

LOCATION AND SPATIAL ANALYSIS OF TOURISM FACILITIES IN ABUJA MUNICIPAL AREA COUNCIL, FCT, NIGERIA USING GIS APPROACH

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Abstract-Tourism is an activity highly dependent on environmental resources. It is also a phenomenon, which in the event of lack of planning and management is likely to erode its environmental base. One of the problems often encountered in the tourism industry is lack of data and a quick update and maintenance of available data. Ineffective management of these spatial information also provide a means by which local governments loose enormous revenue which would have been used to provide the necessary infrastructure which improve the values and living standard of the people in the light of the statutory allocation. Lack of proper management of tourism potentials has made it difficult for Nigeria to be a major tourist attraction in Africa. Therefore this research was aimed at location and spatial analysis of tourism facilities in Abuja municipal area FCT Nigeria using GIS approach. This was achieved through the following objectives: acquisition of base map of study area, point picking of geometric data of tourism facilities using GPS, development of a functional spatial database on tourism facilities and performing various analysis to show the potentials of GIS in analyzing the location of tourism facilities within the study area. The software used included: ArcGIS 9.2, GeoCalc for coordinate conversion and Microsoft word 2007 amongst others. The result of database queries showed the locations of hotel accommodations, relaxation and eating spots, cinemas, banks and churches all located within Abuja municipal area. It was therefore recommended that this study be used as a spatial decision support system for decisions regarding locations of tourism facilities within Abuja municipal area amongst others.

Index Terms- Database Queries. GIS, Tourism Facilities, Tourism,

1. INTRODUCTION

Tourism is a major revenue generation sector that has not been fully harnessed in Nigeria. This is because we failed to see the potentials in the tourism industry. Adedunrin (2000), proved through a research that tourism alone if properly harnessed could earn the nation more than what the nation is currently earning from crude oil. Nigeria is a developing country in West Africa with bountiful potentials of rich tourist attractions as she is indeed blessed with numerous tourist attractions situated in the entire 36 States of the Country and the Federal Capital Territory (FCT).

Over the years, Nigeria has taken some bold steps to diversify its mono-cultural economy through promotion of tourism. These measures include the adoption of the National Tourism Policy (NTP) in 1990, the birth of the Nigeria Tourism Development Corporation (NTDC) in 1992, the founding of the National Institute for Hospitality and Tourism (NIHOTOUR), in Baganda Kano, and the National Travel Bureau (NTB), a tour operating company of NTDC, the adoption of a tourism master plan and the inauguration of the National Tourism Council with the President as Chairman (Ayeni, 2012). The efforts of Government will be a nullity if data about these tourist attractions were

not properly captured, stored, updated and presented in a way that potential tourist will understand. The information can only be generated, stored, updated, analyzed and presented by an Information System which is capable of managing spatially referenced data. GIS offers itself as a decision support tool that can enable stakeholders in the tourism industry to ensure speedy and up-to-date production of tourism map, perform queries and analysis on complex and large volume of spatial and non-spatial tourism data.

2. STUDY AREA

Abuja is located in the heart of the country. The Federal Capital Territory stretches across approximately 8,000 square kilometers. With a geographic location of latitude 70251N and 90201North of the Equator and longitude 50451E and 70391East, the FCT is bordered on the north by Kaduna, on the west by Niger, on the east by Plateau, and on the South-west by Kogi. The geographic location of Abuja is shown in figure 1a and 1b.

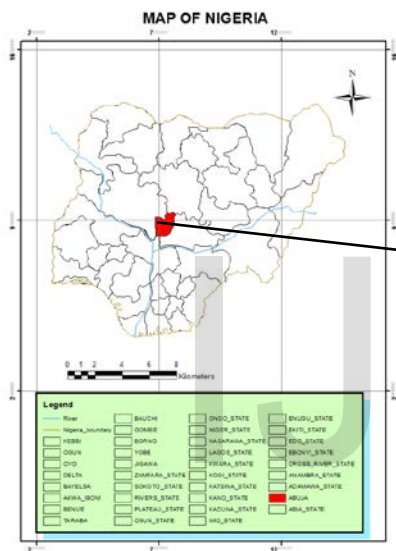


Fig 1a: Map of Nigeria Showing Abuja
(Source: NARSDA Abuja)

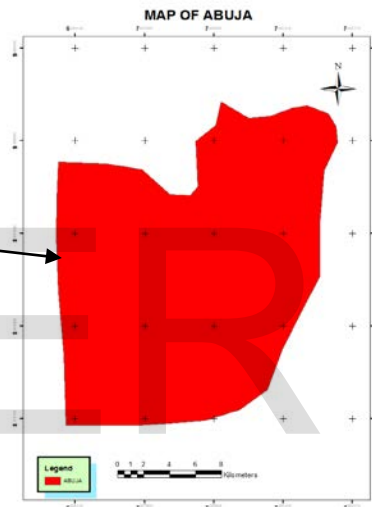


Fig 1b: Map of Abuja
(Source: NARSDA Abuja)

3. DATA AND METHOD

The data used for this research included

- I. Administrative map of FCT Abuja showing local government boundaries.
- II. Abuja municipality area council maps showing road network and towns
- III. Materials available in academic journals, conferences, relevant texts, gazettes, brochures, internet and statistical files of some government offices.

- IV. Locations of recreational centers, hotels and other sites of interest for tourism.

Other useful data was obtained from literatures and statistical files of some government offices, and field capture

3.1 DATA ACQUISITION

3.1.1 Acquisition of Primary Dataset

The primary datasets that was obtained through field visits were:

- i. Positions of sites of interests using GPS where possible e.g. hotels, recreational centers, security institutions, etc.
- ii. Attribute data: This includes non spatial descriptive information of such sites of interest.

3.1.2 Acquisition of Secondary Dataset

The secondary dataset that was needed was gotten from digitization of available map data and attribute data such as:

- i. Abuja municipality area council map showing road network, towns and locations of sites of interest.
- ii. Administrative map of FCT Abuja showing local government boundaries.
- iii. Unpublished/published records kept by statutory bodies and organizations e.g. Tourism records, records from various government ministries, etc.

3.2 DATA PROCESSING AND ANALYSIS

The processing of GIS data involved the following steps:

(A) Database modeling:

The three phases of database modeling include: conceptual, logical and physical modeling phases. (Kufoniyi,1998)

i. Conceptual Database Modeling

Phase: This is a representation of human conceptualizing of reality of the entire information content of the database. Here decision on how the view of reality was presented in a simplified manner and to the satisfaction of the information requirement of the project must be made.

ii. Logical Database Modeling Phase:

This is a representation of the conceptualization of the reality in a data structure that can be implemented by the computer software to be used. In this project, the relational data model was

adopted. In a relational data model, data are separated into tables, and each table contains items of data called fields. Fields are objects (attributes of entities). The entities and attributes are translated into a geo-relational data structure and the following relations are derived e.g.

iii. Physical Modeling Phase: This is the phase where the data structure is translated into built-in data of the chosen software. Nowadays, GIS software dictates most of the physical database design activities. The physical database design for each spatial entity has been completely defined by the vendor and the GIS designer does not have to do anything more for this part of data.

3.3 GIS Analysis

In order to obtain the best answers from the database system several types of queries was framed and executed. These queries basically include: Basic location and spatial queries.

4. RESULTS AND DISCUSSIONS

The major location and spatial/attribute analysis results in the study are shown in figures 2 – 8 below. The Location and spatial queries were classified as mostly as single criteria queries. The major queries include a spatial query for hotels that function 24 hours with constant electricity supply, four and five star rated hotels, location query for the various relaxation and eating spots in Abuja, Eateries that are within 500 meters of the hotels, Eateries within 500 meters of the road side, Churches within 500 meters from hotels, Banks within 500 meters from hotels, cinemas for recreational activities and location of various landmarks.

Fig. 2 shows the query command to determine the number of hotels that operate 24 hours with constant supply of electricity. The result shows that about 51 out of 63 hotels in Abuja municipal

area operate 24 hours with constant supply of electricity

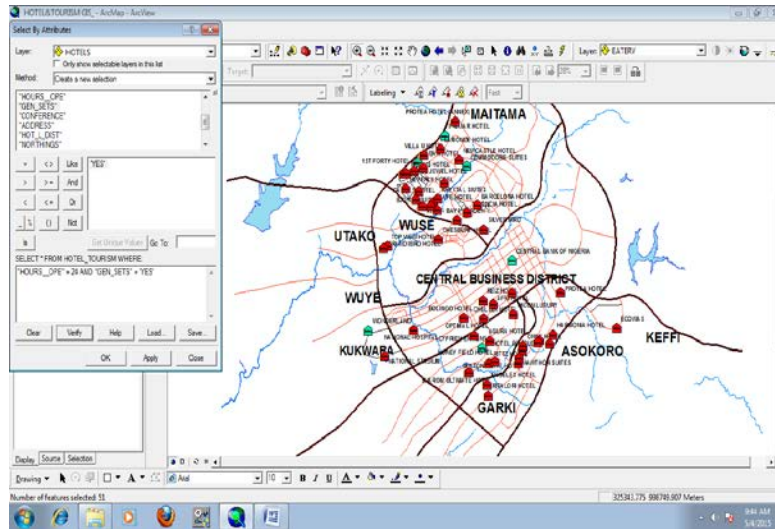


Fig 2: Hotels that operate 24 hours with constant supply of electricity

Fig. 3 shows the query command to determine the number of 4 & 5 star hotels in Abuja municipal area. The result shows that about 26 out of 63

hotels in Abuja municipal area have 4 & 5 star ratings.

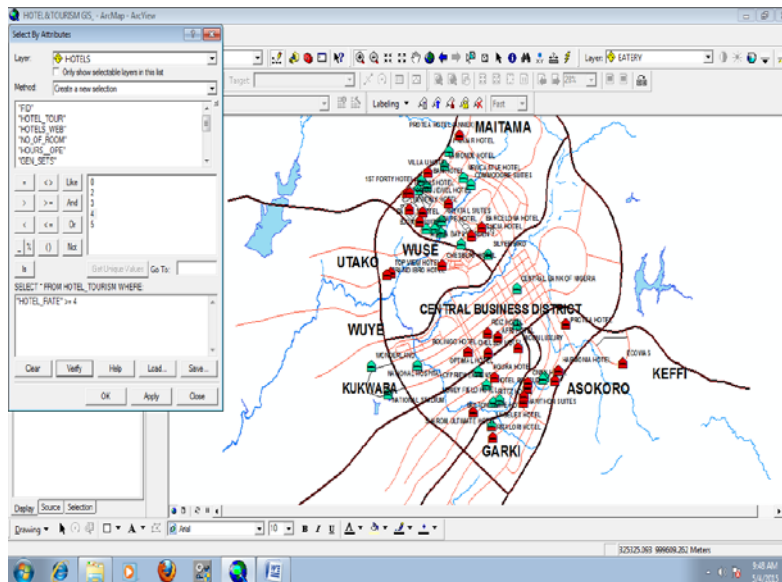


Fig 3: Hotels with 4 & 5 star ratings

Fig. 4 shows the location query command to determine the Eateries that are within 500 meters of the hotels. The result shows that 48 out of 72

Eateries are within 500meters distance from the hotels.

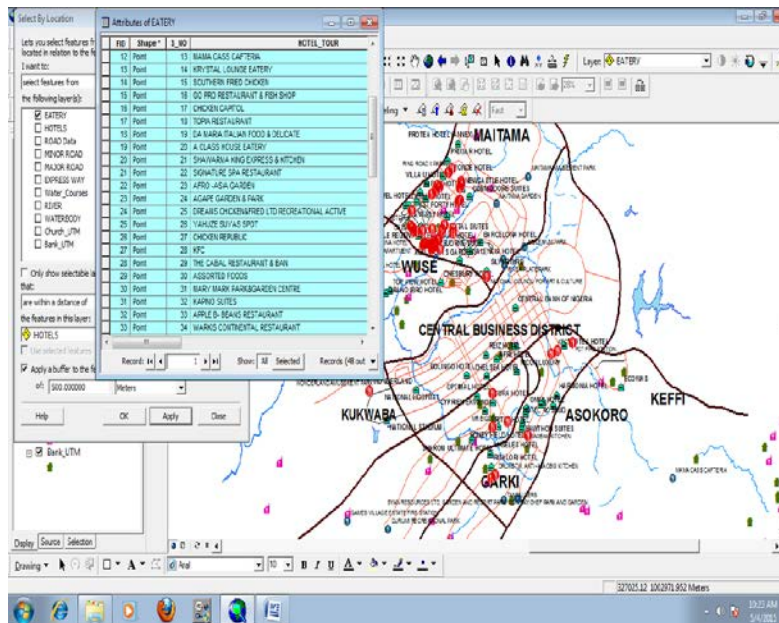


Fig 4: Eateries that are within 500meters of the hotels

Fig. 5 shows the location query command to determine the Eateries that are within 500 meters from the roadside. The result shows that 64 out of

the 72 eateries in Abuja municipal area are located 500meters from roadside.

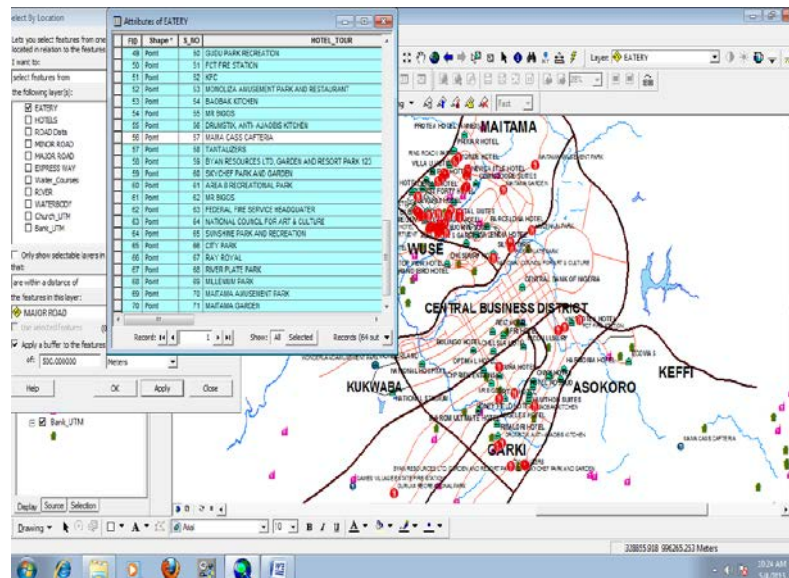


Fig 5: Eateries that are within 500meters of the roadside

Fig. 6 shows the location query command to determine the banks that are within 500 meters from hotels. The result shows that 11 out of 41

banks are within 500meters distance from the hotels.

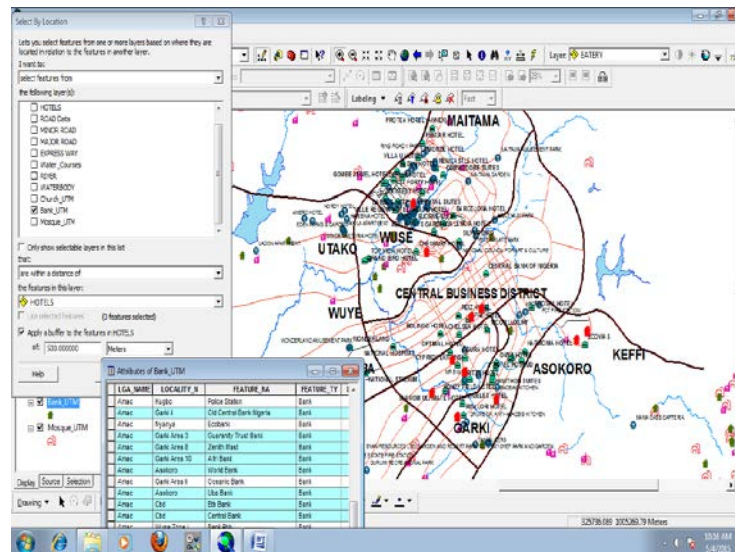


Fig 6: Banks that are within 500meters of the Hotels

Fig. 7 shows the location query command to determine the churches that are within 500 meters from hotels. The result shows that 7 out

of 146 churches are within 500meters distance from the hotels

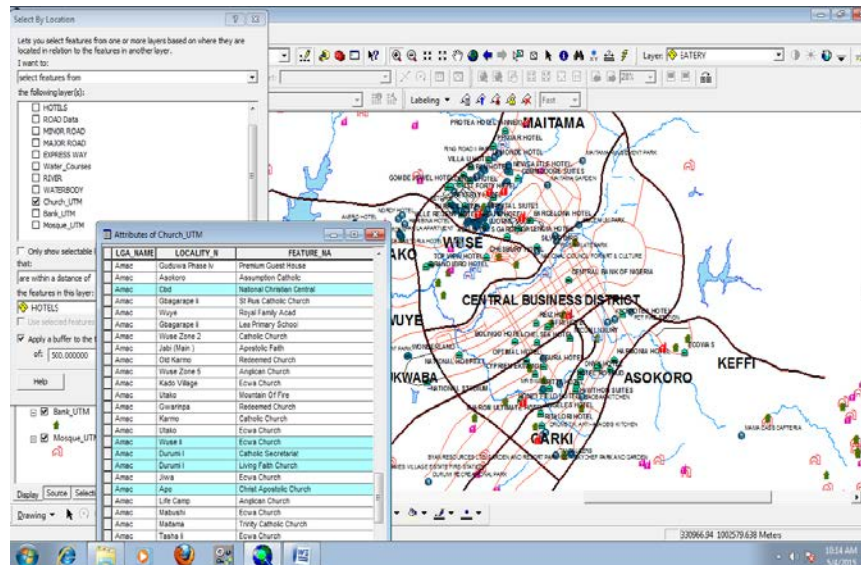


Fig 7: Churches that are within 500meters of the Hotels

Fig. 8 shows the query command to determine location of cinemas in Abuja municipal area.

The result shows that just one cinema is located within Abuja municipal area.

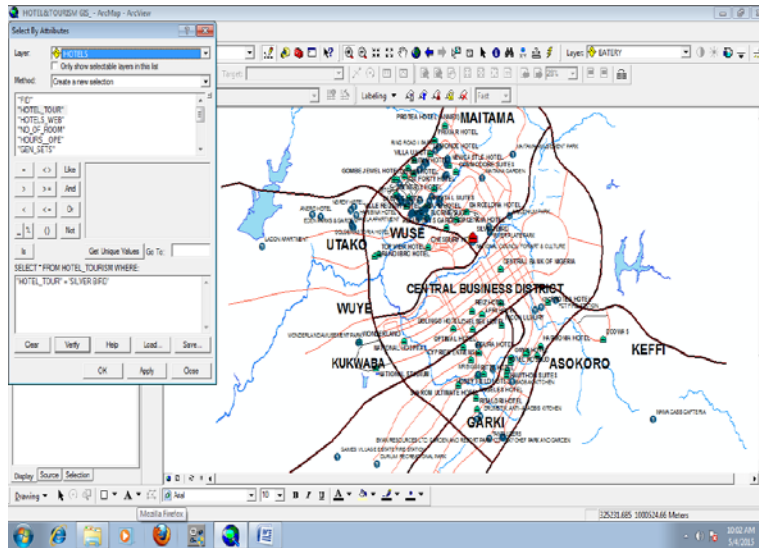


Fig 8: Cinema located within Abuja Municipal Area

Fig. 9, 10 and 11 shows the query command to determine and show locations of Ecowas, Central Bank of Nigeria, and the National

Stadium landmarks in Abuja municipal area FCT.

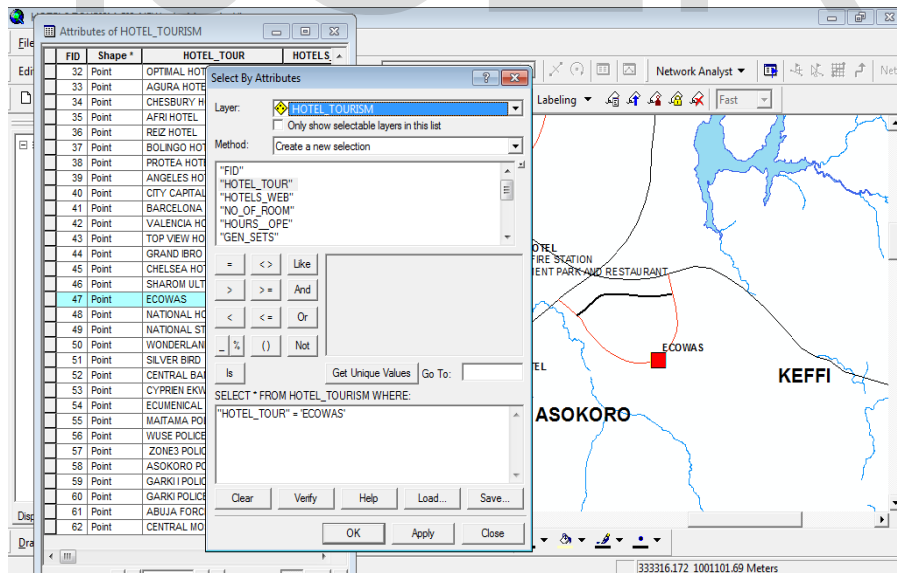


Fig 9: Ecowas Landmark located within Abuja Municipal Area

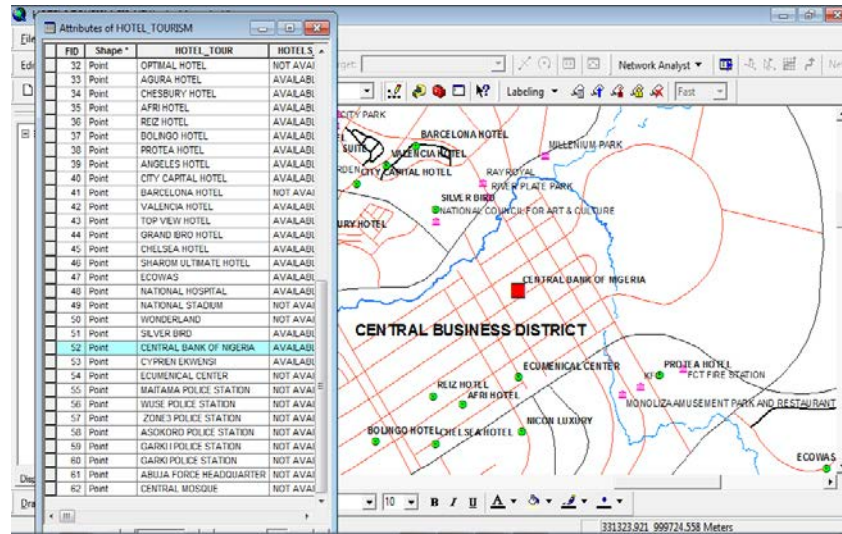


Fig 10: Central Bank of Nigeria Landmark located within Abuja Municipal Area

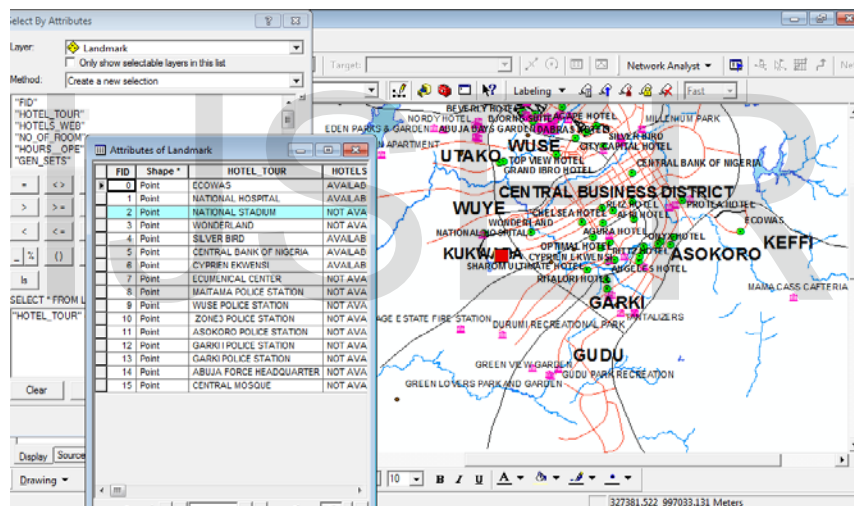


Fig 11: National Stadium Landmark located within Abuja Municipal Area

5. CONCLUSION AND RECOMMENDATION

This study has successfully demonstrated the use of GIS in location and spatial analysis of tourism facilities in Abuja municipal area. The capabilities of Information System in GIS to conduct spatial search and provide answers to some generic

question has been established. The database created was carefully accessed and tested with various queries invoked. The information generated can assist in decision making in tourism management by various authorities involved. It was therefore recommended that this study be used as a spatial decision support system for decisions regarding locations of tourism facilities within Abuja municipal area amongst others.

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