

# Comparative Study of Social Infrastructure Provision in Ikwerre and Etche Local Government Areas of Rivers State Using Geographic Information System

**Ibama Brown**

Department of Urban and Regional Planning,  
Rivers State University of Science and Technology, Port Harcourt,  
PH +2348035519084. E-mail: ibabrown@yahoo.com

**Owukio Stewart Senibo**

Department of Urban and Regional Planning  
Rivers State University of Science and Technology, Port Harcourt,  
PH +2348034491184 Email: stewarty2k@yahoo.com

**Wocha Chikagbum**

Department of Urban and Regional Planning  
Rivers State Polytechnic, Bori.  
PH +2348036751450 Email:chikagbum.eric@gmail.com

**Abstract-** There are observed inequalities in the provision and distribution of social infrastructure facilities in Ikwerre and Etche. The paper examined the availability of some social infrastructural facilities in this two local government of Rivers State. It equally examined the extent to which those facilities have promoted rural development in the State. Data were collected mainly from primary sources. A total number of 160 copies of questionnaire were administered in sixteen (16) settlements from the two (2) Local Government Areas and all were retrieved for the analysis. Research findings revealed unevenness in the availability of Electricity, Potable water supply and other utility services. However, the availability of, education and health facilities were largely indicated by respondents in the 16 settlements of the study areas. The paper recommends that a comprehensive strategy which will eliminate disparities that exist within Local Government Areas and between LGA's be instituted. It also suggests that an articulated and integrated plan for social infrastructure provision indicating priority areas using acceptable criteria is needed for costs to be minimized, and that there should be a balance in the provision of social infrastructure within LGA's.

**Index Terms—** Economic development, Physical infrastructure, Poverty reduction and Social Infrastructure.

## I. INTRODUCTION

Infrastructural facilities refer to those basic services without which primary, secondary and tertiary productive activities cannot function. In its wider sense, infrastructural facilities embrace all public services from law and order through education and public health to transportation, communications and water supply (Mabogunje, 1974; Kahn, 1979).

Social infrastructures are often referred as social services, public services, public facilities or public utilities. Social services are services which are provided with the main aim of improving social welfare. These services mostly include education, health care, police and fire protection, and a variety of cultural and recreational services. Some other activities such

as power, transport, and telecommunications, domestic water supply and sanitation, and refuse collection have important social implications but are not usually regarded as social services.

This study refers to social services as social infrastructure to keep in line with the terms used by the local planning authorities in Rivers State. The performance of particular social infrastructure in particular area depends on the availability of service, the number of population it serves, the location, distribution of service, etc.

Lack of availability of service leads to low accessibility level for the people. Sometimes, overwhelming quantity of people to be served by one facility also leads to low service level of one particular facility. This low performance might influence the prosperity of life for the inhabitants. By taking health care facility and education facility as examples of social infrastructure, this study will illustrate how social infrastructure is plan with geographical accessibility as parameter, using Geographic Information System (GIS) as a tool of analysis.

Ikwerre and Etche, which happens to be a rural settlement in Rivers State, serve as a case study area for the proposed approach of this research.

## II. STATEMENT OF THE PROBLEM

The importance of social infrastructural facilities in grassroots development and poverty reduction cannot be over-emphasized whether in urban or rural environments. McNeil (1993) shows that adequate infrastructure reduces the costs of production, which affects profitability, levels of output, and employment.

When infrastructure works, productivity and labour increase. When it does not work, citizens suffer, particularly the poor. Thus, economic renewal and societal welfare become postponed or halted.

Place like Etche local government area do not have enough social infrastructure facility to service the need of the dwellers among the communities.

The existing condition of health care and education services in Etche LGA shows that there is lack of social infrastructure provision compare to that of Ikwerre LGA. This is because the spatial distribution of those facilities is also not equitable across the city and mostly located near urban centre. Ikwerre Local Government Area has a high level of population which is as a result of high level of industrialization. Because of this condition, some people in particular area especially in the rural periphery of Etche, have low level of accessibility to social infrastructures.

Rural areas in Nigeria are generally deprived of the basic needs of life such as housing, medical care, postal communication, education, transport facilities, recreation, neighborhood utilities, credit facilities and horizon for self-improvement. Studies in Nigeria show a high degree of inequality in income distribution Modupe, (1986); World Bank, (1997) and in the provision of socio-economic opportunities and facilities between rural and urban areas (Mabogunje, (1977; Stewart 1985) in which the rural area is less favored. According to the World Bank (1997), the average per capita expenditure of a poor rural household in Nigeria was one-fifth of the non-poor in 1992. Of the extremely poor, 85 percent lived in rural areas and more than two-thirds of them lived on farms. The infrastructural delivery arrangements at the local level point to the fact that the quality and quantum of infrastructural facilities are far from satisfactory.

### III. GOAL OF THE STUDY

The main goal of this study is to appraise the present provision of social infrastructures i.e. health care facilities and education facilities, and suggest the method(s) on how to balance the provision of social infrastructure in the two LGA's

The objectives of this study are:

- To determine the level of infrastructure disparity in the two Local Government Areas.
- To determine the availability of social infrastructure in the two Local Government Areas.
- To determine the accessibility of infrastructure in the two Local Government Areas.

### IV. RESEARCH QUESTIONS

The research questions are:

- How far the existing social infrastructures can serve the present population with regards to their service capacity?
- How is the present accessibility level of people to existing social infrastructures in the study area?
- Is there any disparity in the provision of social infrastructure in this two LGA's for people to access?

### V. SCOPE OF THE RESEARCH

This paper focuses on a comparative study of social infrastructure provision in Ikwerre Local Government Area and Etche Local Government Area of Rivers State, the paper intends to study the problems of infrastructure provision and the mode of accessibility. And also illustrating with demographic maps using Geographic Information System (GIS) as a tool. Types of social infrastructures considered are healthcare and education facilities. The distribution of existing

social infrastructure is assessed by evaluating the accessibility level of available services. The answers to the question on how to improve the performance of social infrastructure services in the future have been attempted.

## VI. LITERATURE REVIEW

### MEANING OF SOCIAL INFRASTRUCTURE

The notion of social infrastructure has emerged over the last decade. Heaps of researches have been conducted in India, Australia, British, and China. The domain has emerged mainly due to the fact that public infrastructure is the most apparent form of construction which interests the society at large Duffield, (2001). Therefore, this subsection thoroughly reviews the social infrastructure across literature.

Infrastructure is defined as the productive capital structures that underpin the economy and society and contribute over time to the achievement of its economic and social goals Johnson *et al.*, (1995). In this regard, economic infrastructure and social infrastructure have consequently emerged.

Although both economic and social infrastructures have significant social impacts on individuals, communities, and the general public at large in terms of practicality, a distinction between both infrastructures based on their social impact is ambiguous and difficult to establish Gilmour *et al.*, (2010). Likewise, SIP is services delivered by welfare agencies, more commonly known as "human services". The outcome of human service is more difficult to predict as they are dependent on the way staff interpret policies (a factor less significant in economic infrastructure projects) as well as how recipients react to them Hasenfield, (1992). As a result, as the SIP domain expands rapidly, the need to differentiate both infrastructures increases. The genesis of this paper stems from this need. Argy *et al.* (1999) further differentiate social infrastructures into hard social infrastructure (e.g. hospitals) and soft infrastructure (e.g. social security). This paper, however, only focuses on social infrastructure alone.

Social infrastructure may also involve a wider range of partners including in most cases various government agencies, private companies and non-profit organizations together with a selection of user groups, freelance scientists, independent consultants as well as academic research institutes Oppen *et al.*, (2005). Although SIP involves welfare agencies and generally smaller scale as compared to economic infrastructure, SIP is as complex and dynamic as generic construction projects. This is due to the fact that the post construction and maintenance stage involve an ongoing involvement with the community Jefferies and McGeorge, (2009). Wai *et al.* (2011) concluded SIP as the provision of infrastructure particularly with respect to three aspects namely well social value defined, non-profit defined provision and generally procured via Public Private Partnership (PPP) contracting method.

### VII. INFRASTRUCTURE, POVERTY REDUCTION AND ECONOMIC DEVELOPMENT

Infrastructure is a broad concept that embraces public investment in physical assets and social services. Ogun (2010) argued that the urge to increase public investments in urban areas stems from the view that they are key determinants of long-term sustainable growth and the capacity of the poor to benefit from the growth process. Theoretically, three schools of thought exist on the effectiveness of investment in infrastructure as a poverty reduction strategy. The first school

argues that investment in social infrastructure, which embraces investment in education and health, is more relevant to the goal of poverty reduction than physical infrastructure Jahan and McCleery, (2005); Jerome and Ariyo, (2004). The second school maintains that investments in both physical and social infrastructure reduce poverty. The last school holds that investment in infrastructure in general has no effect on poverty reduction.

#### VIII. PRIVATIZATION AND COMMERCIALIZATION THEORY

Privatization and commercialization strategy is a latter-day form of the classical *laissez – faire* policy or strategy of development. The concept embraces deregulation of the economy so as to encourage private initiative and boost productivity and efficiency. The key elements are the “disengagement of government from the ownership of hither to state-owned enterprises (SOEs) and the concomitant sale of such to private entrepreneurs” Oluokuju, (1996). The organized private sector becomes the driving force or the engine of development and growth while the government’s role is reduced to that of a catalyst responsible for the creation of an enabling environment for the growth of the economy. From a global perspective, this is a strategy of development through a more efficient pattern of resource allocation by a free interplay of market forces. Deregulation encourages competition and in this way, a greater quantum of economic and social overhead capital or infrastructures will be built up in a more efficient and competitive market environment.

This is the strategy of the new millennium as governments try to shed their economically inefficient and unproductive overloads to generate more revenue from the sale of the SOEs. This, expectedly, would enable the governments, especially Least Developed Countries governments, to reduce their public expenditures, generate more revenue and balance their budgets, at least. The disposal of the economic infrastructures and parastatals would enable these governments to focus more attention to and fund more adequately the social parastatals and infrastructures that create substantial external economies through the provision of public goods such as health, education, sanitation and portable water Familoni, (2000). This strategy has been introduced in Nigeria for more than one decade and has produced significant results. The telecommunication industry is a good example in this regard.

#### IX. THE ROLE OF INFRASTRUCTURE IN ECONOMIC DEVELOPMENT

Infrastructure is an umbrella term for many activities usually referred to as “social overhead capital” by development economists. Precisely, infrastructure refers to a network of transport, communication and public (social) services – all functioning as a system or as a set of interrelated and mutually beneficial services provided for the improvement of the general well-being of the population Ogbuozobe, (1997). Public or social services refer to those services or facilities meant for the common goods of the people. They include water supply, health care delivery, education, postal and telecommunication facilities, electricity, etc. Sufficient infrastructural services are indispensable for economic development. The adequacy of infrastructure helps to determine a country’s success or failure in diversifying production, coping with population growth, reducing poverty, improving environmental conditions, etc.

Indeed, socio-economic development can be facilitated and accelerated by the presence of infrastructure. If these facilities and services are not in place, development will be very difficult and in fact can be likened to a very scarce commodity that can only be secured at a very high price and cost. Adequate access to social welfare services, such as medical services, education, potable water supply, roads, electricity, employment opportunities etc, are strong indices of development Adeyemo, (1989). In any discourse on infrastructure, it is important to note that infrastructure can be broadly classified in two: physical (roads, electricity, telecommunication, etc) and social (education, health, recreation, housing etc.). In some clime, physical infrastructure is often referred to as economic infrastructure. Thus, the role of infrastructure in economic development will be discoursed along this line.

#### X. THE ROLE OF PHYSICAL INFRASTRUCTURE

Aigbokhan (1999) gives examples of physical infrastructure as public utilities such as power, telecommunications, piped water supply, sanitation and sewage, solid waste collection and disposal and piped gas as well as public works which include roads, major dam and canal works for irrigation and drainage, and other transport projects like urban and interurban railways, urban transport, seaports and waterways and airports.

Physical infrastructure has played a very significantly positive role in the growth performance of countries in recent times. Where development of economic infrastructure has followed a rational, well-coordinated and harmonized path, growth and development has received a big boost. Examples are Korea and Japan, Familoni, (2000). Where the growth of infrastructures has not followed such a rational and coordinated path, growth and development has been stunted. Examples can be found in most African countries and other LDCs. The role of infrastructure is a very wide and controversial issue that has been the subject of numerous empirical studies.

Studies from 89 districts in 13 Indian states show that lower transport costs increased farmers’ access to markets and led to considerable agricultural expansion, just as modern irrigation methods brought high yields Ogbuozobe, (1997). Also, it has been noted that infrastructural capacity grows step for step with economic output. For example, a one per cent increase in the stock of infrastructure is associated with one percent Gross Domestic Product (GDP) (World Bank, 1994). Canning and Pedroni (2004) investigated the long run consequences of infrastructure provision on per capita income in a panel of countries over the period 1950-1992.

The results provide clear evidence that in the vast majority of cases infrastructure (telephone, electricity generating capacity and paved roads) does induce long run growth effects. In developed economies - Japan and United States of America for example, Ogbuozobe (1997) observed that telecommunications, electricity and water are used in the production process of nearly every sector, and transport is an input for every commodity. The provision of economic infrastructure can expand the productive capacity of the economy by increasing the quantity and quality of such infrastructure, thereby accelerating the rate of economic growth and enhancing the pace of socio-economic development.



### XI. THE ROLE OF SOCIAL INFRASTRUCTURE

Education and health are the two dominant social infrastructures which can have profound effect on economic development of any nation. Education has been considered as a very important source of economic growth. Even though education may be a social investment, it is also an economic investment since it enhances the stock of human capital Denison, (1962).

Again, the role of education as a social infrastructure and as a stimulant of growth and development can be enhanced only if it is qualitatively provided. Qualitative education is a major determinant of the stock of human capital. It has proved to be the vehicle for national transformation in human history and no nation ever rises above her investment in education Oyedepo, (2011).

A less developing economy needs professionals in all sectors to accelerate the growth and development of such sectors. In fact, UNESCO recommends a minimum of fifteen percent of national expenditures on education. Some advanced countries spend more than 15% of their GDPs on education and yet, education still remains in the front burner of national debate on their development priorities.

Similarly, health is a very important argument in the socio-economic production function. A popular adage says that a sound mind usually resides in a healthy body. Health is one of the major determinants of labour productivity and efficiency.

Public health deals with the environment in which economic activities take place. In fact a conducive environment would be permissive of accelerated growth and development. Aigbokhan (1999) found that human capital components of infrastructure appear to have impact on growth. For example, he observed that expenditure on health care and education record statistically insignificant impact on growth and suggests that if efficiently applied, public spending on the services is capable of impacting positively and strongly on growth.

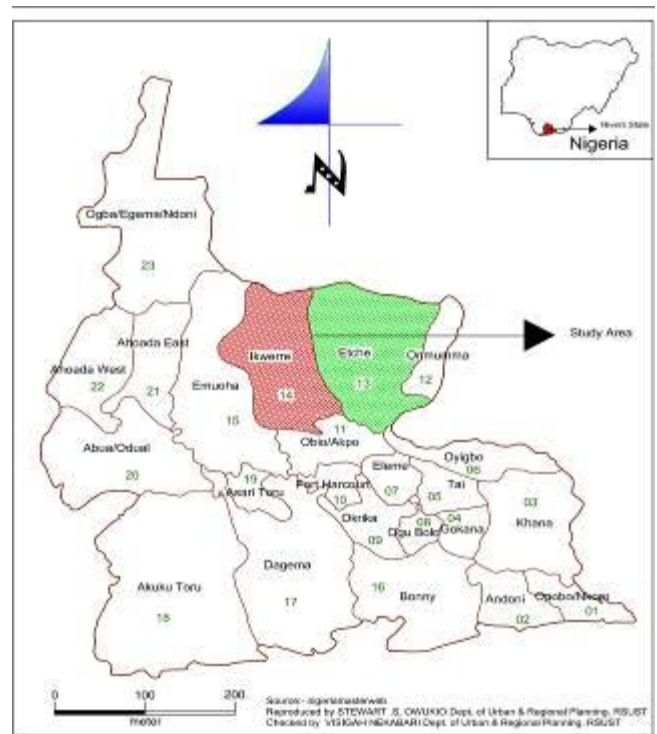
Within the context of Nigeria’s vision 20:2020 programme, therefore, the realization of all that have been envisioned would depend to a large extent, on the availability of the necessary infrastructure in the right quantity and quality. This is so because infrastructure represents if not the engine, then, the “wheels” of economic activity. In another perspective, the relationship between infrastructure and economic development is further established by the correlation between a nation’s GDP and her level of urbanization as demonstrated by World Bank studies Yunusa, (2011).

### XII. METHODOLOGY

The study is undertaken in Ikwerre and Etche LGA’s of Rivers State. It is bound by longitude 5.056690° to 7.138669°E and latitude 6.923640° to 5.137167°N, Google Earth, (2013)

Ikwerre Local government has one hundred and fifteen (115) settlements while Etche Local government has one hundred and sixty four (164) settlements, therefore the study area covers 279 settlements.

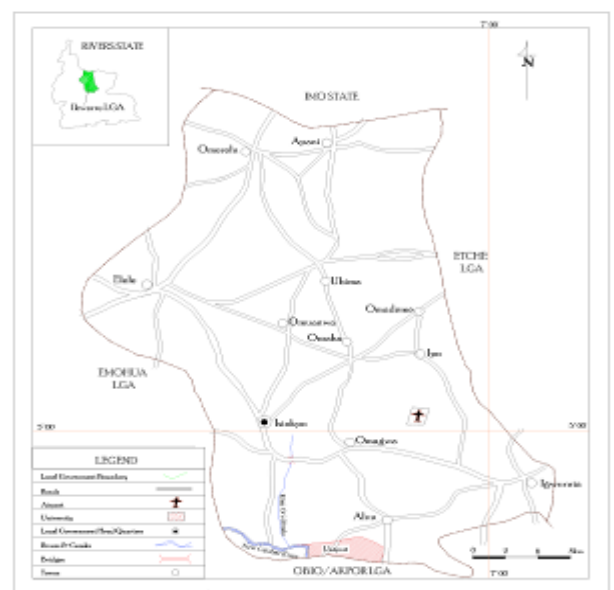
The two Local Government Areas share common boundary with Imo state and their major occupation is farming, production of palm oil, cultivation of cassava for the production of garri and other farm produce.



**Map of Rivers State showing Ikwerre and Etche Local Government Areas.(study area)**  
Source: Google imagery

### XIII. HISTORICAL BACKGROUND OF THE STUDY AREA

**Ikwerre LGA:** The Ikwerre people are of Nigerian Igbo extraction. This is an unnecessarily debated point which has no economical or present-day relevance. Scholars believed the then Ikwerre dwellers refuted their origin of being Igbo as an escape strategy from the Nigerian Army during the Biafrican Civil War. A claim which was supported by Ikwerre being recognized as a separate group only in the Nigerian Constitution after the Civil war and in 1979.

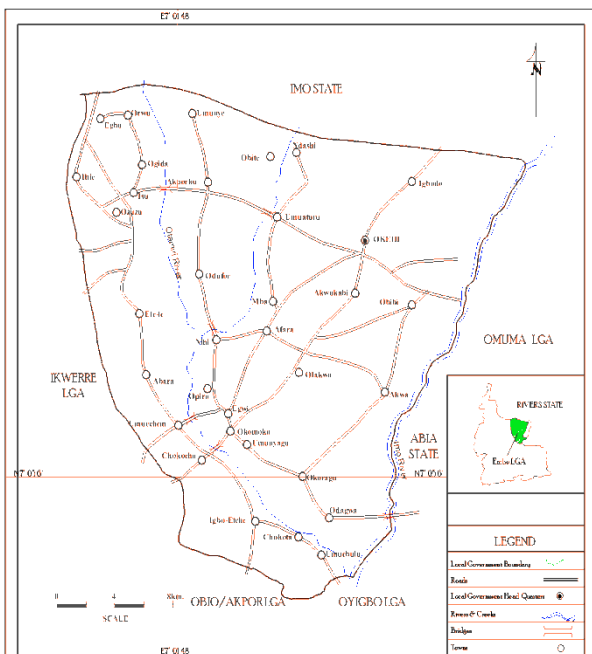


**Map showing Ikwerre Local Government Area of Rivers State**  
Source: Google imagery

**Etche LGA:** Etche, an ethnic nationality, is located in the northeast of Rivers State. It is bound in the east by Abia State, in the north by Imo State, in the west by the Ikwerre local government area, and in the south by the Obio/Akpor local government area. The land mass of Etche comprises of 97,500 hectares (376.5 square meters) with a population estimated to be about 600,000. Etche is nestled in two local government areas of Rivers State – Etche and Omuma local government areas (making up a National Assembly Constituency).

The Etche heritage is easily discernible in her distinct language, culture and tradition, with her symbolic ethnic head anchored on the stool of the paramount ruler OnyiIshi-Etche. In order to avoid confusion as to her relationships with other areas, it is important to note that Etche is neither Oyigbo nor Ibo. Additionally, it should not be viewed as a part of the Ikwerre. On the contrary, these areas are Etche’s neighbours; with existing cordial and intense relationships with Etche.

Ikwerre and Etche LGA’s are located in the northern fringes of Rivers State. Relatively similar to Port Harcourt city, these two LGA’s are also a rapidly growing in terms of population growth and urban physical growth.



**Map showing Etche Local Government Area of Rivers State**

Source: Google imagery

**XIV. THE RESEARCH DESIGN**

The research took the form of explorative research and randomize survey from which the community and the respondents to be sampled were chosen. The study also evaluated the existing provision of social infrastructure and further suggested improvements for its optimum provision of social infrastructure in Ikwerre and Etche Local Government Area. Provision of social infrastructure is related to how well they can serve the people

**XV. SAMPLE SIZE AND PROCEDURE**

Out of 279 settlements in the study area, 16 settlements are selected from the 2 Local Government Areas; this is to say that 8 settlements were taken from each local government area. Questionnaires were administered, so in order to obtain detailed information, one hundred and sixty (160) households were interviewed which is to say that 10 questionnaires were be administered in each settlements that are sampled.

**TABLE 1: SHOWING QUESTIONNAIRE DISTRIBUTION IN THE STUDY AREA.**

S/ No	COMMUNITIES	SETTLEMENTS
1	<b>ISIOKPO</b>	Nkarahia
2		Ogbodo
3		Azumini
4		Alimini
5	<b>ALUU</b>	Omuahunwo
6		Mbodo
7		Omuike
8		Omuoda
9	<b>UMUEGBULU</b>	Umuegbulu I
10		Umuegbulu II
11		Umuegbulu III
12		Umuegbulu IV
13	<b>IGBO ETCHE</b>	Umuoke
14		Chokota
15		Umuasuike
16		Umuodogo

Source: Authors’ field survey, 2014

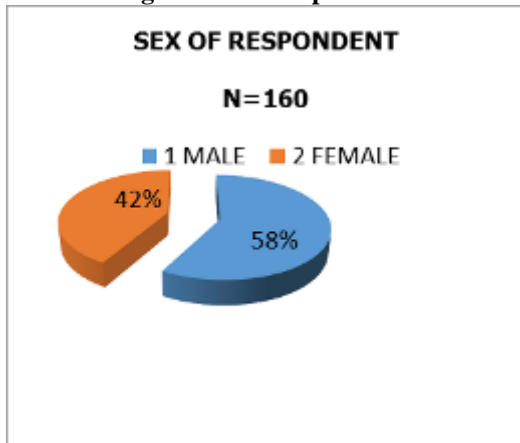
**TARGET POPULATION**

The study was targeted at household members of the sampled settlements, a total number of 10 questionnaires were used in sampling 10 different households in each of the settlement. This gave us a grand total of 160 households that were sampled in the study area.

**DISCUSSION OF FINDINGS**

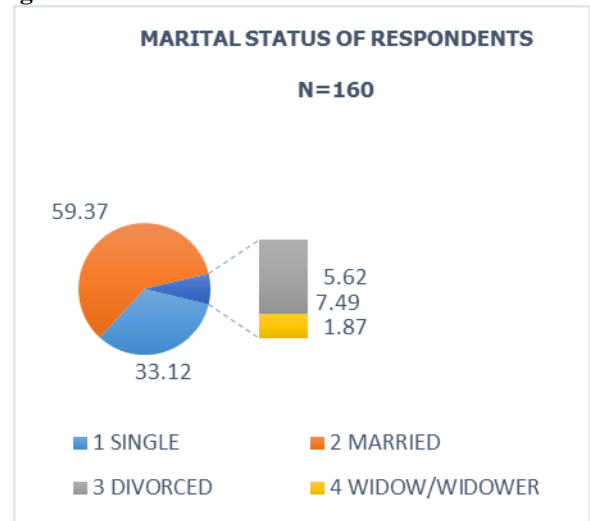
Figure 1 represent the sex distribution of respondents of data collected where males numbered up to 93 persons and females were 67 persons, representing 58% and 42% respectively.

**Fig. 1: Sex of Respondents**



Source: Authors' Field survey, 2014

**Fig.2: MARITAL STATUS OF RESPONDENTS**



Source: Authors' Field Survey, 2014

**Table 2: Age of Respondents**

S /NO	AGE COHORTS (Years)	NUMBER OF RESPONDENTS	%
1	21-25	20	12.50
2	26-30	26	16.25
3	31-35	17	10.00
4	36-40	18	10.63
5	41-45	25	15.62
6	46-50	21	13.12
7	51-55	16	10.00
8	55-60	14	8.75
9	60yrs +	3	1.88
	<b>Total</b>	<b>160</b>	<b>100.00</b>

Source: Authors' Field Survey, 2014

Table 2 above indicates that 16.25% of the respondents were aged between 26-30 years and 1.88% of the respondent's age 60 years above.

Marital status of respondents in fig. 2 shows that 39.37% of the respondents are married and 1.87% of the respondents and widows or widowers. This is because the married respondents were the ones available as at the time the questionnaires were administered.

**Table 3: LEVEL OF EDUCATION OF RESPONDENTS**

S/NO	LEVEL OF EDUCATION (MALE)	NUMBER OF RESPONDENTS	%
1	No formal education	3	3.23
2	Primary school (completed)	12	12.90
3	Sec/Tech. Voc. (completed)	19	20.43
4	Sec/Tech. Voc. (uncompleted)	-	-
5	Nursing/health tech.(completed)	1	1.07
6	COE Poly, Uni. Or Equivalent (uncompleted)	31	33.33
7	COE Poly, Uni. Or Equivalent (completed)	24	25.81
8	Not ascertained	3	3.23
	<b>TOTAL</b>	<b>93</b>	<b>100.00</b>

Source: Authors' Field Survey, 2014

Table 3 above shows that 33.33% is the modal class and represents male respondents who haven't completed COE, Polytechnic, University education or its equivalent while 1.07% have completed nursing/health Technology Education.

**Table 4 LEVEL OF EDUCATION OF RESPONDENTS**

S/NO	LEVEL OF EDUCATION (FEMALE)	NUMBER OF RESPONDENTS	%
1	No formal education	1	1.9
2	Primary school (completed)	6	8.95
3	Sec/Tech. Voc. (completed)	18	26.86
4	Sec/Tech. Voc. (uncompleted)	4	5.97
5	Nursing/health tech.(completed)	7	10.44
6	COE Poly, Uni. Or Equivalent (uncompleted)	14	20.89
7	COE Poly, Uni. Or Equivalent (completed)	11	16.41
8	Not ascertained	6	8.95
	<b>TOTAL</b>	<b>67</b>	<b>100.00</b>

Source: Authors' Field Survey, 2014

From the table 4 above it can be deduced that 26.86% of the respondents completed secondary/technical or vocational education while 8.95 have no formal education.

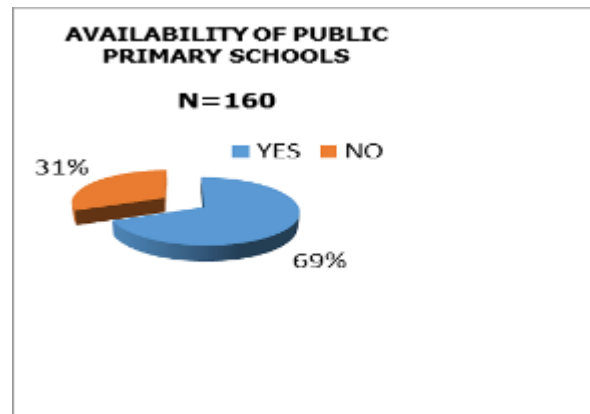
**Table 5: EMPLOYMENT STATUS OF RESPONDENTS**

S/NO	TYPES OF EMPLOYMENT	NUMBER OF RESPONDENTS	%
1	Labourers	11	8.39
2	Farming/fishing	33	25.19
3	Retail trading	15	11.45
4	Business	42	32.06
5	Mechanics/Tech/Dri vers/other artisans	6	4.58
6	Engineering, medical, teaching, legal etc	5	3.81
7	Civil Servant	19	14.50
	Total	121	100.0

Source: Authors' Field Survey, 2014

The table 5 above shows that 32.06% of the respondents are involved in various businesses while 3.81% of the respondents are employed in Engineering, medical, teaching, legal and allied professions.

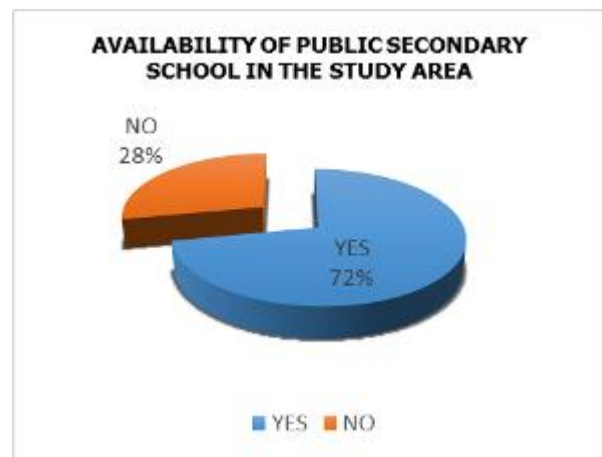
**Fig. 3 AVAILABILITY OF PUBLIC PRIMARY SCHOOLS**



Source: Authors' Field Survey, 2014

The figure 3 above shows that 69% of the respondents says there are public primary schools within the study area while 31% of the respondents said there are none in their locality.

**Fig. 4 AVAILABILITY OF PUBLIC SECONDARY SCHOOLS**



Source: Authors' Field Survey, 2014

The figure 4 above shows that 72% of the respondents says there is availability of secondary schools within the study area while 28% of the respondents NO

**TABLE 6: SHOWING FACILITIES, UTILITIES AND SERVICES PROVIDED BY GOVERNMENT AND OTHERS**

S/N	Facilities	Number of Respondent	Not Available %	Number of Respondent	Available provide by government & community %	Number of Respondent	Available provide by private individuals & industries %
1	Electricity	0	0	29	8.57	11	9.73
2	Portable water	21	29.16	24	7.10	42	37.16
3	Health Centre	11	15.27	71	21.00	12	10.61
4	Hospital	8	11.11	40	11.83	34	30.08
5	Primary/Secondary			80	23.66	14	12.38
6	Post office	3	4.16	2	0.59	0	0
7	Market			63	18.63	0	
9	Town hall	29	40.24	29	8.57	0	
	<b>Total</b>	<b>72</b>	<b>100</b>	<b>338</b>	<b>100</b>	<b>113</b>	<b>100</b>

Source: Authors' field survey, 2014

**FACILITIES NOT AVAILABLE**

It can be seen from the table 4.5 above shows that 40.24% of the respondents says there is no availability of town halls, 29.16% no availability of portable water, 15.27% no availability of health centre's, 11.11% no availability of Hospitals, 4.16% says there is no availability of post office, while Electricity and market was not ascertained.

**FACILITIES AVAILABLE, PROVIDED BY GOVERNMENT AND/OR COMMUNITY**

23.66% of the respondents says there is availability of Primary / Secondary school, 21.00% responded that there is availability of Health Centre, 18.63% says there is availability of market within the study area , 11.83% responded that there is availability of Hospital in the study area, 8.57% ascertained that there is availability of electricity and Town Halls in the study area, 7.10%

responded there is availability of portable water, while 0.59% responded that there is availability of post office in the study area.

**FACILITIES AVAILABLE PROVIDED BY PRIVATE INDIVIDUALS AND INDUSTRIES**

37.16% of the respondents says there is availability of portable water which is provided by private individuals and industries , 30.08% responded that there is availability of Hospitals is provided be private individuals in the study area, 12.38% says there is availability of Primary/secondary schools are provided by private individuals within the study area , 10.61% responded that the availability of Hospital in the study area is provided by private individuals, 9.73% responded that the electricity is provided by private individuals while post office market and town halls was not ascertained.

**TABLE 7: RESPONDENTS RATING OF FACILITIES**

S/NO	Rating	NUMBER OF RESPONDENTS	%
1	Excellent	58	65.17
2	Very good	18	20.23
3	Good	8	8.99
4	Fair	5	5.61
5	Poor	-	-
	<b>TOTAL</b>	<b>89</b>	<b>100.00</b>

Source: Authors' field survey. 2014



Table 7 above shows that 65.17% of respondents in the study area say the facilities are services as excellent while 5.61% of the visitors rate its services as fair and 0% was not ascertained.

S/N	COMMUNITY	SETTLEMENT	SCHOOLS	HOSPITALS	MARKET	POLICE STATION	POSTAL AGENCY	PETROL STATION	TOWN HALL	HOTEL	CHURCH	BANK	ELECTRICITY	INDUSTRIES	COURT	Secretariat	Total	Rank
1.	<b>ISIOKPO</b>	Nkarahia		1	1	1			11		4		1	1	2		23	2 <sup>nd</sup>
2.		Ogbodo	4	1					9	1	7		1				22	3 <sup>rd</sup>
3.		Azumini	4		1				1	1	4		1	1			13	5 <sup>th</sup>
4.		Alimini	2					1	12		7	1	1		1	1	22	3 <sup>rd</sup>
5.	<b>ALUU</b>	Omuahunwo	1						3	1	3		1	1			10	8 <sup>th</sup>
6.		Mbodo	1		1	1			4		7		1				15	5 <sup>th</sup>
7.		Omuike	1						3	1	3		1				9	9 <sup>th</sup>
8.		Omuoda							2		3		1				6	11 <sup>th</sup>
9.	<b>UMUEGBULU</b>	Umuegbulu I	2	1	1				2	1	4		1	1			12	7 <sup>th</sup>
10.		Umuegbulu II	1						2	1	5		1				10	8 <sup>th</sup>
11.		Umuegbulu III	2	1	1			1	2		3		1	1			7	10 <sup>th</sup>
12.		Umuegbulu IV	1														6	11 <sup>th</sup>
13.	<b>IGBO ETCHE</b>	Umuoke	6					2	3		11						21	4 <sup>th</sup>
14.		Chokota		1				1	4		8		1				4	12 <sup>th</sup>
15.		Umuasukpo	24	8					3		45						80	1 <sup>st</sup>
16.		Umuodogo	4	3				2			5						14	6 <sup>th</sup>

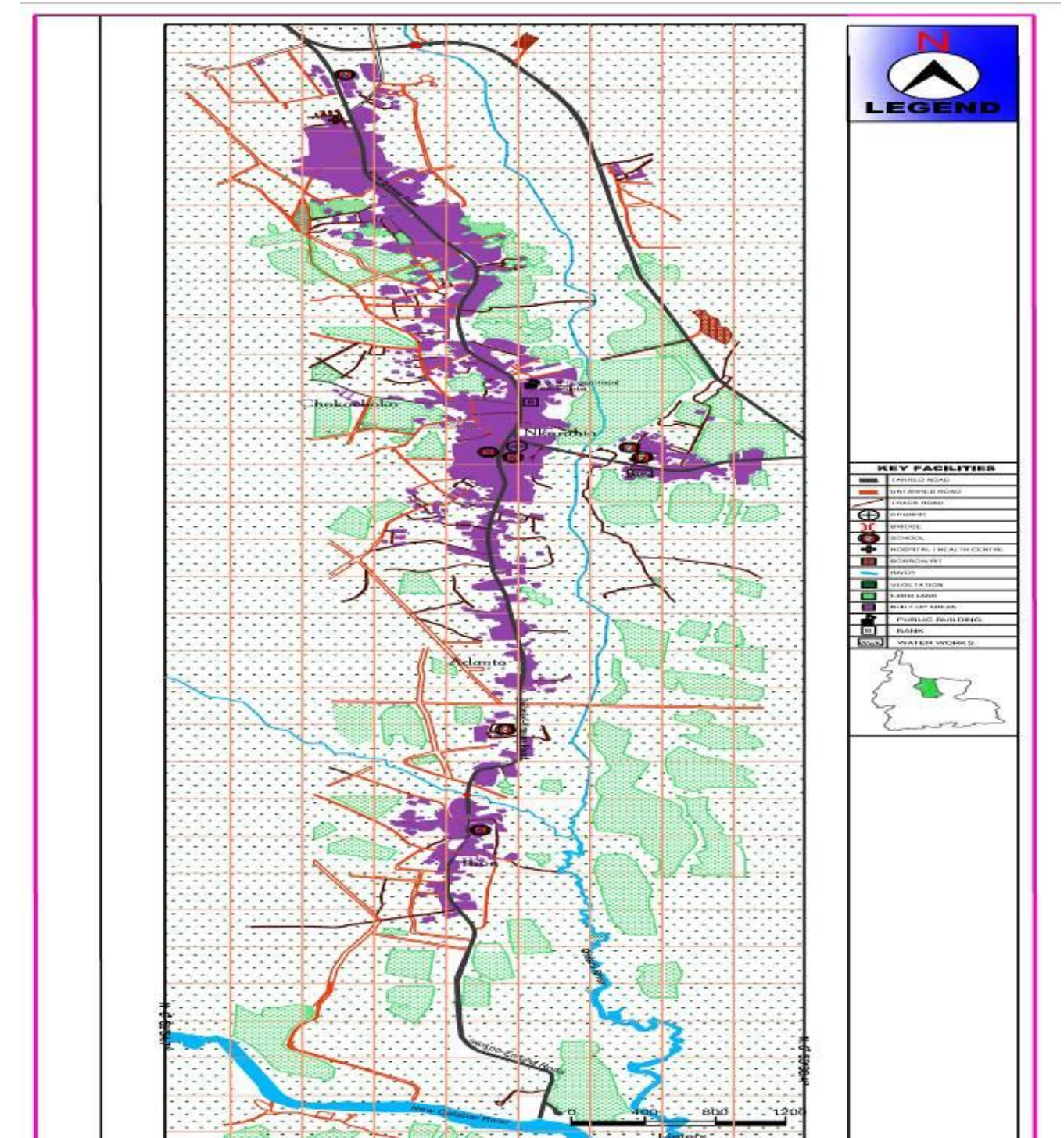
**TABLE 8: SHOWING FACILITIES IN THE STUDY AREA (FUNCTIONAL HIERARCHY)**

Source: Authors' field survey. 2014

Table 8 above shows the number of Facilities in the study area and its (Functional Hierarchy) Umuasukpo in Igbo- Etche in Etche Local Government Area happens to be the 1st order in the facilities hierarchy while Nkarahia in Isioikpo Ikwerre Local Government Area is 2nd in their

ranking order. And a GIS model was developed to show the Facilities and their positions in the study area, co-ordinates were used to establish the boundaries of each community.

### GIS MODEL. 1: SHOWING EXISTING FACILITIES IN ISIOKPO, IKWERRE LGA



Source: Google Imagery,  
Produced by: Stewart S. Owukio Dept. of Urban & Regional Planning  
Checked by: Nekabari Paul Visigah Dept. of Urban & Regional Planning

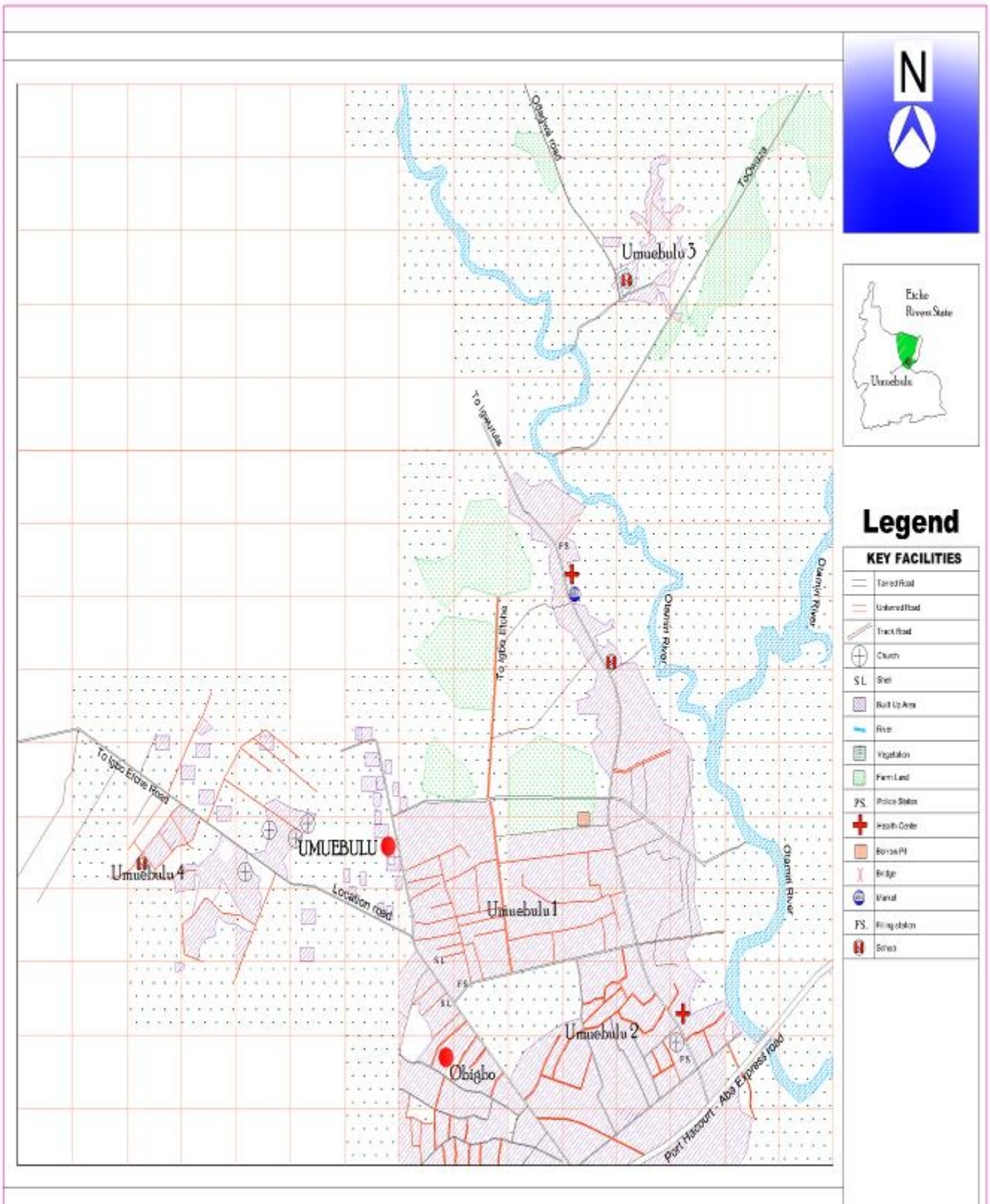
**GIS MODEL 2  
 SHOWING EXISTING FACILITIES IN ALUU, IKWERRE LGA**



Source: Google Imagery,  
 Produced by: Stewart S. Owukio Dept. of Urban & Regional Planning  
 Checked by: Nekabari Paul Visigah Dept. of Urban & Regional Planning

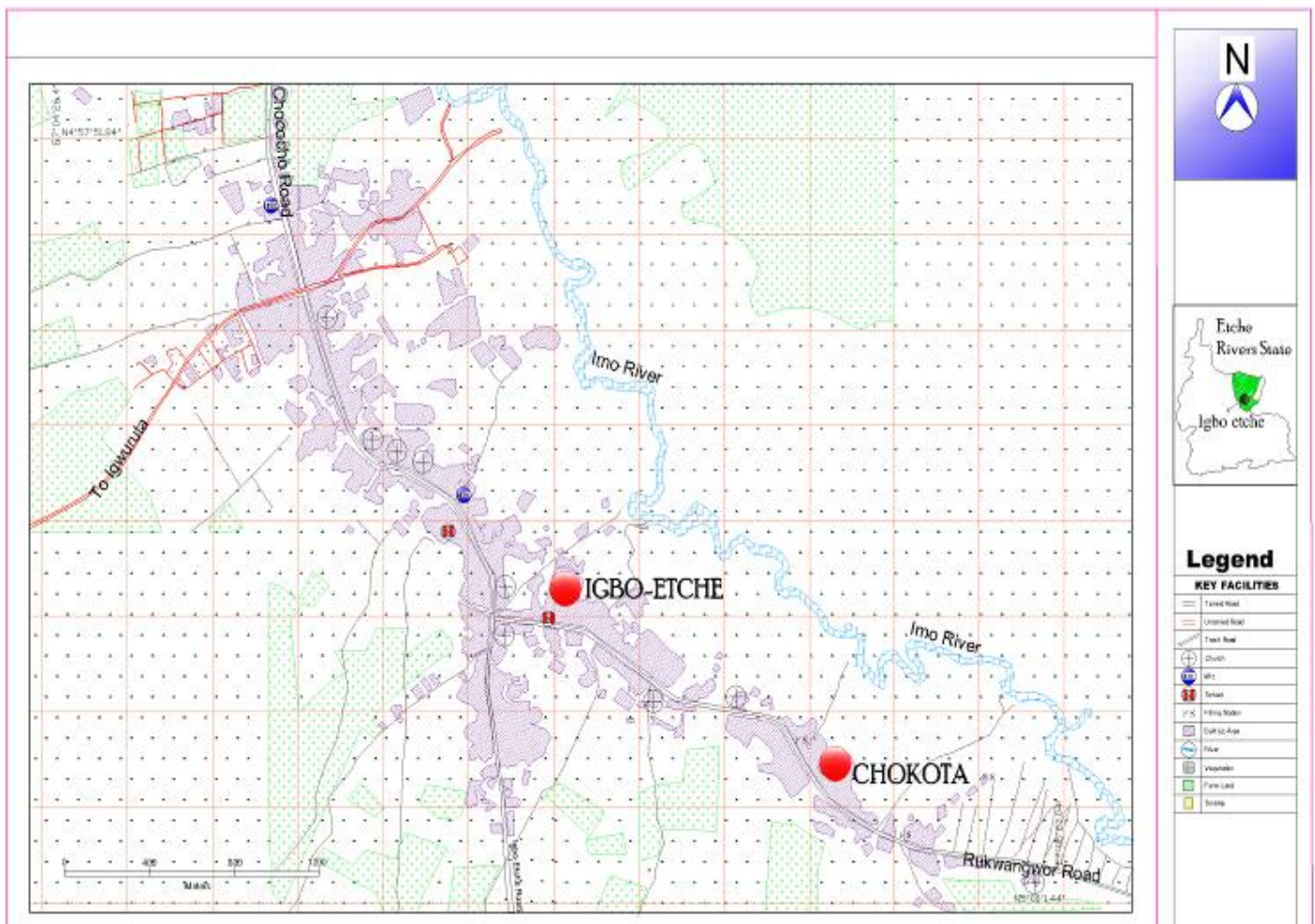


### GIS MODEL 3 SHOWING EXISTING FACILITIES IN UMUEGBULU, ETCHE LGA



Source: Google Imagery.  
 Produced by: Stewart S. Owukio Dept. of Urban & Regional Planning  
 Checked by: Nekabari Paul Visigah Dept. of Urban & Regional Planning

### GIS MODEL 4 SHOWING EXISTING FACILITIES IGBO-ETCHE, ETCHE LGA



Source: Google Imagery,  
 Produced by: Stewart S. Owukio Dept. of Urban & Regional Planning  
 Checked by: Nekabari Paul Visigah Dept. of Urban & Regional Planning

#### XVI. CONCLUSION

This study was a preliminary study that has examined the availability of social infrastructure and facilities in Ikwerre and Etche Local Government Area of Rivers State using GIS as a tool to compare the provision and distribution of social infrastructural facilities.

From the findings of this study it was observed that Igbo Etche in Etche LGA ranked 1<sup>st</sup> in the availability of social infrastructure.

According to the problem statement it was assumed that Ikwerre has more social facilities than that of Etche. After the findings from the sampled communities in the two LGA's it became very clear that Igbo Etche in Etche LGA ranked 1<sup>st</sup> in the facility hierarchy while Isiokpo ranked 2<sup>nd</sup> in Ikwerre LGA after going through the ratio in table 8 it was observed that Education and Health facilities were not lacking looking at their threshold population in the study area.

GIS was used as a tool to explain the spatial distribution of existing facilities in the study area, as well as provide data list in ranking order to compare the availability of social infrastructural services.

According to Nwaru (1997) rural development is an integrated process involving several components which include

agricultural development, industrialization, improvement in social and physical infrastructural facilities in sectors such as health, education, transportation, water, electricity, etc. Thus social infrastructures are critical variables in rural development. They are recognized for their ability to provide many prospects for employment and income generation among rural dwellers, stemming of rural-urban migration, modernizing of agricultural production and fostering of even spread of development. They are known to develop rural market economies and promote greater rural input into the economic affairs of the state.

#### XVII. RECOMMENDATIONS

To improve the quality of social infrastructure provision in the study area, the following recommendations have been suggested and should be considered.

That there should be a comprehensive strategy that will eliminate disparities that exist within L.G.As and between L.G.As be instituted.

That there should be an articulated and integrated plan for social infrastructural provision indicating priority areas using acceptable criteria is needed for costs to be minimized.



That there should be a balance in the provision of social infrastructure by the government at the state and local government areas.

#### ACKNOWLEDGMENTS

The Authors wish to sincerely acknowledge the contributions of these persons who in their own ways contributed immensely towards the success of this work: Dr. V.C Obinna, Dr. (Mrs.) O.B.Owei, Ms. Jane Emeruem, Mr. Eric O and Mrs. Christiana Ibama-Brown

#### REFERENCES

- [1] Adeyemo, A. M. Spatial Variation in Accessibility to Secondary School Facilities in Oyo State, Unpublished PhD Thesis, Geography Department, University of Ibadan, Nigeria, (1989).
- [2] Aigbokan, B. E.: Evaluating Investment on Basic Infrastructure in Nigeria, Proceedings of the Eighth Annual Conference of the Zonal Research Units (Organised by Research Dept., Central Bank of Nigeria, at Hamdala Hotel, Kaduna, 11 –15 June, 1999), p.208, (1999).
- [3] Argy, F., M. Lindfield, Stimson, B. and Hollingsworth, P. Infrastructure and Economic Development. CEDA Information Paper No. 60. Melbourne, Committee for Economic Development of Australia, (1999).
- [4] Denison, E. F.: Education, Economic Growth, and Gaps in Information. *Journal of Political Economy*, 70, (5), 124-128.
- [5] Duffield, C. F.: An Evaluation Framework for Privately Funded Infrastructure Projects in Australia. PhD thesis. Engineering Project Management Group, Department of Civil and Environmental Engineering, the University of Melbourne, Victoria, Australia, (2001).
- [6] Familoni, k. A.: The Role of Economic and Social Infrastructure in Economic Development: A Global View. [Online] Available: [www.pdfsearchengine.com](http://www.pdfsearchengine.com),(2000). Accessed on 23rd January, 2015.
- [7] Gilmour, T., Wiesel, I., Pinnegar, S. & Loosemore, M. "Social Infrastructure Partnerships: a Firm Rock in a Storm?" *Journal of Financial Management of Property and Construction*, 15(3), 247-259, (2010).
- [8] Hasenfield, Y.: *Human Services as Complex Organizations*. Sage, Newbury Park, CA. Pp.4, (1992)
- [9] Jahan, S., & R. McCleery. Making infrastructure work for the poor, UNDP. [Online] Available: [www.undp.org/poverty/docs/fpage/Synthesisreport.pdf](http://www.undp.org/poverty/docs/fpage/Synthesisreport.pdf), (2005). Accessed on 23rd January, 2015.
- [10] Jefferies, M. and McGeorge, W.D. (2009) Using Public Private Partnerships (PPPs) to procure Social Infrastructure in Australia. *Engineering, Construction and Architectural Management*. 16, (5), pp 415-37, ISSN 0969-9988. DOI 10.1108/09699980910988348
- [11] Jerome, A., & A. Ariyo.: 'Infrastructure Reform and Poverty Reduction in Africa. African Development and Poverty Reduction: The Macro-Micro Linkage'. TIP/DPRU Forum, 13-15 October, South Africa, (2004).
- [12] Johnson, S., Gostelow, P., Jones, E. & Fourikis, R. 'Engineering & Social – an Australian Perspective,' Pymble: Harper Educational Publishers, Australia, (1995).
- [13] Kahn, A. (1979). *Social policy and social services*, (2nd edition), New York, Random House.
- [14] Mabogunje, A.L. "Towards an Urban Policy in Nigeria" *Nigerian Journal of Social and Economic Studies*, Vol. 16, pp. 85-98, (1974).
- [15] Mabogunje, A.L: Issues in Nigeria Urbanization. In: *Urbanization and Nigerian Economic Development*. Proceedings of the Nigerian Economic Society, (1977).
- [16] McNeil, M.: *The Changing Nature of Infrastructure: The Urban Age* 1(3): 1–5, (1993).
- [17] Modupe, O.: Rural Areas and Industrialization in Nigeria. Paper presented at the Environmental Planning Week, University of Ife, Ile-Ife, (1986).
- [18] Ogbuozobe. N.M.: "Infrastructural Development" in Nigeria in 2010. Phillips, A., & Titilola, S. T. (Eds), *Nigeria Institute of Social and Economic Research* (pp. 163-193), Ibadan, (1997).
- [19] Ogun, T. P.: *Infrastructure and Poverty Reduction: Implications for Urban Development in Nigeria*, United Nations University-World Institute for Development Economic Research, Working Paper No. 2010/43(pp.1-14). (2010).
- [20] Olukoju, A.: *Maritime Trade, Port Development, and Administration: The Japanese Experience and Lessons for Nigeria*, (Institute of Developing Economies, Tokyo, Japan), V.R.F. series, No. 268 (pp. 69), (1996).
- [21] Oppen, M., Sack, D. & Wegener, A. *Germany: Private-Public Partnerships in Personal Social Services*. New Directions in a Corporatist Environment. In G. Hodge and C. Greve (Eds), *the Challenge of Public-Private Partnerships: Learning from International Experience*, Edward Elgar, Cheltenham, Pp.269-89, (2005).
- [22] Oyedepo, D. "Leading a Revolution in Education Towards the Restoration of the Dignity of the Black Race". Keynote Address by the Chancellor, Covenant University, at the 26th Annual Conference of the Association of Vice Chancellors of Nigerian Universities (AVCNU), Held at Covenant University, Ota, Nigeria, 27th – 30th June, 2011, (2011).
- [23] Pedroni Peter and Canning David: *The Effect of Infrastructure on Long Run Economic Growth*. [Online] Available: [www.pdfsearchengine.com](http://www.pdfsearchengine.com), (2004). Accessed December 2014.
- [24] Stewart, F.: *Basic Needs in Developing Countries*. Baltimore, Maryland: The John Hopkins University Press, (1985)
- [25] Wai, S. H., Yusof, M. d., AMINAH & Ismail, SYUHADA: 'Relationship Framework for Social Infrastructure Success Determinants and Criteria,' Proceedings of the International Conference on Quality in Research, ISSN114-1284, 4-6 July 2011, Bali, Indonesia, 566-573, (2011).
- [26] World Bank. : *Poverty and Welfare in Nigeria*. Federal Office of Statistics, National Planning Commission. The Federal Republic of Nigeria, Abuja, (1997).
- [27] Yunusa, M. (2011). *Planning Cities for Wealth Creation: Lecture delivered at the First Urban Dialogue Series of Department of Urban and Regional Planning, Faculty of Environmental Sciences, University of Lagos*.