

# Assessing the Magnitude of Urban Infrastructure and Facilities Provision and Maintenance in Enugu, Nigerian

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## ABSTRACT

The beauty of urban area stems from the availability and functionality of urban infrastructure and facilities. Governments often tend to establish her legitimacy by expending huge money on the provision and maintenance of basic infrastructure and facilities especially in urban areas. Studies have shown that the Nigerian population is 50% urban hence, her cities faces rapid urbanization with its associated problems which include pressure on available infrastructure and facilities. This paper aims at investigating the extent of urban infrastructure and facilities provision and maintenance in Enugu metropolis with a view to proffering sustainable measures that will enhance the area. The study revealed that while efforts have been made over the years towards providing and enhancing the functionality of urban infrastructure and facilities in the city and given a growth rate of 2.5% and the current urban population of about 927,642 residents, the available infrastructure and facilities in the city was adjudged not only so meager but also worrisome due to poor state of maintenance. The study therefore recommended for an articulated government action which would ensure that the urban infrastructure and facilities are maintained. Public participation and public partnership with the private sector, None Governmental Organizations (NGOs) and Community Based Organizations (CBOs) among other sustainable measures for the provision and maintenance of urban infrastructure and facilities in the city, was advocated.

**Key Words:** Urban Infrastructure and Facilities, Magnitude of Provision and Maintenance, Enugu, Nigerian

## 1.0 INTRODUCTION

The quality of a given environment is determined to a large extent by the availability of several forms of urban infrastructure and facilities which have been provided. The term urban infrastructure and facilities refers to those facilities and services, provided to aid the functionality and development of a given area. According to Abrams (1967) urban infrastructure refers to basic equipment, utilities, productive enterprises, instruments and services which are provided essentially for the operation and growth of a city or nation. This means that urban infrastructures are those facilities that aid productivity and directly ameliorate the quality of life of residents.

In view of the above, we can see that urban infrastructure and facilities comprise of such transportation facilities as roads, rails, bridges and airports; public utilities such as electricity, water, drainage systems and telephone services. It also includes community services such as educational and health centers, recreational facilities and postal services among others.

Maintenance as it relates to urban infrastructure pre-supposes a calculated attempt to support, sustain or uphold available facilities. It includes all efforts aimed at ensuring that available infrastructural facilities are kept in a workable or acceptable state for its present and intended use.

This study seeks to investigate the magnitude of urban infrastructure and facilities provided and maintenance in Enugu over the years, their existing condition and determines sustainable ways of improvement.

## 2.0 The Study Area: Enugu Metropolis

Enugu metropolis comprises of three local government areas namely, Enugu North, Enugu South and Enugu East local government areas. The City which is popularly referred to as the "Coal City" occupies a total area of about 20.7 square kilometers and is located on an undulating terrain which makes for easy drainage. It had earlier served as headquarters for the Southern provinces from April 1929. In 1939 when the Southern provinces were split into Eastern and Western provinces, Enugu was made the headquarters of the Eastern province. Again in 1951 when regions were introduced into the Nigerian polity, Enugu became the administrative capital of Eastern region of Nigeria. With the division of Nigeria into twelve states under the federation system, it became the Capital of East-Central State. In 1976, Enugu was again made the capital of Anambra State. This lasted till 1991 when Anambra State was split into Anambra and Enugu States, (Enugu state Wikipedia, 2012).

Today, Enugu is the capital of Enugu State and stands out as the biggest commercial, industrial and administrative centre in the state. As we saw from the historical survey above, the City has always been an administrative centre for many years. This attracted many people to the city and thus led to the rapid urbanization of the area.

Enugu is made up of many layouts. Some of the older layouts in Enugu include Coal Camp, Ogbete, Ogui, Asata, Abakpa-Nike, Uwani and the Government Reserved Area (GRA). Today, newer layouts have been developed to further expand the boundaries of the City. These include the Independence layout, Trans-Ekulu, Maryland, Awkunanaw and Idaw River Layouts. The urban population of the city and its urbanization processes has been inevitably on a rapid increase. The growth rate of the city is 2.5%, and with a current urban population of about 927,642 residents (Nigeria Demographic profile 2013; NPC, 2006).

### **3.0 Trends in the Provision of Urban Infrastructure and Facilities in Enugu**

The foundation for the sharp variation in the hierarchy and level of urban infrastructure provided in many Nigerian Cities was laid during the colonial period. At that time, cities that served as administrative headquarters for the whites were given special attention and classification and Enugu the coal city was one of them.

Enugu the study area benefited so much from the colonial masters with regards to the provision of urban infrastructure and facilities because it served as an administrative headquarter for the Southern provinces. Available data show for instance, that it was at that time that the outline for the present transportation network in the city was put in place.

Trends in the provision of urban infrastructure in Enugu will be discussed under 3 sub headings as follows: Community Facilities, Transportation Facilities, Public Utilities.

#### **3.10 Community Facilities**

These refer to those facilities which are provided for the benefit of an entire community. Some examples of community facilities that will be discussed here are educational and health Institutions.

#### **3.11 Health Institutions**

Enugu has a comprehensive Health care delivery system. Data used for drawing up the Enugu Master Plan shows that in 1977 there were 59 medical facilities available in the city and 90% of them were privately owned. At that time, Enugu had an average of 11,732 people per hospital and 143 people per hospital bed.

By 1993, the number of health institutions in Enugu had tremendously increased to about 137. This shows that the health institutions are increasing as the city grows. As a result of frequent strike actions by public health workers in the country, the numbers of privately owned hospitals are now on the increase. Most doctors and other medical personnel established their own medical institutions. Private medical facilities can be seen scattered all over the city. However, the three most popularly used public Hospitals are the University of Nigeria Teaching Hospital, Park lane Hospital and Orthopedic Hospitals which are located some distance away from the majority of the urban population; for example Parklane hospital is located at GRA, and UNTH near the Central Business District. This makes it difficult for people living in other parts of the city like Achara layout, Idaw River, Awkunanaw, Independence layout, Maryland, Thinkers' Corner etc. to make effective use of them. People therefore tend to patronize the private clinics which are scattered all over the city. Efforts by the governments at improving public health care delivery over the years have also increased the number of health facilities to in the City to about a current total of 171 and these are at various levels of functionality.

The major problem with the hospitals is lack of adequate facilities and maintenance. The public hospitals usually have many patients seeking their services. The long waiting periods spent in these major hospitals, make it imperative that majority of households make use of private medical facilities which are not only very costly but have fewer facilities while others engage in self medication. Table 1 depicts the distribution of Health care facilities in the City.

**Table 1: Number of health institutions and Type of ownership in Enugu**

S/No.	Type of Health Institution	Number	Govt. Owned	Privately Owned
1	Hospitals	59	10%	90%
2	Doctors' Clinics	38	13%	87%
3	Maternity Homes	23	-	100%
4	Maternity/Hospitals	5	-	100%
5	Health Centers	46	100%	-
	<b>Total</b>	<b>171</b>		

Source: Enugu State Ministry of Health 2012

### 3.12 Educational institutions

The existing 6-3-3-4 educational system of the Federal Government of Nigeria is operational in Enugu as is the case in other Cities in the country; namely the Primary school, Secondary school and the tertiary institutions. In 1977, there were 61 primary schools in Enugu and by July 1985, the number had increased to 103. Presently there are over 175 primary schools in Enugu due to government interventions and private school operators in the City.

As at 1985, there were 22 Secondary schools in the city. At the moment, the number is about 118. This means that the number of these schools have been increasing with increase in the number of people that live in the city. Also, there were previously four tertiary institutions in Enugu which include University of Nigeria Enugu Campus, Enugu State University of Science and Technology, Institute of Management and Technology (IMT) and the recent addition of Our Savior's Institute of Science and Technology (OSISATECH). Today, there are about 24 in all. A summary of Educational Institutions in Enugu can be seen in Table 2.

**Table 2: A summary of educational institutions in Enugu Metropolis by Local Government Areas**

Educational institutions in Enugu Metropolis	Enugu North	Enugu South	Enugu East	Total
Primary schools	54	41	80	175
Secondary School	21	56	41	118
Tertiary institutions	7	2	15	24
Total	82	99	136	317

Source: Enugu State Education Sector Performance Report, 2012.

### 3.13 TRANSPORTATION

#### (a) Road Transportation System

The road network in Enugu follows a grid pattern with a north-east to south-west orientation which links Enugu with Abakaliki to the east and Onitsha to the South. Within the City, a continuous Agbani road coming from Port-Harcourt passing through Coal camp, Okpara Avenue and Abakaliki roads and leading to Onitsha and Makurdi roads could be classified as the major arterial of the City. A system of minor arterials can also be identified showing the structure of the City. Such roads are Ziks Avenue, Kenyatta and Ogui roads. The collector roads and streets which complement the major road network include Independence layout road, Nise and Bishop Anyogu Streets. The remaining road systems are the streets of local character.

Out of the total road network within the city, 97.5 km (68%) are of local character, 20 km (14%) are collector roads while 26.4 km (18%) form the arterial road system consisting of 17.5 km and 9 km for minor and major arterial roads respectively.

One can easily say that the road network in the city is just fair when compared with some state capitals in the country. Though about 56% of the road networks are unpaved, all the major and minor arterial roads have an

asphalt pavement. As for the rest, about 30% of collector roads and 77% of the total local streets are unpaved as depicted in Table 3.

The paved roads have width varying from 4.3 to 7.3m and have lateritic base course with black top consisting mainly of prime coat while most local roads have no surface dressing at all, (Enugu State Ministry of Transportation, 2012)

The two major means of urban transportation system in Enugu are the public and private buses/cars. In Enugu, the volume of traffic is usually very low before 6.30 am but between 7.30 am to 8.30 am, traffic is usually very heavy as people leave for their various places of work while children leave for their schools. At such periods, road users experience delays due to traffic jams on the roads. From about 9.00 a.m. to 12 noon, traffic comes down to a normal average flow and rises again at about 1.00 pm-4.00 pm. The increase is as a result of school children and civil servants returning to their homes after the day's business. Traffic at such times is heavier on roads like Agbani and Abakpa Nike roads, Ziks Avenue, Ogui and Obiagu roads.

Traffic congestions on some of the roads in the study area are mostly due to some dangerous intersections which are common features in the older sections of the city like Uwani, Coal Camp, Asata and Achara layout.

#### **(b) Rail Transportation**

Facilities provided in Enugu city, several years ago for rail transport are mostly lying idle as they are rarely put into use. Though the Nigerian Railway Corporation has made some efforts to revitalize some of their trains, rail transportation facilities is yet to amount to anything in Enugu. It is like the proverbial Siberia. Many people know it exists but no one ever goes there.

### **3.14 PUBLIC UTILITIES**

#### **(a) Water Supply**

Enugu has been enjoying good portable drinking water supply though not properly spread out, especially since 1983 by the Enugu State Water Corporation. Pipe borne water is supplied to Enugu through the Enugu Water Scheme situated at Ajalli. There are other sources of water supply to Enugu city. According to the Enugu Master Plan, water supply to Enugu from the 1920's was drawn from escarpment springs of the Ekulu River. This perennial clean water is collected and pumped directly to the city's 4.5 million liters reservoir at Enugu-Onitsha Road. Enugu operated two water treatment plants; the one at Iva Valley was constructed in 1956 while the Ekulu water works was constructed in 1962.

Enugu also receives water from the 9th Mile Corner. This consists of borehole supply scheme connected to Enugu on Mission Avenue. This benefits mainly the Coal Camp area of Enugu. There are about two major storage reservoirs, two at Mission Avenue, one at Independence layout, one at WTC, Queen's School, University of Nigeria Enugu Campus, UNTH, Parliament Building, the Enugu Airport, and the tank at Park lane.

A survey carried out in twenty layouts in Enugu on the availability of water supply revealed that apart from Aria road and Mary-Land Layout, other layouts have water supply in their houses. It was also observed that the regularity of water varies. For example GRA and Thinkers Corner have 100% supply of water. The percentage supplies in other layouts in Enugu are as indicated in Table 4.

#### **(b) ELECTRICITY**

Electric power is one of the stimulants of development in any city, and so Enugu is connected to the National grid of the Power Holding Company of Nigeria (PHCN), i.e. availability of adequate electricity supply in Enugu has been attracting other development oriented projects that need it for their operation in the city. All the layouts in Enugu have adequate electric supply as indicated in Table. However, none of the layouts have up to 100% supplies. Some layouts have supply ranging from 70% to 96%. In general, about 82.4% of houses in the study area have electricity supply. Electric light is supplied to Enugu through a 66.6 kva high tension network.

#### **(c) TELECOMMUNICATION FACILITIES**

Telecommunication facilities are also enjoyed in most parts of the city. However, before the privatization of the Nigerian Telecommunications Limited (NITEL), this facility was grossly inadequate due to high service charges, coupled with poor spread of available facilities. They were thus beyond the reach of a greater percentage of the population. Today, the emergence of GSM in 2001 has improved the situation drastically as individuals own and use mobile phones. Telecommunication masts are mounted at various locations.

#### **(d) SOLID WASTE MANAGEMENT FACILITIES**

Initially, Enugu local government councils were responsible for solid waste collection and disposal in the city. Thereafter, the then Anambra State Sanitation Authority (ASESA) was established to take over this function. Later, with the creation of Enugu State the job was taken over by the Enugu State Environmental Sanitation Authority (ESESA) to ensure the general cleanliness of the city. Currently, the Enugu State Waste Management Authority (ESWAMA) is mandated to ensure neater, healthier and more efficient disposal of waste in the city

using dumpsters, compactors and other modern facilities that needs to be improved upon to ensure adequacy and even spread, (ESWAMA, 2012).

**Table 4: Urban Infrastructure and Public utilities by Neighborhoods in Enugu**

S/No.	Layouts	Water (Level of service in Percentage)	Electricity (level of service in Percentage)	Telephone (Level of service in Percentage)	Sewage disposal (Septic Tank) level of service in percentage
1	Abakpa Nike	64.6	95.8	35.54	60
2	Achara Layout	55.6	85	27.8	90
3	Aria	0	100	0	-
4	Asata	76.5	100	11.8	59
5	Aukunanaw	71.4	80.1	33.3	-
6	Coal Camp	50	70	50	-
7	GRA	100	100	45	-
8	Idaw River Layout	80	100	28.6	-
9	Independent Layout	80	100	26.7	-
10	Garriki	-	80	-	-
11	New Haven	92.8	82.8	35.7	-
12	MaryLand	0	100	0	-
13	Ogbete	40	70	15	-
14	Ogui	50	92.8	50	36
15	Ogui New Layout	85	95	56	90
16	Secretariat	83.3	83.3	50	-
17	Thinkers Corner	100	100	100	-
18	Trans Ekulu	48	100	20	-
19	Udi Siding	50	100	0	-
20	Uwani	80.6	91.7	25	89

Source: State Economic planning commission, computed in research Survey, 2012

### 3.15 RECREATIONAL FACILITIES

Open space development was integrated into the over-all plan of Enugu in the 1950s. This was during the colonial era when more emphasis was on school play grounds, golf and tennis courts. These served as the earliest recreational facilities in Enugu. However, by 1973 government enacted an edict establishing the Open Space Development Commission (East Central State edict 11, 1973). Due to some problems beyond Governments control, the commission did not take of until 1975. The then Anambra State Government established its own Open Space Development Commission after the splitting of the former State into Imo and Anambra. When Enugu State was carved out of the old Anambra State, ESESA took over the responsibility for the maintenance of open spaces and today, it is under the care of the State Ministry of Environment.

Many open spaces were mapped out both on state and privately owned land as contained in Tables 5 and 6 respectively.

**TABLE 5: OPEN SPACES ON STATE LAND**

S/No	Parks	Location	Area in Hectre
1	Murtala Mohammed Park	G.R.A	1.113
2	Polo Park	G.R.A	3.094
3	Ejindu Park	Ogbete	0.704
4	Onwudiwe park	Uwani	0.578
5	Ngwo Park	Uwani	3.438
6	Isuochi/Anyogu Park	Uwani	0.024
7	Osadebe Park	Ogui New Layout	0.024
8	Nnaji Park	New Haven	1.21
9	Chief Agbo Park	Asata	0.426
10	Amokwe Lane	Uwani	1.206
	Total		111.82

Source: Open space Development Commission Enugu 2012.

**TABLE 6: OPEN SPACES ON PRIVATE APPROVED LAND**

S/No	Layout	Area/Hectre	No of Open spaces
1	Ogui-Nike Community	19.72	13
2	Maryland	11.32	15
3	New Haven East/West	11.33	19
4	New Town	20.6	18
5	Awkunanaw	6.28	16
6	Achara Layout	2.6	2
7	Asata River Valley	16.72	10
8	Thinkers Corner	22.26	5
9	Abakpa Nike	1.39	22
10	Republic	23.52	Not available
11	New Era	12.4	Not available

SOURCE: Open Space Development Commission Enugu 2012.

Out of these open spaces which were mapped out on state and privately owned lands, only about sixteen (16) recreational parks have been developed. All these are situated on only eleven (11) out of many layouts in Enugu as shown in Table 7 below from this table, it is observed that Uwani Layout has the highest number of developed open spaces. This is followed by GRA with two open spaces. The large number of developed open spaces in Uwani can be attributed to the high population density. This places Uwani highest in hierarchy in terms of number of developed open spaces.

**TABLE 7: HIERARCHY OF DEVELOPED OPEN SPACES IN ENUGU METROPOLIS**

S/No	Layout	No of Parks
1	Trans-Ekulu	1
2	Abakpa Nike	1
3	River side Estate	1
4	Ekulu (GRA)	2
5	Thinkers Corner	1
6	New Haven	1
7	Aria Layout (GRA)	1
8	Ogbete	1
9	Uwani	5
10	Idaw River Layout	1
11	Ogui New Layout	1
12	Total	16

Source: Open space development commission, Enugu, 2012.

There is one standard stadium in Enugu situated along Ogui road. There is also a golf course situated at GRA as well as three recreational clubs namely: Enugu Recreational Club, the Railway Club and Enugu Sports Club.

### 3.16 DRAINAGE FACILITIES

The city was not planned to have a comprehensive drainage system. Many streets in Enugu are paved and many have drains on both sides, so the city could be said to have fairly good drainage facilities. However, the major



problem here is that of lack of maintenance. The available drains are usually filled with mud and refuse during the rainy seasons. Some of the drains retain standing pools of water rather than channeling them away.

### **3.17 SEWERAGE**

In Enugu like in many urban centers in Nigeria, four means of human waste disposal have been identified. They include water closets, pit latrines, bucket system and bush method. As far back as 1974, government made it mandatory that only WC toilets should be provided in every new house. Much later in 1988, an edict was passed requiring the whole urban structures in the state to convert their toilet system to the water closet type.

As of today, a high percentage of the inhabitants of Enugu use water closets. However, pit and VIP toilets can still be identified in some areas. The slum areas of the city use the bush method since some of the houses do not even have toilet facilities at all. Of all these systems, the use of bucket system is almost completely eradicated.

### **3.18 PUBLIC LIBRARY FACILITIES**

Three main Libraries serve the urban population of Enugu; namely: the Enugu State Library, the British council library (Private but open to the Public) and the National Library. There are also libraries in the various tertiary institutions but their use is restricted to their school not the publics, hence, there is much room for improvement to ensure adequacy and spread.

### **3.19 POSTAL SERVICES FACILITIES**

Enugu is fully equipped with postal services. In fact, there are two general post offices in the city. The first is located within the Nigerian Railway's premises along Ogui road. The second is located at the State Secretariat along Okpara Avenue. There are also postal agencies dotting most of the layouts in Enugu. In recent times, postal services are generally avoided by the members of the public.

### **4.0 Trends in the Maintenance of Urban Infrastructure and Facilities in Enugu**

Maintenance has been defined as any calculated effort aimed at servicing, repairing and restoring damaged facilities to an acceptable standard for its present and intended use. Servicing relates to all work executed to avoid the total breakdown of facilities. This is a type of preventive maintenance.

Restoring, on the other hand connotes works carried out when the infrastructure has already damaged. This is referred to as corrective maintenance. This pre-supposes that the maintenance of urban infrastructure will ensure that facilities provided in the city do not deteriorate and in this way, the functionality and aesthetic quality of the city is enhanced.

Here in Enugu, like in most Nigerian urban centers, the story is completely different. Most of the infrastructure provided both by government or private enterprises have deteriorated due to lack of maintenance. For instance, many of the roads and streets have turned into patches of pot-holes and death traps. Roads like Abakpa Nike road which was closed for some months in 2012 due to the eventual collapse of its bridge, parts of Agbani road, Bishop Anyaogu and streets like Hill view and upper North-Fifth Avenue in Trans-Ekulu Enugu, are typical examples. Drainage facilities provided for many roads are narrow, inadequate and have deteriorated so much that residents now suffer from flood disasters which sometimes lead to building collapse during heavy rainfalls, as most streets are flooded among many other such pitiable conditions, (Enugu East Local Town Planning Authority, 2012, ECTDA, 2012). Health, educational and recreational facilities are also left in a state of disrepair. Parcels of land set aside for open space development for recreational purposes have been converted and subdivided into plots for residential, commercial and other uses. Such practices have taken place in layouts like GRA and Trans Ekulu. Streams which have potentials for recreational purposes and landscape development have been neglected such as the Trans-Ekulu River which flows around the G.R.A and through Trans-Ekulu Housing Estate. Other landscape features like street furniture are either lacking or inadequate while those that were provided have been allowed to deteriorate due to lack of maintenance. In addition, some of the utilities provided for Enugu have been over-stretched due to the rapid increase in the city's population. Water for example is always in short supply. Oftentimes, some layouts or neighborhoods are without water supply while others suffer irregular supply of water. Typical examples are layouts like Garriki, Achara Layout and Trans Ekulu. Some other layouts do not even get water at all, in spite of the fact that they are connected and sometimes even pay water bills. Electricity supply in Enugu also has its own peculiar problems. Epilepsy of Power supply and total power failure are common features in the city as some parts of Enugu often remain in complete darkness for weeks. The refuse disposal system in some parts of Enugu are at times completely neglected because waste disposal facilities are inadequate or broken down due to the fact that an effective maintenance culture is yet to be adopted. The available infrastructure and facilities in the city was adjudged to be meager.

### **5.0 RECOMNENDATIONS AND CONCLUSION**

This study revealed that Enugu which has served as an administrative headquarters for many years is endowed with different types of essential urban infrastructure. However, due to lack of proper maintenance, many of these facilities have deteriorated considerably. At the moment, though a few of the existing infrastructure could still be

considered adequate, many of them have been over stretched due to increased population and rapid urbanization in the city. In the same vein, some of the facilities have outlived their usefulness and need urgent attention which they do not get at the moment, due to poor funding.

Nevertheless, just as settlements cannot exist without water, good communication systems, and transport facilities, so the need for the provision and proper maintenance of urban infrastructure and facilities at the right quantity and quality cannot be over-emphasized. For Enugu the study area and many other Nigerian cities, the time for a planned action should be adopted. The following recommendations are meant to serve as a guide for the provision and maintenance of urban infrastructure and facilities in Enugu and other Nigerian cities in general:

- (1) Government should evolve a standing policy of integrated action involving public participation and partnership with the private, Non Governmental Organizations (NGO) and Community Based Organizations (CBO) for the provision and maintenance of urban infrastructure and facilities in all Nigerian Cities. This will attract a great deal of input from planners who should be able to make adequate population projections using the result of census in order to ensure that enough facilities are planned for, to take care of the ever increasing Nigerian population.
- (2) In making annual budgets, government should endeavor to set aside a certain amount of money which should be used to satisfy the infrastructure needs of the populace.
- (3) Efforts should be made to ensure that facilities are located in areas where they are really needed while also ensuring an even spread. To this end, parts of the cities where some of these facilities are inexistent should be given priority.
- (4) A well articulated maintenance culture should be adopted to take care of the needs of every city. Proper maintenance must be anchored on a well planned strategy. In addition, a decentralized system of maintenance at all tiers of Government should be encouraged.
- (5) Enugu and other Nigerian cities should aspire to set up a good monitoring team, which will be responsible for ensuring that projects for the provision of any urban infrastructure and facilities are efficiently implemented.

Finally, we all know that the nature and standard of urban infrastructure and facilities in a given city is a necessary ingredient in the development of the socio-economic life of the society. It will therefore provide the functional, aesthetically pleasant and healthy environment for all those, who spend their entire lives in Nigerian cities.

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