

**URBAN INFRASTRUCTURAL FACILITIES PROVISION: KEY TO SUSTAINABLE DEVELOPMENT IN
THE BUILT ENVIRONMENT**

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ABSTRACT

With keen research interest, this paper focused on the provisions of urban infrastructural facilities by major stakeholders and the numerous benefits derived from it in the long run. The aim is to see how satisfactory residents are and beautiful the built environment appears or looks when infrastructural facilities are developed and managed properly by experts. The researchers adopted a method that utilizes both primary and secondary sources of data collection. Questionnaires were administered to residents in the field within the study areas, and the retrieved questionnaire formed the basis for analysis and interpretations. The researchers preferably made use of the descriptive statistics because it gives room for easy understanding and explanations. Furthermore, a very interesting statistical tool called chi-square was also significant in the testing of hypothesis carefully formulated in the body of the work. The study revealed that, infrastructural facilities development is capital intensive but its importance cannot be over emphasized. Recommending that, government at all the levels should declare a state of emergency on the development of infrastructure owing to its economic and environmental values. The study concludes that government should encourage private individuals in the building and management of infrastructural facilities.

Keywords: Urban, Infrastructure, Sustainable development, Built environment.

Introduction

According to world Bank Reports (1994), infrastructure entails or embodies all necessary services, facilities, equipment and devices needed and desired for the physical, mental health, and social wellbeing of the family and individual. On the other hand, infrastructure represents quite a wide range of economic and social amenities which are crucial or keen to creating an enabling,

atmosphere for sustainable urban growth as observed in most cities of the world. These includes physical structure and facilities that are developed or services provided by the public or private institutions to improve or enhance the efficient functioning of an areas or the built environment. This constitutes the main fabric of urban physical systems described as the bedrock on which development stands or flourishes

(Francis, 2016). However, there are indications that many existing infrastructural facilities requires refurbishment in some urban centres in the country which additional capacity is needed or required to meet urban demand. This is necessary because infrastructural facilities plays a pivotal cum important role in the development and well-being of a society to the level and standard that urban growth and expansion is dependent on the state and of existing infrastructure.

Infrastructural facilities provision refers to the technical structures that beautifies and supporting a society which includes; telecommunications, water supply, roads, electricity supply, sewers, schools, hospitals, amusement parks, buildings, water fountains, airports, sea ports, rail lines, etc. Development is seen as the use of land, the character, appearance, and management of buildings and facilities to ensure economy and convenience (Onyike, 2011). This means that development must be environmentally sound and sustainable without any constraints to quality of life and the productive capacity of the earth. For the context of this paper, development is defined as the transformation of human and materials resources for socio-economic poverty, infrastructural development and economic prosperity (Alaja, 1999). Therefore, sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This points to a very salient truth, that we are all stakeholders and no one person or group is more important than the others.

Statement of the Problem

Looking at the contribution of the urban sector to the national economy, enhancing the development of the sector should be the priority of government and relevant stakeholders. This is necessary as such would further propelled the ability of the urban area for increased contribution to the overall national socio-economic development. Several studies have been undertaken by interested scholars to determine the state of urban infrastructure in Rivers State and other parts of the world, most of these studies

relate to the provision, pattern of development and distribution without emphasis on management strategies that brings about the needed economic development.

Government at various levels and at different times made concerted efforts and policies to develop infrastructural facilities in rural and urban centres in Nigeria but the services remained very poor compared to what obtains in other developing countries like Ghana and South Africa. Urban infrastructure development is characterized by adoption of inappropriate standards while its provision and maintenance policy lack focus. The situation has remained same to date despite various attempts by government to change the sector for the better. To achieve this, is through sustainable development and management of urban infrastructure.

Aim and Objectives of the Study

The aim of this study is to examine how urban infrastructural facilities can be managed sustainably to produce economic development in the built environment. Specific objectives of the study are;

1. To identify the impact of infrastructural development in urban centers
2. To identify the different stakeholders responsible for the provision of urban infrastructure
3. To identify the barriers to infrastructural provision.
4. To identify sustainable ways of managing infrastructural facilities provided.
5. To identify the relationship between urban infrastructural facilities and sustainable development.

Research Questions

1. What are the impact of infrastructural development in urban centres?
2. Who are the different stakeholders responsible for the provision of urban infrastructure?
3. What are the barriers to infrastructural facilities provision?
4. What are the sustainable ways of managing infrastructural facilities provided?

5. What are the relationship between infrastructural facilities and sustainable development?

Research Hypothesis

Ho: There is no significant relationship between urban infrastructural facilities and sustainable development in the built environment.

Literature Review

This segment called literature review is a systematic examination of valuable looks, journals, periodicals, newspapers, and other materials with the intention of obtaining and recording information from them which are relevant and useful to the research (Ekenta, 2017).

According to Dekor (2013) opined that infrastructure is basic physical and organizational structures needed for the operation of a society or enterprise, services and facilities necessary for an economy to function. He further stated that, infrastructures facilities the production of goods and services, and also the distribution of finished products to the markets, as well as basic social services such as schools and hospitals. In the words of Adebayo (2006) a comprehension of infrastructure spans not only these public works facilities, but also the operating procedures, management practices and development policies that interact together with societal demand and the physical world to facilitates the transport of the people and goods, provision of water for drinking and a variety of other uses, safe disposal of society's waste products, provision of energy, where it is needed, and transmission of information within and between communities. Furthermore, infrastructures are basic essential services that should be put in place to enable development to occur because socio-economic development can be facilitated by the presence of social and economic infrastructures. If these facilities and services are not in place, development will be very difficult and movement of goods and services will be halted (Akpoghomeh, 2002). It is true that infrastructure investment enhances private sector activities by lowering the cost of production

opening new markets, presenting new production opportunities and trade.

However, the linkages between infrastructure investment and the key indicators of social well-beings such as health care, water and sanitation, housing electrification and communication are essential to address poverty challenges and advancing urban growth and development. Kessides (2006) stated that infrastructure as the long-lived engineered structures, equipment ;and facilities, and notes that the services provided are used both in economic production and by households. Accordingly, infrastructural facilities refers to those basic services without which primary, secondary and tertiary productive activities cannot function (Akujuru, 2004). In its widest sense, infrastructural facilities embrace all public services through education and public health to transportation, communications and water supply (Agbola, 1987).

Impact of Ubran Infrastructure on Economic Development

As a basic condition of economic development, infrastructure has a significant impact on economic system. These includes;

- Job creation
- Increased income and better health
- GDP growth.
- Attracting investment
- Promoting consumption
- Increasing revenue
- Stimulating export
- Economic growth
- Fast urbanization process
- Urban development.
- Promotes the inflow productive factor in cities in cities which leads to enlargement of urban economic scale.

To produce a conducive atmosphere where the economy can grow, this increasing the standard of living of the urban residents. This in turn leads to improved urban transportation system, better housing and improvement in the quality of life and reduction in poverty. It improves land values. All th

ese demonstrates the relationships that exists between infrastructure and economic development in urban areas.

Management of Infrastructural Facilities in Urban Centres

These are durable stocks of capital that yield future income streams and which therefore require regular maintenance since they vary substantially in structures, materials and equipment.

Well managed infrastructure can:

- **Facilitate Maintenance:-** This entails good urban planning that makes it easier to access and maintain all areas of a city.
- **Facilitate Urban Development:-** This can help cities meets the demands of population growth and economic development:- This can help cities meet the demands of population growth and economic development (Agbola, 2005).
- **Reduce Environmental Impact:-** It can help cities become more climate resilient.
- **Support Economic Development:-** This connects homes, businesses and industries to resources and economic opportunities (Akpan, 2011).
- **Improves Quality of Life:-** This provides reliable services such as water electricity and transportation which can help residents access health and educational resources (Akpan, 2010).
- Reduce the cost of delivered goods, facilitates the physical mobility of people and products, remove productivity constraints and increases competitiveness (Asuquo, 20011).
- Reduce supply chain disruption (Bello, 2003).
- It create livable cities that are sustainable and well functioning.

Public Attitude Towards Infrastructural Facilities

Here are somethings to consider about public attitudes toward urban infrastructure.

- **Public opposition:-** This can happen during construction projects triggered by

factors such as land acquisition, construction costs and the presence of endangered spaces.

- **Housing type:-** The type of house and residents lives in can influence their attitude towards it.
- **Level of Education:-** A person's educational standard can influence their attitude toward infrastructure provision.
- Nonchalant attitude towards public property where pipes laid for the distribution of water are uprooted by road construction workers without any care to repair them; causing avoidable wastage (Gramlich, 1994).
- Uncultured persons deriving joy in vandalizing electric cables, telephone lines and stolen manhole culverts on the roads.
- Many other urban infrastructure have been vandalized in similar circumstances.

Barriers to Infrastructural Facilities Provision in Cities

Many factors are responsible for the epileptic supply or building of infrastructure in urban areas.

- **Funding:-** Inadequate funding for research and innovation, poor budget and budget implementation can hinder infrastructural development.
- **Maintenance:-** Poor maintenance or not maintaining at all can also hamper the development of urban infrastructure.
- **Corruption:-** Bribery and corruption can stop or marred the development of facilities.
- Poor policy Implementation
- **Compliance:-** Poor compliance to regulation and standards.
- Lack of skilled man power (expertise)
- **Agency responsibility:-** lack of clear cut responsibilities and coordination among agencies.
- Poverty

Types of infrastructure needed in cities

Truly speaking, there are various types of infrastructural facilities needed in cities:

- **Transportation Infrastructure:-** Roads, highways and other transport systems.
- **Energy infrastructure:-** coal, electric, wind power, oil, solar power, gas/ biogas.
- **Social infrastructure:** Schools, parks, hospitals, waste disposal plants, fire and security services.
- **Communication Infrastructure:-** Telegraphs, telephone, radio, television, etc.

Stakeholders responsible for the provision of infrastructural facilities

In Nigeria, the government is primarily responsible for providing, owning and managing urban infrastructure.

- The Federal Level:
- **Trade:-** Import and export. The federal government does these through the foreign Affairs Department.
- **Defense:** it is the responsibility of the federal government operating the country's armed forces.
- **Telecommunications and broadcasting:** in related laws governing radio, television, the internet and satellite communications etc, products of the federal government.
- **Provision of inter-state Roads network.**
- **Building of air ports, sea ports, maintenance, and provision of services** are done by federal government including social services.

State Level

Building of schools, provision of water, construction of state's roads and maintenance, security of lives and property, building of hospitals and maintenance

Local Level

- Building and maintaining local roads, control traffic and providing parking lots
- Construction of modern markets, parks, community halls, waste disposal and management, ensuring that houses are built and numbered according to physical planning laws, building libraries, provision of public toilets, and providing play fields. In addition, NGOs and individuals can also provide some of these infrastructural facilities.

Methodology

The study is conducted in Rumuokwursi in Obio/Akpor Local Government Area of Rivers State, Nigeria. Its choice of location is dependent on the presence of infrastructural facilities in the area. The study is designed as a survey research, administering questionnaire to get relevant information from the selected respondents living or doing businesses in the city. The population of this research comprise of 210 persons drawn from the Ministry of Works Rivers State, Julius Berger Plc, Estate Surveyor and Valuers randomly selected. The simple descriptive methods were used for the analysis, then, the hypothesis were tested using chi-square statistics.

The formula is expressed as $\chi^2 = \frac{(O - E)^2}{E}$

Results and Analysis

Table 1: Questionnaire Distribution and Retrieval

Respondents	Questionnaire Distribution	Questionnaire Retrieved	% Response
Staff RSMOW	82	60	43.17
Staff of Julius B.	78	54	38.85
Estate Surveyors and Valuers	50	25	17.98
Total	210	139	100

Source: Field Survey, 2025

This table demonstrates the categories of respondents number of questionnaire given and retrieved accordingly.

For staff of Rivers State Ministry of works 82 copies were given and 60 retrieved representing 43.17%, staff of Julius Berger as a

construction company 78 given and 54 retrieved representing 38% while Estate Surveyors and Valuers given 50 and retrieved 25 representing 17.98%. This means that 66.19% is good for the study

Table 2: **Impact of infrastructural development in urban centres.**

Impacts	(O)	(E)	(O – E)	(O – E) ²	$\frac{(O - E)^2}{E}$
Job creation	36	34.8	1.2	1.44	0.041
Attracting investment	31	34.8	3.8	14.44	0.415
Increasing revenue	20	34.8	14.8	219.04	6.294
Improves land and housing values	52	34.8	17.2	295.84	8.501

$$X^2 = 15.251$$

H₀: There is no economic impact of infrastructural development in urban centres.

H₁: There is economic impact of infrastructural development in urban centres.

X² calculated = 15.251

The value will be at 5% degree of freedom

(C – 1)(R – 1)

$$(1 - 1)(4 - 1) = 3(3, 0.05) = 7.82$$

Decision Rule: X² calculated is 15.252 > 7.82 formulated value, which means null hypothesis will be rejected and alternative hypothesis will be rejected and alternative hypothesis accepted that there is economic impact of infrastructural development in urban centres.

Table 3: **Different Stakeholders Responsible for the provision of urban infrastructure**

Stakeholders	(O)	(E)	(O – E)	(O – E) ²	$\frac{(O - E)^2}{E}$
Federal Government	42	27.8	14.2	201.64	7.253
State Government	40	27.8	12.2	148.84	5.354
Local Government	21	27.8	6.8	46.24	1.663
Individuals	16	27.8	11.8	139.24	5.009
NGOs	20	27.8	7.8	60.84	2.188

$$X^2 \text{ cal.} = 21.47$$

H₀: All these stakeholders are not responsible for the provision of urban infrastructure

H₁: All these stakeholders are responsible for the provision of urban infrastructure.

X² cal. = 21.47

The value will be at 5% degree of freedom

(C – 1)(R – 1)

$$(1 - 1)(5 - 1) = 4(4, 0.05) = 9.49$$

Decision Rule: X² calculated is 21.47 > 9.49 tabulated value, which means the null hypothesis will be rejected and the alternative hypothesis accepted that all these stakeholders are responsible for the provision of urban infrastructure.

Table 4: **Barriers to infrastructural Facilities Provision**

Barriers	(O)	(E)	(O – E)	(O – E) ²	$\frac{(O - E)^2}{E}$
Funding	31	23.17	7.83	61.309	2.646
Poor maintenance	28	23.17	4.83	23.333	0.010
Poor policy	30	23.17	6.83	46.649	2.013
Embezzlement	20	23.17	3.17	10.049	0.434

Poverty	18	23.17	5.17	26.729	1.154
Corruption	12	23.17	11.17	124.769	5.385

$$X^2 \text{ cal.} = 11.642$$

H₀: All these are not barriers to infrastructural facilities provision

H₁: All these are barriers to infrastructural facilities provision.

X^o calculated = 11.642

The value will be at 5% degree of freedom

$$(C - 1)(R - 1)$$

$$(1 - 1)(6 - 1) = 5(5, 0.05) = 11.07$$

Decision Rule: X² calculated is 11.462 > 11.07 tabulated value, meaning the null hypothesis will be rejected and the alternative hypothesis accepted that all these are barriers to infrastructural facilities provision.

Table 5: Sustainable ways of Managing Infrastructural Facilities Provided

Options	(O)	(E)	(O - E)	(O - E) ²	$\frac{(O - E)^2}{E}$
Facilitate urban development	41	34.75	6.25	39.063	1.124
Reduce environmental impact	42	34.75	7.25	52.563	1.513
Support economic development	46	34.75	11.25	126.563	3.642
Improves quality of life	10	34.75	24.75	612.563	17.628

$$X^2 \text{ cal.} = 23.907$$

H₀: These are not the sustainable ways of managing infrastructural facilities provided.

H₁: These are the sustainable ways of managing infrastructural facilities provided.

X² calculated = 23.907

The value will be at 5% degree of freedom

$$(C - 1)(R - 1)$$

$$(1 - 1)(4 - 1) = 3(3, 0.05) = 7.82$$

Decision Rule: X² calculated is 23.907 > 7.82 tabulated value, meaning H₀ is rejected and H₁ accepted that these are the sustainable ways of managing infrastructural facilities provided in the city.

Table 6: Relationship between urban infrastructural facilities and sustain and sustainable development

Relationships	(O)	(E)	(O - E)	(O - E) ²	$\frac{(O - E)^2}{E}$
Supporting human health and equity	27	34.75	7.75	60.063	1.728
Supporting smart public transportation	22	34.75	12.75	162.563	4.678
Supporting economic development	48	34.75	13.25	175.563	5.052
Enhances efficient building, green spaces and land values	42	34.75	7.25	52.653	1.513

$$X^2 \text{ cal.} = 12.971$$

H₀: There is no relationship between urban infrastructural facilities and sustainable development in the built environment.

H₁: There is relationship between urban infrastructural facilities and sustainable development in the built environment.

X^2 calculated = 12.971

The value will be at 5% degree of freedom

$(C - 1)(R - 1)$

$(1 - 1)(4 - 1) = 3(3, 0.05) = 7.82$

Decision Rule: X^2 calculated is $12.971 > 7.82$ tabulated value, meaning that H_0 is rejected and H_1 accepted that there is perfect relationship between urban infrastructural facilities and sustainable development in the built environment.

Discussion of Findings

1. The study revealed that infrastructural development in urban centres improves land and housing value, increases revenue, attract laudable investment and job creation.
2. That in spite of dwindling economy, stakeholders should always enter into partnership with the private sector to provide decent and long lasting infrastructure. Having seen its numerous benefits.
3. That effective management and maintenance of infrastructural facilities provided in cities should be taken seriously, defaulters, those destroying or stealing components of these facilities should face the law because development of such facility is capital intensive.
4. The study discovered that infrastructural facilities and sustainable development plays key role in the quality of human life and supporting economic development.

Conclusion

Urban infrastructure and sustainable development are closely linked. Sustainability is an all-inclusive concept designating a process of achieving human and economic developing over time and space. The built environment is a multifaceted concept that includes engineered facilities, utilities and systems as well as issues or economic growth, climate change and municipal waste. The ability of the environmental system will be affected if the output is not based on the principles of sustainable development which is considered the final long term goal.

Recommendations

1. Development agencies and NGO's should be encouraged, motivated by government to engage in the provision of infrastructure to complement government's effort for rapid economic and environmental expansion.
2. Building and development r urban infrastructure is one, but what is important is its continued performance. So there is need for monitoring and feedback information for future results.
3. Urban infrastructure should be properly maintained through preventive, corrective as well as emergency to ensure increased efficiency.
4. It is on record that Nigeria is good at making or enacting laws, but poor in their implementation. This study is recommending that any infrastructure not completed by any administration, the law should force the successive government to take up that project to avoid abandonment.
5. Funding should be provided for infrastructural development. This attitude will achieve greater harmony and ensure improved consumer satisfaction.

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