Research Journal of Humanities and Social Sciences
(An Open Access International Peer Reviewed Journal)
ISSN: 2945-3968

The Impact of Road on Accessibility to Health Facilities in Etsako West Local Government Area, Edo State

Okhani Vincent Ayegwalo[1], Ojeifo Magnus[2]
[1]Department of Urban and Regional Planning, School of Environmental Studies, Auchi Polytechnic, Auchi, Nigeria
[2]Department of Geography and Environmental Management, Faculty of Environmental Studies, Ambrose Alli University, Ekpoma, Edo State, Nigeria

Abstract: This paper examines the impact of accessibility to health facilities in Etsako West Local Government Area of Edo state. The study objectives are: taking inventory of health facilities in the area, examining the existing road transport facilities, evaluating the effect of road access on health facilities, and analyzing the impact of road access on accessibility to health facilities in the study area. Both primary and secondary data were used for this study. 485 questionnaires were administered in the 12 wards in the study area. Scheduled interviews were held with the management of the teaching hospital in Auchi. A systematic random sampling method was used in the administration of the questionnaire. The study showed that the condition of the roads is poor. This had an impact on the accessibility of roads to health facilities. This condition has led to poor access to health facilities, high costs of accessing health facilities, longer time spent accessing health facilities, lack of interest in using health facilities, and an increase in poor health conditions in the study area. It is recommended that the settlements in the study area should be interconnected for efficiency and effective movement to reduce costs and time of movement to access these health facilities.

Keywords: Health facilities, Accessibility, Transportation, Roads, Health

How to cite this article: Ayegwalo OV, Magnus O. The Impact of Road on Accessibility to Health Facilities in Etsako West Local Government Area, Edo State. **Research Journal of Humanities and Social Sciences.2026 Oct 11, 5(4): 302-313, doi.org/10.58924/rjhss.v5.iss4.p26**
Source of support: Nil.
Conflict of interest: None
DOI: doi.org/10.58924/rjhss.v5.iss4.p26

Received: 10-08-2026
Revised: 12-08-2026
Accepted 25-09-2026
Published: 10-10-2026

Copyright:© 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1.0 INTRODUCTION

Road as an infrastructure is a veritable means of encouraging regional economic development (Segynola, 2004, Omofonmwan, 2006). Most allocation to investment such as road transport has led to economic growth and the effect which the provisions of road transport have on rural economic development is quite immense. Indeed, a World Bank study in 1977 concludes that where no transport exists, all economic activity is reduced to a bare minimum of subsistence (Bawn, 1980; Metchies, 1997). This therefore means that Infrastructure is the stock of fixed capital assets of a country, be it roads, railway, airports, hospitals, water works, and telecommunication network.

Road transport is regarded here as the movement of goods and people through a network of channels as means of movement, it includes motorway, right of way and means of movement by mobile transport equipment such as cars, buses, trucks, bicycles, motorcycle and human movement. Road transport is one of the main forces shaping the spatial distribution and density of human activities (Olaseun, 2004, Ojeifo, 2005). Hence, activities generate movement and when movements are generated, there exist interactions among the activity areas which lead to development.

The concept of "access to healthcare" has been extensively discussed in medical and nursing literature and defined in various ways. In the 1960s and 1970s, access to healthcare was primarily viewed through the lens of healthcare facility distribution and physician-to-population ratios (Melhado, 2006). Access to healthcare remains a significant global challenge and a fundamental determinant of population health

outcomes. The World Health Organization (WHO) estimates that at least half of the world's population still lacks access to essential health services, highlighting this as a critical public health concern (WHO, 2023). Within this broader context, rural areas consistently experience worse health outcomes than urban communities, with higher rates of mental health disorders, substance abuse, physical illnesses, and sexual health problems (Reilly, 2021). This reality is worsened when access to health facilities through road network is lacking, mostly in rural areas.

Infrastructure is defined as the basic physical systems of a business, region, or nation and often involves the production of public goods or production processes. Examples of infrastructure include transportation systems, communication networks, sewage, water, and school systems, (Michael, 2023). Viewed broadly, road as an infrastructure provides the catalytic base for facilitating the production of goods and services, and also market, as well as basic social services such as schools and hospitals. Essentially therefore, infrastructure refers to the interconnected and interrelated network that provide base for industrial production, connects goods to the markets, workers to the industry and people to services (World Bank, 1994).

Edo state is located in the Southern part of Nigeria. The study area is Etsako West Local Government, Edo State (see figure 1). Its headquarters is in Auchi. Etsako West comprises six clans, including Uzairue, Auchi, South Ibie, Awain, Jagbe, and Aviele clans. The local government area covers approximately 1950 km2. Etsako West Local Government Area is located at latitude 7.05°N and longitude 6.16°E. The local government area is approximately 300 km from Abuja, the federal capital, and 140 km from Benin, the state capital. The local government is bounded by Akoko-Edo and Etsako East LGAs in the northeast and northwest, respectively. To the east, it is bounded by Etsako Central LGA; to the south, by Esan West, Esan Central, and Esan North East LGAs; and to the west, by Owan West LGA, see figure 2. The local government is divided into wards,witha total of 12 wards, and more than 80 percent of the population is involved in farming.

Road transportation in the area is prominent along the route from Benin City to Abuja. This passes through Agbede, Auchi, to Opkella. The traffic on the road is very high as motorists use the road to connect other states in the federation. The second major road is the Auchi, Fugar to Agenebode road, which connects the area to Idah in Kogi state through the River Niger by boat crossing. The third major road is the Auchi, Ekperi to Agenebode road. The other roads in the area are connected to settlements within the local government, see figure 2

This study examines the impact of roads on access to health facilities. This is because hospitals and other health facilities are among the basic socioeconomic infrastructure that enhances the development of a settlement.

1.1 Aim and Objectives

The study aimed at assessing the impact of road accessibility to health facilities in Etsako West Local Government Area of Edo state. This will be achieved through

1 Taking inventory of health facilities in the study area.
2 Examining the existing road transport facilities in the study area.
3 Evaluating the effect of roads on accessing health facilities in the study area.
4 Analyzing the impact of road on accessibility to health facilities in the study area.

1.2 Method of Study

The data for this study were obtained mainly from primary and secondary sources. The research population of the study area is the households. One settlement each was selected

from each ward for this study. This was based on the most populated settlement in the ward. A sample size of 4.5% of the households from the population was taken, representing 485 respondents. A systematic random sampling technique was adopted, using an interval of 10 households in each settlement.

2.0 LITERATURE REVIEW

2.1 Road and Sustainable Development in Nigeria

The rural transport infrastructure sector is a critical force for sustainable development that is interwoven with many other sectors. Rural transportation is an underlying driver of many of the Sustainable Development Goals (SDGs) and a crucial contributor to many socioeconomic benefits for rural people around the world, (Kaiser and Barstow, 2022),
Sustainable human development has three major components namely, the human population, physical environments and the management of both human and natural resources for the benefit of the present and future generation (Omofonmwan, 1998). The provision of health facilities to rural populace will enhance population growth, distribution, consumption and will help to improve the living condition of the people in the rural areas. This concept as applied to the population of a given area helps in the planning and management of healthcare infrastructural provisions for the total inhabitants of an area to meet their own needs without compromising the needs of future generation. Under the physical environment, the concept help to maintain a balance between the provision of infrastructural facilities like roads, water, electricity, hospitals, housing and schools without much damage to the physical environment where we live. And the human and natural resources for the sustainability of the rural areas are protected and meant to serve the present generation and meet the future needs of the people.

The inadequate linkage of the settlements and available health facilities in Etsako West area with road transport infrastructure increases the distances within these locations in terms of cost and time. This is further worsened by the distance and low connectivity index of the communities in the study area, thereby affecting the transferability of its products to other parts of the state, and also reducing the interaction of other parts of the state with Etsako communities. Low connectivity index retards socio–economic development. This explains the statement of Tenkanen et al., (2016) that one factor limiting the full incorporation of the time dimension into location-based accessibility modeling has been the lack of temporally sensitive spatial data.
The quantity and quality of available health infrastructure determine, to a large extent, the production and consumption patterns of an economy. The type of health infrastructure chosen and the way it is designed, regulated, and operated also affect the price, timing and quality of the products (Pérez and Sánchez, 2019). Therefore, health Infrastructure also plays an important role in the development of urban-rural links, and in the insertion on the international market of agricultural and other production from rural territories, as these investments are fundamental for inclusive and sustainable productive, institutional and social transformation (UNDP, 2014).

2.2 Road Infrastructure Development in Nigeria's Rural Area

The rural transport infrastructure sector is a critical force for sustainable development that is interwoven with many other sectors. Rural transportation is an underlying driver of many of the Sustainable Development Goals (SDGs) and a crucial contributor to many socioeconomic benefits for rural people around the world, (Kaiser and Barstow, 2022), According to Transport & ICT (2016), One-third of the global rural population—approximately one billion people—live farther than 2 km from an all-season road, creating isolated communities with little access to essential services. Without safe access, devastating consequences are faced by communities, including higher under-five infant

mortality and lower gross-domestic product (GDP) per capita (Sustainable Mobility for All, 2019). Investment in infrastructure has been shown to play an important role in global development, whereby networked infrastructure supports 72% of the Sustainable Development Goals-SDGs (Thacker, et al, 2018). More specifically, rural transport infrastructure, such as feeder roads and trail bridges, has links to 10 of the 17 SDG (Kaiser and Barstow, 2022), with SDG indicator 9.1.1 being measured as the proportion of the rural population with access. While the importance of rural transport infrastructure has been studied significantly over the past several decades, spending on infrastructure is still prioritized for urban development where economic growth and policy is focused (Ernest and Young, 2015).

2.3 Road Connectivity and Accessibility to Rural Areas

In its report, World Bank Group, (2019), submitted that Transport connectivity is an essential part of the enabling environment for inclusive and sustained growth. In many developing countries, particularly in Africa, the vast majority of people are still not connected to local, regional, or global markets. Such rural accessibility is crucial to reduce poverty and promote inclusive economic growth. The Sustainable Development Goals (SDGs) aim to build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. It further stated specifically on Nigeria that, Nigeria's total road network consists of about 198,000 km of roads, including 34,1200 km of federal roads, 34,300 km of state roads and 129,580 km of registered rural roads. This, according to the report, translates into 21.7 km per 100 km2 of land area, which is favorably comparable to other large countries in Africa

Sadly, the report noted that the vast majority of the road network is considered to be in poor condition. No updated road inventory data are available in Nigeria. It is only estimated that 10 to 15 percent of the total network is paved. Only about 15 percent of the federal network are estimated to be in good to fair condition. Out of the country's 160,000 km of state and rural roads, less than 10- 15 percent are likely to be in good to fair condition. 68. That the available road network data that was collected in 2014 comprises only 107,794 km of roads, which account for about half of the total road network and lack many rural roads according to the national statistics. Based on the available data, about 40,200 km of roads are paved, out of which about 12,100 km were in good condition, 12,900 km in fair condition and the rest in poor condition. Only about 1,200 km or less than 2 percent of the unpaved road network is in good condition (World Bank Group, 2019).

3. RESULTS

Health Facilities Provision in Etsako West

A total of 15 hospitals are located in the study area, with 8 of them located in Auchi.This represents 53.3%, while the remaining 46.7% are distributed in other settlements within the study area. Jattu is next to Auchi with 20% of the total number of hospitals. South-Ibie, Jagbe and Anwain do not have hospitals at all. The communities here have to travel regularly to settlements where health facilities are available for medical care when needed. This is shown in Table 1

Research Journal of Humanities and Social Sciences
(An Open Access International Peer Reviewed Journal)
ISSN: 2945-3968

Table 1: Number and Distribution of Health Facilities

Wards	Number	Distribution	Percentage (%)	
1	2	Utsogun – Auchi	13.3%	**53.3%**
2	3	Ekhei – Auchi	20.0%	
3	2	Igbe – Auchi	13.3%	
4	1	Aibotse – Auchi	6.7%	
5	0	South – Ibie	0.0%	**46.7%**
6	0	Jagbe	0.0%	
7	1	Aviele	6.6%	
8	0	Anwain	0.0%	
9	1	Elele	6.6%	
10	1	Apana	6.6%	
11	3	Jattu	20.0%	
12	1	Afashio	6.7%	
Total	**15**		**100%**	**100.0%**

Source: field survey 2026

Types and Condition of Roads Used to Health Facilities

The type of road used to health facilities and footpaths, earth roads, tared roads and dual carriage roads, as shown in Table 2. The footpaths are not motorable by vehicles, theearthroad have eroded and failed portions, while some have no linkage to the health facilities. The tared roads are filled with portholes with eroded portions. The dual carriage roads are in good condition with easy access to the health facilities within the accessible settlements. This is shown in Table 2.

Table 2: Types and condition of roads to Health Facilities

Types of Roads	condition	Location/Name of Road
Footpaths	Not Motorable by Vehicle, Only Accessible by foot and Motorcycles	Ewora - Agbede
		Idegun - Agbede
Earth Road	Eroded and Failed Portions	Iyuku – Auchi
		Imeke–Auchi
	No Road Linkage	Ewora – Idegun
Tarred Roads	Port Holes with Eroded portions	Igbira Camp – Auchi
		Ayogwiri – Afashio
Dual Carriage	Good roads with street lights	Afashio – Auchi
		Jattu – Auchi
		Elele – Auchi

Source: field survey 2026

Effects of the Condition of Roads on Accessibility to Health Facilities

The effects of the condition of roads on the accessibility to health facilities are discussed by analyzing the poor accessibility to the health facilities, Cost of accessing health facilities, Concentration of health facilities, and Time spent in accessing health facilities.

Poor Accessibility to Health Facilities

About 28.0% of the roads used to held facilities are in poor conditions, these roads are at roads characterized with eroded and failed portions and no linkage, while about 28.5% of the roads are in fair conditions they are tared roads characterized with potholes. The

good roads represent 43.5% they are the tared roads and dual carriage roads linking the immediate settlements surrounding Auchi, which is the local government headquarter. This is. shown in table 3.

Table 3: Poor Accessibility to Health Facilities

Condition of roads	Accessibility	Percentage
Good	211	45.5%
Fair	138	28.5%
Poor	136	28.0%
Total	485	100%

Source: field survey 2026

Cost of Accessing Health Facilities

The average cost of accessing health facilities in Etsako West is about ₦2,242.00. The increase in the cost of accessing health facility between2018 to 2025 is 57.1% to 76.6%. The high cost of transport to health facilities is as a result of poor condition of the roads as shown in table 4.

Table 4: **Cost of Accessing Health Facilities**

Wards	**Cost of Transport (₦)**		**Increase in cost**	**Percentage increase**
	2018	**2025**		
1	500	1500	1000	66.7%
2	500	1500	1000	66.7%
3	500	1500	1000	66.7%
4	600	2000	1400	70.0%
5	800	2400	1600	66.7%
6	1200	3000	1800	60.0%
7	1000	2500	1500	60.0%
8	1500	3500	2000	57.1%
9	600	2500	1900	76.0%
10	1000	2500	1500	60.0%
11	500	1500	1000	66.7%
12	600	2500	1900	76.0%
Average Total	**775**	**2242**	**1466**	**66.1%**

Source: field survey 2026

Concentration of Health Facilities

The majority of health facilities are located in Auchi, which represent 53.3% as shown in Table 1. The only teaching hospital in Etsako West is located at Auchi along the water board road in Ward 4. The majority of the other settlements in the study area move on poor road conditions to access the health facilities at Auchi. The settlement with private hospitals are around Auchi, such as Jattu, Afashio, and Aviele. At the southern part of the study area is a general hospital at Agbede, which services the settlement around its location. But these settlements still depend on the teaching hospital at Auchi for major health issues. The majority of the health facilities are private hospitals which represent 80.0%, general hospital represents 13.3% and teaching hospital represents 6.7% respectively as shown in Table 5.

Table 5: **Concentration of Health Facilities**

Facilities	Location	Number	Percentage (%)
Teaching Hospital	Auchi	1	6.7%
General Hospital	Agbede/Apana	2	13,3%
Private Hospital	Auchi (7), Jattu (3), Afashio (1), Aviele (1)	12	80%
Total		15	100%

Source: field survey 2026

Time spent in accessing health facilities

The settlement within the local government headquarters spent between 30 minutes to 35 minutes to access health facilities, such as Ward 2, 3, and 4, while settlements outside Auchi spend above 35 minutes to 1 hour 30 minutes to access health facilities as a result of the poor road conditions as shown in table 6.

Table 6:Time spent in accessing health facilities

Wards	**Condition of Roads**	**Time Spent**
1	Good	30mins
2		35mins
3		35mins
4		30mins
11	Fair	40mins
5	Poor	60mins
6		90mins
7		50mins
8		100mins
9		50mins
10		45mins
12		55mins

Source: field survey 2026

Impact of Poor Access to Health Facilities on the Study Area

The impact of poor Access to health facilities on the study area is discussed by examining the Lack of interest in using health facilities, increase in poor health conditions, and increases in death rate in the study area.

Lack of Interest in Using Health Facilities

From the study, 61.7% of respondents have no interest in using the health facilities as a result of poor accessibility of road to the health facilities, because of the poor road conditions. Settlements in ward 1, 2, 3, and 4 have good roads that makes accessibility to health facilities easy. The settlements in the wards that have poor road condition do not have interest in accessing the facilities. This is why some of these settlements change to using alternative traditional methods available to their environment for treatment. This is shown in Table 7

Table 7: **Lack of Interest in Using Health Facilities**

Wards	Respondents	Level of Interest (Loss)	Percentage
1	22	0	0%
2	49		
3	36		
4	11		

5	61	52	85.3%
6	4	4	100%
7	86	67	70.9%
8	6	6	100%
9	34	24	70.6%
10	26	22	88.0%
11	120	99	82.5%
12	30	25	83.3%
Total	485	299	61.7%

Source: field survey 2026

Increase in Poor Health Condition on the study Area

The settlements that lack good access to health facilities are characterized by avoidable illnesses. From the record of most patients with the teaching hospital at Auchi, the condition of the patients from location with poor road conditions are always at critical level when brought for treatment. This is because they attempt trying other alternative method of treatment due to high cost of transportation, and longer time spent on roads in other to access health facilities. Patients within Auchi metropolis easily have access to treatment than those from outside the metropolis.

Increases in Death Rate in the Study Area

From the oral conversation with medical specialist at the teaching hospital, it is a common experience to receive dead bodies from interior settlements in the mortuary of the teaching hospital. These are mostly patient that were never treated or observed by any qualified medical personnel in a modern health facility.

4. SUMMARY OF FINDINGS

Based on the field survey data of 2026, the following key findings emerged from the study:

Uneven Distribution and Concentration of Health Facilities: The study area has a total of 15 hospitals. However, 53.3% of these facilities are concentrated in Auchi metropolis, with Jattu accounting for another 20%. Wards such as South-Ibie, Jagbe and Anwain have zero hospitals, forcing residents to travel to other settlements for medical care. Private hospitals constitute 80.0% of all facilities, while general and teaching hospitals represent 13.3% and 6.7% respectively. This indicates a high level of spatial inequality in health service provision.

Poor Road Condition and Accessibility: Only 43.5% of roads linking communities to health facilities are in good condition, comprising dual carriage and tarred roads around Auchi. About 28.0% are in poor condition with eroded portions and no linkage, while 28.5% are fair but characterized by potholes. Footpaths and earth roads remain non-motorable or failed, limiting vehicular access to health centers. This aligns with World Bank (2020) which notes that poor rural road infrastructure is a major barrier to service access.

Increased Cost and Travel Time: The average cost of accessing health facilities rose from N775 in 2018 to N2,242 in 2025, representing a 66.1% increase. The highest increases of 76.0% were recorded in wards with poor road conditions. Travel time also varied significantly: residents within Auchi spent 30-35 minutes, while those in peripheral wards spent 45 minutes to 100 minutes due to poor road conditions. High transport costs and long travel times act as financial and temporal barriers to healthcare utilization (WHO, 2021).

Negative Health and Social Impacts: Poor Road accessibility has led to a lack of interest in using formal health facilities among 61.7% of respondents, particularly in wards with

poor roads. This has resulted in reliance on alternative traditional treatment, late presentation of patients at critical stages, and reported increase in death rates from interior settlements. This supports Canter (2019) that transport infrastructure directly affects health outcomes and mortality in rural areas.

Dominance of Private Health Providers: Private hospitals constitute 80.0% of the total facilities, whereas public facilities remain minimal, consisting of General Hospitals at 13.3% and a single Teaching Hospital at 6.7%. Major secondary and tertiary referrals depend heavily on the Teaching Hospital in Auchi

5. CONCLUSION

The study concludes that road condition is a significant determinant of accessibility to health facilities in Etsako West LGA. This demonstrates that spatial accessibility to healthcare in Etsako West Local Government Area is fundamentally constrained by poor road infrastructure and an uneven distribution of health facilities. The concentration of 53.3% of health facilities in Auchi, combined with poor and non-existent road linkages in over 56% of the access routes, has created spatial inequity in healthcare delivery; a concentration that makes Auchi creates a clear center-periphery disparity, placing an undue burden on rural communities. Consequently, this structural isolation encourages reliance on unverified traditional medical treatments, exacerbates critical illness levels upon delayed hospital presentation, and contributes to preventable mortality across remote settlements in the local government area. The resultant effect is increased transport cost, longer travel time, low utilization of health facilities, deterioration of health conditions, and avoidable mortality in underserved communities (Glasson, Therivel, & Chadwick, 2013).Therefore, road infrastructure is not merely a transport issue but a critical public health and social development issue. Improving road networks is essential to achieving equitable access to health services and reducing health vulnerabilities in the study area (Adeleye, 2020).

6. RECOMMENDATION

Based on the findings and conclusion reached on this study, the following recommendations have become indispensable

1 **Equitable Distribution of Health Facilities**: Findings showed 53.3% of all 15 hospitals are in Auchi, 20% in Jattu, while South-Ibie, Jagbe and Anwain have 0%. 80% are private. This spatial inequality forces long-distance travel to Auchi, even to the only teaching hospital. This makes it urban-biased, not rural-focused. To reverse this reality, government and private stakeholders should establish primary health centers in underserved wards such as South-Ibie, Jagbe and Anwain to reduce travel distance and dependence on Auchi. This will align with the principle of spatial equity in health planning (FMEnv, 2022).

2 **Targeted Rural Road Rehabilitation and Maintenance:** Only 43.5% of access roads are good (dual carriage around Auchi). 28.0% are poor with eroded/failed portions and no linkage, and 28.5% are fair with potholes. Footpaths like Ewora-Agbede and Idegun-Agbede are non-motorable. This poor condition directly causes poor accessibility. Therefore, the Local Government Council, in collaboration with the Edo State Ministry of Works and any other useful agency, should prioritize the grading, paving, and maintenance of critical access corridors—specifically connecting isolated settlements. This will create the avenue for rehabilitation of earth roads and tared roads with potholes linking rural communities to health facilities. Special attention should be given to roads in Wards 5, 6, 7, 8, 9, 10 and 12 where travel time exceeds 45 minutes (World Bank, 2020).

3 **Subsidized Rural Transit and Emergency Medical Services (EMS):** Average transport cost increased by 66.1% from N775 in 2018 to N2,242 in 2025, with up to 76.0% increase in wards with poor roads (Wards 9 and 12). Travel time is 30-35 mins within Auchi but 45-100 mins in peripheral wards (e.g., Anwain 100 mins, Jagbe 90 mins). High

cost and time are the financial and temporal barriers leading to late presentation and deaths. To reverse this reality therefore, Local authorities should implement dedicated rural emergency response systems (e.g., subsidized ambulance transit networks) to mitigate high transport costs and facilitate rapid transfer of emergency patients to tertiary facilities.By such arrangement, emergency transport system such as subsidized motorcycle ambulances can be introduced for communities with poor road access. Transport subsidies for pregnant women and emergency cases should also be considered to reduce the financial burden of the 66.1% increase in transport cost (WHO, 2021).

4 **Community Participation in Road Maintenance**: Many roads are earth roads and footpaths that require regular clearing and grading. Government alone cannot sustain them. Community ownership is needed for sustainability, especially for low-traffic rural linkages. Therefore, Community-based road maintenance committees should be established to undertake routine grading and clearing of footpaths and earth roads. This will ensure sustainability and reduce total dependence on government intervention (Canter, 2019).

5 **Integration of Health Accessibility in EIA and Planning:** The study found 61.7% lack of interest in using formal health facilities due to poor road access, leading to reliance on traditional methods, critical illness on arrival at Auchi teaching hospital, and increased death rates in interior settlements. This proves that road access is a "Valued Ecosystem Component" - VEC that affects health outcomes and must be included in future EIA, road planning and public health planning. Future Road projects and EIAs in the LGA should include "access to health facilities" as a key Valued Ecosystem Component - VEC. Impact mitigation measures should ensure that new roads provide direct linkage to existing and proposed health facilities (Glasson et al., 2013).

6 **Community Health Interventions and Outreach:** Health management boards should deploy mobile clinic units and community health extension workers (CHEWs) to remote communities to provide early diagnosis, preventive care, and reduce reliance on unsafe alternative medical practices.

References

1. Adeleye, O. A. (2020). Environmental Impact Assessment and Sustainable Development in Nigeria. University of Lagos Press
2. Bawn, P. (1980). The impact of Transport on the social and Economic Development in less developed countries. Transport policy and decision making 1. 47-53
3. Canter, L. W. (2019). Environmental Impact Assessment(3rd ed.). McGraw-Hill Education.
4. Ernest, A.J and Young, S.D. (2015). Remote Access: Efficient Strategies for Rural Transport Infrastructure; EYGM Limited: Nassau, Bahamas,
5. Federal Ministry of Environment [FMEnv], (2022). Guidelines for Environmental Impact Assessment in Nigeria.
6. Glasson, J., Therivel, R., & Chadwick, A. (2013). Introduction to Environmental Impact Assessment (5th ed.). Routledge.
7. Isah M. A. (2012). Trends of Rural-Urban Migration in Nigeria. European Scientific Journal. 8(3) 97 – 125
8. Kaiser, N. and Barstow, C.K.(2022) Rural Transportation Infrastructure in Low- and Middle-Income Countries: A Review of Impacts, Implications, and Interventions. Journal of Sustainability, 14, 2149. https://doi.org/10.3390/su14042149
9. Melhado, E.M. (2006). Health planning in the United States and the decline of public-interest policymaking. The Milbank Quarterly, 84 (2) pp. 359-440, 10.1111/j.1468-0009.2006.00451.x
10. Metchies, G. (1997): Basic needs and public passenger Transport in Developing countries. "In proceedings organization and management of public Transport EnterpriseGerman foundation for International Development"
11. Michael J. B. (2023). Infrastructure: Definition, Meaning, and Examples.The Investopedia Team.

Updated September 27, 2023.

12. Ojeifo O.M. (2005): The Planning implication of Road Network Development in Nigeria Towns: A case study of Ekpoma. In the occasional publications of the Department of Geography and Regional Planning Ambrose Ali University Ekpoma. Edited by Segynola A.A Benin Rasject publishers
13. Olaseun, A.M. (2004). "Rural Development in Nigeria Lagos", 1st edition concept Publications 1-31.
14. Omofonmwan, S.I (2006). "Political Geography" Benin City Nigeria Donald Printers
15. Pérez, G. and R. Sánchez (2019), "Logistics for production, distribution and trade", FAL Bulletin, No. 369, Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), October.
16. Reilly, M. (2021). Health disparities and access to healthcare in rural vs. urban areas. Theory in Action, 14 (2) pp. 6-27, 10.3798/tia.1937-0237.2109
17. Segynola A.A (2004). "On sustainable development in Nigeria (monograph sense)". Benin City Rasject publishers
18. Sustainable Mobility for All (2019). Global Roadmap of Action Toward Sustainable Mobility: Universal Rural Access; Sustainable Mobility for All: Washington DC, USA.
19. Tenkanen, H., Saarsalmi, P., Järv, O., Salonen, M., & Toivonen, T. (2016). Health research needs more comprehensive accessibility measures: Integrating time and transport modes from open data. International Journal of Health Geographics, 15(1), 23. https://doi.org/10.1186/s12942-016-0052
20. Thacker, S., Adshead, D., Morgan, G., Crosskey, S., Bajpai, A., Ceppi, P., Hall, J.W. and O'Regan, N. (2018). Infrastructure: Underpinning Sustainable Development; UNOPS: Copenhagen, Denmark,
21. Transport & ICT (2016). Measuring Rural Access: Using New Technologies; Transport and ICT Global Practice: Washington DC, USA,
22. Umoren, V, Ikurekong E.E, A, and Udida A.A (2009). Development of Road Infrastructure as a tool of Transforming IbionoIbom Local Government. Global Journal of social science 8 (2); 53-59. Nigeria, Bachudo science 10 Limited
23. UNDP (United Nations Development Programme) (2014), "Chile Rural. Un desafío para el desarrollo humano", Temas de Desarrollo Humano Sustentable, No. 12
24. WHO. (2023). Billions left behind on the path to universal health coverage. World Health Organization. September 18, 2023. https://www.who.int/news/item/18–09-2023-billions-left-behind-on-the-path-to-universal-health-coverage.
25. World Bank (1994). World Bank report on Road Transport Infrastructure.
26. World Bank Group, (2019). World Measuring Rural Access: Update 2017/18
27. World Bank. (2020). Rural Access and Mobility: Connecting People with Services. The World Bank.
28. World Health Organization [WHO], (2021). Health in Rural Communities: Addressing Access Barriers. WHO Press.

***