# Spatial Inequalities in Infrastructural Development in Plateau State, Nigeria

**Adefila, J. O. PhD**
Senior Lecturer (Corresponding Author
Department of Geography Ahmadu Bello University
Zaria
Nigeria

**Bulus, J. S.**
Department of Geography Ahmadu Bello University
Zaria
Nigeria

## Abstract

*The development processes often produce spatial contrast among regions such that some areas may appear to have more than their average share of the same facility and this is evident in developing countries where the urban centres usually have concentration of essential goods and services at the expense of their rural counterparts. The objective of the study is to examine the level of spatial dimension of inequalities in infrastructural development in Plateau State with a view to making a comparative analysis of the pattern of development. The primary data were collected through the administration of structured questionnaire among one thousand and twenty (1,020) randomly sampled population in the seventeen local government areas of Plateau State. Also, secondary data were generated from relevant ministries and agencies to authenticate data from questionnaire survey in Plateau State. The study employed standardized score (Z-score) analytical technique was for the analysis of data. The result revealed considerable inter-local government disparities in overall levels of infrastructural development in the study area. Among the upper third category that are most privileged areas include Jos Central (4.85), Jos North (4.49), Mangu (4.14), Shendam (2.59 and Pankshin (2.10). The middle third areas include Mikang (0.40), Quan 'an Pam (0.05), Kanem (-0.16), Langtang South (-0.72) and Wase (-0.94). The bottom third category include Bokkos (-1.00), Jos East (-1.60), Barkin Ladi (-1.13), Langtang North (-1.82), Bassa (-2.07), Kanke (-3.30) and Riyom (-4.45) in that order of performance. It shows a lopsided spatial pattern of infrastructural development. On the basis of the findings, the study recommends among other things that community development strategy should be adopted such that areas that shouldered the construction of roads, bridges, supply of pipe-borne water and embark upon electrification projects should be encouraged by the government through provision of financial grants and technical assistance. Also, there should be a discriminatory investment in infrastructural facilities in favour of less-privileged and deprived areas so as to enhance a balanced infrastructural development.*

**Key Words:** Infrastructure Development Pattern Inequalities Deprivation

## 1. Introduction

Infrastructural facilities are not evenly spread over space because certain environmental factors, operation of economic, cultural and political processes often produce areas of concentration and specialization. Spatial disparities in the level of development are the results of uneven distribution of natural resources and regional differences in the history of human development. The phenomenon of inequality is widely recognized in Nigeria and it was epitomized in the use of such terms as 'advantaged' and disadvantaged' 'privileged and less-privileged'. Inequalities are most apparent between the commercial, industrial and urban centres on the one hand and extensive agricultural and poor rural areas on the other hand. The former are generally better provided with both quality and quantity of essential services to the neglect of the rural areas.

There is unequal access to productive resources, and basic infrastructures such as schools, health centres, potable water, good feeder roads, culverts, storage and irrigation facilities (Fakayode *et al,* 2008).

In addition, inadequate and low qualities of infrastructures could have serious implication for welfare and persistence of poverty in our society. It is a consensus among scholars (Ndulu, 2006; Calderon and Serve, 2008; Egbetokun, 2009) that infrastructures are the criteria for the success of public and private efforts aimed at accelerating economic development. It is obvious that one cannot expect rapid socio-economic development without adequate provision for infrastructural facilities. Omofonmwan (2004) had remarked that one of the critical factors that contributed to the high level of rural poverty is the inadequate infrastructural facilities.

The role of infrastructural facilities in the overall economic growth and development cannot be overemphasized. UN (2011) had remarked that infrastructure plays a critical role in poverty reduction, economic growth and employment for the masses. Moreover, Ale, *et al* (2011) shared similar opinion that provision of basic infrastructures is a prerequisite for developing economies to stimulate economic growth and reach the state of economic recovery and poverty alleviation through increasing and diversifying agricultural outputs. Also, (Calderon, 2009; Egbetokun, 2009) observed that the provision of infrastructures are part of integrated strategy which combine the development of various spheres of life including agricultural, educational, health, nutrition, electrification, water supply and cooperatives simultaneously. This serves as a holistic approach towards solving the regional problem to a large extent. Bamboye (2007) pointed out that individual are poor because they do not have access to infrastructural services for improving quality of life. In the same vein, (Oyewole and Oloko, 2006) had remarked that adequate infrastructures can reduce the cost of production which affects productivity, level of outputs, and employment. It was remarked that where infrastructures are put in place, level of agricultural productivity will be increased and if otherwise citizens will suffer particularly the rural poor, thus economic renewal and societal welfare become worse and halted (Perkins and Luiz, 2005; Akinola, 2007).   Therefore, a strategy to reduce abject poverty needs to incorporate policies to develop both production and welfare oriented infrastructures in order to improve poor people's productive capacity and quality of life.

Recognizing the importance of infrastructures to economic development, the federal government initiated Directorate of food, roads and rural infrastructures (DFRRI), River basin development authority (RBDA) and of recent, National fadama projects geared towards providing basic services and infrastructures for the less privileged areas. The primary concern of this paper is to bring into focus the level of spatial balance in infrastructural development and to undertake a comparative analysis of the pattern of distribution among the seventeen local government areas that make up the Plateau State.

## 2. Conceptual Framework of Study

### 2.1 Development

In history, development means achieving sustained rates of growth of income per capita to enable the country to expand its output at a rate faster than growth in population. It is viewed in terms of planned alteration of the structure of production and employment such that agriculture's share declines and that of the manufacturing and services increase (Todaro and Smith (2011).  This is true to a large extent as development strategies in the developing countries are geared towards industrialization at the expense of agriculture and rural development. Jhingan (2008) opined that economic development should be a spontaneous change in the stationary and static state which for some time alters and displaces the equilibrium state previously in existence.  It is essentially an innovative process leading to the structural transformation of socio-economic system.

The past experience of many developing countries showed that benefits from economic growth have not impacted meaningfully on the quality of life of the people and condition of living remained unchanged over the years and this led to the re-thinking about the concept of development. Seers (1969) underlined certain basic questions to be answered affirmatively in understanding the concept of development as he remarked what is happening to poverty, inequality, and unemployment?. He maintained that if the three central economic problems have been growing worse, it is strange to call the result development even if the per capita income more than doubled. Development must therefore be seen as a multi-dimensional process which involves changes in structural attributes and institutions as well as the acceleration of economic growth, the reduction of inequality and eradication of abject poverty. This view is shared by Oyugi (2000) who remarked that development is associated with increases in per capita income, public welfare and subsequent reduction in unemployment and social inequality. Goulet (1991) identified three core values of development namely, sustenance which implies ability of the society to meet basic needs such as food, shelter, education, health-care and protection; self-esteem means a sense of worth, self-respect and not to be used as stooges by others for their selfish interest.

It has to do with recognition, dignity, respect and honour; freedom from servitude which implies basic components such as freedom of expression, political emancipation, equal opportunity, personal security and the rule of law.

## 2.2 Infrastructure

Infrastructures are those basic physical, social and institutional forms of capital, which enhance production, distribution, consumption activities and ultimately the quality of life (Ekong, (2000). Essentially, it constitutes facilities such as basic services without which primary, secondary and tertiary productive activities cannot function (Madu, 2012) Infrastructures forms the necessary ingredients for motivating people to be more productive and achieve relative self-reliance (Ekong, 2005). In other words, infrastructural facilities are elements in the package of basic needs which a community would like to procure for better living (Olayiwola and Adeleye, 2005). It is viewed as those facilities and services that are needful to improve on the quality of life of the people. Abumere (2002) put infrastructure to include the system of physical, human, and institutional forms of capital which enables rural residents to better perform their production, processing, and distribution activities, as well as help to improve the overall quality of life. In addition, infrastructure can be better understood as those specialized elements in the development process that bring about improvements in the socio-economic welfare of the masses. Moreover, they are catalysts of development and at the same time their presence can be an indicator of the level of development (Oguzor, 2011; Oisasoje and Ojeifo, 2012).

Barrios (2007) had assisted in categorizing the infrastructural facilities to include - economic such as credit, loan, production support; physical infrastructures such as roads, electricity, irrigation facilities; capacity building in terms of training, information dissemination; and support service namely, market services, and access to basic social services. Idachaba (1995) had attempted the classification of the infrastructures into three namely, first: physical infrastructures consisting of roads, bridges, storage facilities, dams, irrigation, water facilities, and other forms of processing facilities. Second, social infrastructure such as health and medical facilities, educational facilities and third, institutional infrastructure which consists of cooperative societies, farmers' unions, financial institutions like banks, agricultural extension and training services. This classification is of immense importance because socio-economic status of people largely depends on the quality of infrastructural facilities provided with good maintenance culture.

## 3. Recent Studies in Infrastructural Development

One of the critical problems facing developing countries is the inadequate provision and maintenance of infrastructural facilities and that the poor state of infrastructure in many areas is posing a great challenge to economic developmental efforts particularly level of agricultural and industrial productivity (Abumere, 2002) It was remarked that the infrastructural facilities that should serve as catalyst in the process of agricultural production are either not available or inadequate and can impede socio-economic transformation Adeoye, *et al*, 2011). The development of infrastructure must be seen as an integral part of the entire economic growth and development.

In Nigeria, a major problem is the pattern of distribution of these basic infrastructures which exhibits urban bias; hence poverty is at a higher level in the rural areas than urban areas. A considerable emphasis is placed on the development of urban infrastructure to the neglect of the rural areas (Oguzor, 2011). Apart from poverty problem, the prime factor for rural-urban exodus is the attraction of the infrastructural facilities placed in the few urban cities and this trend will continue unabated until such facilities are equitably provided and sustained in the rural communities. Aderamo and Magaji, (2010) remarked that the sustainability of the provision, operation and maintenance of appropriate rural infrastructures has eluded the hopes and aspirations created in the minds of rural folks. Umoren *et al* (2009) observed that rural infrastructural development has not been taken seriously in Nigeria and it is often difficult to quantify its direct influence on the quality of life in rural areas.

Rotimi (1994) had attested to the fact that transport and communication were capable of assisting the diffusion of ideas and innovation. In development process, the role of transport and communication cannot be over-emphasized in that they help in no small measure to spread the benefit of development from the industrial urban centre to the rural hinter-land usually in form of spread effects. In the same vein, Ogunsanya (2002) had remarked that transport was analogous to internal organs of human body that often worked as the life-wire of our socio-economic and political life. Ogunsanya went further to emphasize the considerable importance of transport in any regional economy.

In addition Familoni (2001) shared identical opinion when he remarked that the functions that banks perform in the modern society which include operating current, saving and deposit accounts, money transfers, purchase of drafts, procurement of loans for a large variety of purposes and opening its door to business in community, is largely viewed as vehicle of ushering in growth and development.

Jhingan (2009) had identified low rate of capital accumulation as a potent obstacle to regional economic development. Jhingan maintained that shortage of capital stemmed from the vicious circle of poverty. In this regard, one believes that an increment in banking institutions in relation to higher volume of banking transactions, the more availability of fund for socio-economic development. Umoh (2000) assessed the impact of rural electricity and roads as facilitators of socio-economic development of rural areas in Kaura Namoda (Zamfara State). Umoh discovered that recent installation of rural electricity supply and construction of access roads as increased volume of investments in respect of transport services and which has contributed to economic growth in general.

Akinola (2007) examined coping strategies with infrastructural deprivation through collective action among rural people in Nigeria and discovered that the failure of the government to properly address the problem of rural infrastructure led to the adoption of self-help strategy by the people through collective action. The result further explained that the rural people organized themselves into appropriate institutional arrangements, mutual agreements and shared understanding, planned and execute public goods and services that directly touched the lives of the people. Fakayode *et al* (2008) examined the place of infrastructures in the agricultural productivity of farm households, using farm level data from Ekiti State, Nigeria. In the study, eight types of infrastructures were surveyed namely road, health centres, market centres, water supply, electricity, banks, communication gadgets and education, and their influence on the agricultural productivity. The data obtained were analyzed using the total factor productivity (TFP) and the ordinary least square (OLS) regression analyses. The study revealed that besides road infrastructures which were found to be in bad state, all other infrastructures were found to be much available and the computed infrastructural index of 032 was found to be very low for the area.

Similarly, Ale *et al* (2011) examined the importance of rural infrastructural development in solving the problems of food security and city congestion, pointing out that many rural farm families move to the cities where infrastructures are adequately provided at the expense of food production for the large populace all in search for good living. The outcome of the study made it obvious that the level of infrastructural development in rural Nigeria is nothing but poor. It further stated that if the country will continue at this level of lip service in the provision of infrastructural facilities, she will not be able to meet the vision 2020 target of providing food security as contained in the millennium development goals (MDGs).

Adeoye *et al* (2011) examined rural infrastructure and profitability of farmers under Fadama-II project in Oyo State. The study made use of primary data collected from two hundred and sixty four (264) farmers through a multi-stage sampling technique. It compared the infrastructural development between Fadama II in the local government areas and non- Fadama II areas using infrastructural index and gross margin. The result showed that more than halve (59.1%) of the villages in Fadama-II local government areas have more infrastructures than non-Fadama II villages. Moreover, they were found to be significantly better-off in a number of areas including agricultural production, and household income. This implies that Fadama-II project has contributed significantly to the development of infrastructures in Oyo State.

## 4. Methodology

In this section, some issues relating to methodology are discussed namely, data selection, sources of data, data collection procedure and analytical framework of study.

### 4.1 Data Selection

The variables were carefully selected for this study and they include the following:

$Z1$ = Number of global communication subscribers per '000 population
$Z2$ = Access road density (km) per unit area
$Z3$ = Number of Commercial Banks per '000 population
$Z4$ = Water consumption/day per '000 population
$Z5$ = Electricity consumption/unit area

**4.2 Data Sources and Collection Procedure**

There are two principal sources of data namely, primary and secondary both of which were employed in this study. Among the primary source of data include information collected through questionnaire survey. It was administered among one thousand and twenty (1,020) randomly sampled population in the seventeen local government areas of Plateau State.

In addition, secondary data were collected from the relevant ministries and agencies such as the Central Bank of Nigeria, Water Boards, and Power Holding Company of Nigeria (PHCN) at the State and local levels in order to ascertain the authenticity of the data being collected from the questionnaire survey. Additional relevant documented materials were generated from the Federal Office of Statistics (FOS), statistical records from the National Population Commission, published journals and recent text-books.

**4.3 Methods of Data Analysis**

In this study, standardized score technique (Z-score) was adopted for, it affords the opportunity to rank the unit areas in accordance with their performance in the distribution of the infrastructural variables. This technique measures the relative departure of the individual observations from the 'mean' of observations usually expressed in a comparative form. The score of each local government area in each of the variables is standardized into Z-scores by changing the scores into zero mean and unit standard deviation. The zero mean was produced and forms the baseline from which departures of scores of observation in particular variable was compared. In effect, the local government areas were ranked according to their performance in the distribution of infrastructural facilities. The Z-score is widely used (Aderamo and Aina, 2011; Fabiyi, 2011) to analyse spatial pattern of distribution of facilities. The model for the study is stated below:-

Z-score formula:-

$$Z_i = \frac{X - \overline{X}}{SD}$$

Where $Z_i$ = standardized score for the ith observation

$X$ = the original of the ith observation

$\overline{X}$ = the mean of the value X variable

$SD$ = the standard deviation of the X variable and

$$SD = \sqrt{\frac{\Sigma(X - \overline{X})^2}{N}}$$

Where N = Total number of observation

**4.4 Data Analysis and Discussion of Results**

A cursory look at Table 1 shows eight columns. The first column presents the names of the seventeen local government areas in Plateau State. The columns 2 to 6 present the standardized scores on infrastructural variables carefully selected for this study. The seventh column presents the sum of the Z-score otherwise known as the composite scores. While the eighth column shows the rank of the LGAs. From the Table 1, it is glaring that some LGAs performed better than others in the distribution of infrastructural facilities. A cursory look at the seventh column representing the composite scores revealed that seven areas are privileged while ten other areas are under-privileged. The advantaged areas constitute some 41 .2% while the disadvantaged areas constitute about 58.8%. The most advantaged areas include Jos Central, Jos North and Mangu with similar scores of 4.85, 4.49 and 4.14 respectively. Some other LGAs in the category of advantaged are Pankshin (2.10), Mikang (0.40) and Quan'an Pan (0.05) in order of performance. It is observed that none of the LGAs has positive scores in all the five variables.

This implies that the LGAs are either advantaged or disadvantaged in all the variables. But there are areas that are advantaged in three or more out of the five variables and they include Bokkos, Jos Central, Jos North, Mangu, Pankshin and Shendam. The percentage of this category of LGAs is 35.3. On the other hand, there are areas that are disadvantaged and they include Riyom and Kanke with score values of -4.45 and -3.30 respectively. These two areas are found to be most disadvantaged as far as the distribution of infrastructural facilities is concerned. Some of the other areas that are disadvantaged include Barkin-ladi (-1.13) Bassa (-2.07), Bokkos (-1.00) Jos East (-1.60) Kanem (-0.16), Langtang-North (-1.82), Langtang-South (-0.72) and others with different levels of deprivation.

At this juncture it is important to consider the individual variables vis-a-vis their Z-scores in each of the local government areas. Variables Z1 and Z2 represent number of global communication subscribers and access road density per unit area from the LGA to State headquarters. In variable Z1, it revealed that six areas are advantaged while the remaining eleven areas are disadvantaged. The advantaged LGAs include Shendam (2.16) Mangu (1.55), Jos North (1.09). Others include Jos Central (0.13), Mikang (0.94) and Pankshin (1.09). The analysis shows that Shendam enjoys most of the privileges in this variable.

A glance at the disadvantaged category, two areas are found to be most disadvantaged, namely, Barkin Iadi, and Bassa with Z-scores of -1.04 and -1.20 respectively. Some other LGAs in this under-privileged category include Bokkos (-0.54), Jos East (-0.32), Kanem (-0.72) Kanke (-0.53) Riyom (-0.14) and Wase (-0.39). In variable Z2, nine areas are advantaged while eight other areas are disadvantaged. The areas that have maximum privilege include, Langtang-North, Langtang-South, Quän'an pan and Wase with varying scores of 1.04, 1.56, and 1.04 respectively. Some of the other areas under this advantaged category include Bokkos (0.19), Kanem (0.67) Kanke (0.23), Mangu (0.03) Mikang (0.47) and Pankshin (0.87).

The disadvantaged areas under this variable Z2 include Jos East, Jos Central, Jos North and Shendam with z-scores of -1.35, -1.47, -1.02 and -1.59 respectively. The performance of Jos areas with respect to the access road is worthy to note. The topography of the region might account for the deprivation of access road. A look at variables Z3 and Z4 denote the number of commercial banks and water consumption per day respectively. In variable Z3, seven areas are advantaged while ten other areas are disadvantaged. The most advantaged areas are Jos Central Mangu, and Shendam with scores of 1.58, 1.31 and 2.11 respectively. It appears that Shendam dominates other areas in terms of the distribution of commercial Banks and other financial institutions. Some of the other LGAs that are privileged include Barkin Iadi (0.81) Bokkos (0.25), Jos North (0.52) and Pankshin (0.78).

The ten areas that suffered deprivation include Kanke and Riyom with equal scores of -1 .34 respectively. This implies that the two areas suffered equal level of deprivation in the distribution of this variable. Some of the other LGAs that are disadvantaged include Bassa (-0.28) Jos East (-0.02), Langtang-North (-0.81) Langtang-South(-0.28). Both Quan'an Pan and Wase have equal scores of -0.81. It is observed that three areas suffered equal level of deprivation, namely Jos East, Kanem, and Mikang with the same scores of -0.02.

As regards variable, Z4 that denotes water consumption per day, seven areas are advantaged while ten other areas are under-privileged. The most privileged areas include $J_{05}$ Central, Jos North, and Mangu with z-scores of 1.70, 1.88 and 1.46 respectively. Some of the other areas that are advantaged include Bassa (0.08) Kanem (0.75), Quan'an Pan (0.55) and Shendam (0.52). It appears that Riyom and Kanke are the most disadvantaged with scores of -1.37 and -1.05 respectively. Some of the other areas that are under-privileged are Barkin-ladi (-0.19), Bokkos (-0.93), Jos East (-0.51), Langtang-North (-0.46) Langtang-South (-0.93), Mikang (-0.90) and Wase (-0.53). The last variable under this dimension is Z5 denoting electricity consumption per unit area. In this variable, only four areas are advantaged while the remaining thirteen areas are disadvantaged. This point shows that most the local government areas in Plateau State do not enjoy electricity consumption as it happens in some parts of Nigeria. The advantaged areas include Bokkos, Jos East, Jos Central and Jos North. The pattern of infrastructure development in the study area is however, depicted on figure 1.

## 5. *Implication of the Study*

The findings of this study reveal that there are a good number of policy and planning implications for infrastructure development in Plateau State in particular and in the country at large. The information and knowledge derived from the spatial pattern of infrastructure development exhibited by the seventeen local government areas can be harnessed to form the premises around which policy instruments could be articulated and directed with a view to correcting spatial imbalance between the privileged and deprived local government areas. Admittedly, the third tier level of government is seriously considered to be in the position to embark upon the development of productive capacity and improving the living conditions of the people at the community levels, the reverse has always been the case in Nigeria.

The study reveals the fact that some areas have more than average share, thus making infrastructural facilities to be localized in the study area which thus means, that one would have to travel long distances before one can enjoy essential services. This kind of lopsided spatial pattern of development tends to aggravate the problem of regional imbalance which the Federal Government should address with more seriousness.

In effect, the introduction of of the Petroleum Trust Fund (PTF), Education Trust Fund (ETF) and Subsidy Re-investment empowerment Programmes (SURE-P) are considered as right steps in the right direction.

The study also reveals that there are spatial disparities in the overall levels of infrastructural development in Plateau State as in many of the States in Nigeria. It becomes glaring however that the purpose of creating more States and local government areas in this country has not yielded meaningful result. The true position is that the spatial imbalance among the regions continues to persist till today**.**

## 6. Recommendations

The existence of spatial inequalities in the distribution of infrastructural facilities informs the planners that increased resources should be directed to less-privileged and deprived areas with a view to promoting a balanced development. There is need for both socio-economic and physical planners to co-operate such that, if the socio-economic planner allocates the resource for a specific project, the physical planner should be in the best position to give the project the optimal location. By so doing, localization of the facilities in the few urban centres would no longer arise. Moreover, it will go a long way to stem the wave of rural-urban migration in this country.

The community development strategy should be accorded the right attention it deserves since it has been realized that our government cannot provide all the needs of the society. The communities that shouldered the construction of roads, bridges, supply of pipe-borne water and embark upon electrification projects should be encouraged by the government through provision of financial grants and technical assistance. By so doing, it would go a long way to reduce regional imbalance between the privileged and under-privileged areas.

## 7. Conclusion

From the foregoing analysis and discussion, it is clear that inequalities exist in varying degrees among the seventeen local government areas of Plateau State of Nigeria. The results generally confirm the notion of the core and periphery spatial pattern of development. A basic challenge in the future development process in Nigeria is therefore the narrowing of the gap between the privileged and under-privileged areas.

It is quite disheartening that certain government policies have compounded the problem because of their non-pragmatic approach. For instance in our health-care delivery system lies "health for all by the year 2010" Unfortunately, this goal could not be achieved as speculated and widely circulated all over the place. These are laudable programmes that should be backed with action but in the current dispensation with the introduction of PTF programme**,** it will go along way to help bridge the gap. Similar radical policies are needed country wide to correct the present imbalance between the advantaged and disadvantaged areas in terms of accessibility to basic infrastructural facilities.

Finally, if government at all levels are really serious in the pursuance of the egalitarian goals, where no man is oppressed against sex, tribe, religion nor discriminated against political affiliation, then there should be re-allocation of the national resources in favour of the deprived regions in order to achieve the goal of a balanced development.

## References

Abumere, S. I. (2002). Rural infrastructure and the development process in rural Nigeria. Research report No. 36. development policy centre. Ibadan. Nigeria.

Adeoye, A., Yusuf S. A., Balogun, O. L. & Carim-sanni, A. (2011). Rural infrastructural development.and profitability of famers under Fadama-II Project in Oyo State, Nigeria. World rural observation. 3(2). Science publications.

Aderamo, A. J. & Aina, O. A. (2011). Spatial inequalities to social ameneties in developing countries: A case from Nigeria. Australian Journal of basic and applied science. 5(6): 316-322.

Aderamo, A. J. and Aina, O. A. (2011). Spatial Inequalities to Social Ameneties in Developing Countries: A Case from Nigeria. Australian Journal of Basic and Applied Science Volume 5(6): Pp. 316-322.

Aderamo, A. J. & Magaji, S. A. (2010). Rural transportation and the distribution of public facilities in Nigeria: A case of Edu local government area of Kwara State. Journal of human ecology. 29(3):171-179.

Akinola, S. R. (2007). Coping with infrastructural deprivation through collective action     among rural people in Nigeria. Nomadic Journal of African study.  16(1):30-46.

Ale, M. O., Abisuwa, T. A., Olagunagba, F. O. & Ijarotimi, O. (2011). Rural infrastructural development, food security and city congestion in Nigeria. Journal of research in national development (JORIND. 1(9).

Bamboye, P. O. (2007). Rural development strategy in Nigeria: an appraisal of the Directorate of food, roads and rural infrastructures (DFRRI). Ibom Journal of social issues. 8(2):48-58. Department of Sociology/Anthropology. University of Uyo, Nigeria

Calderón, C. (2009). Infrastructure & Growth in Africa, Policy Research Working Paper 4914, the World Bank, Washington, D.C.

Calderón, C. & Serve, L. (2008). Infrastructure and Economic development in Sub-Saharan Africa, policy research working paper 4712. World Bank. Washington. DC.

Egbetokun, O. A. (2009). Provision of rural infrastructures in Oyo State of Nigeria. Journal of Agricultural Sustainable Practice. 1 & 2: 69-70.

Fakayode, B. S., Omotesho, O. A., Tsoho, A. B. & Ajayi, P. D. (2008). An economic survey of rural infrastructures and agricultural productivity profile in Nigeria..European Journal of social science. 7(2):158-171.

Familoni, J. A. (2001). "Community Banking and Infrastructural Imperative to Grass Root Development. Case Study of Rural Areas of Ekiti State" Conference Proceedings on Rural Environment and Sustainable Development in Nigeria, University of Ado-Ekiti.

Goulet, D. (1991). The cruel choice: A new concept in the theory of development. Athenean press. New York.

Idachaba F. S. (1985). Infrastructural Economics. University Press, Ibadan.

Ifabiyi, I. P. (2011). Spatial distribution and performance of water pumps in the rural areas of Kaduna State, Nigeria; before the Second Republic. European Journal of Social Sciences. 26(1):15-25.

Jhingan, M. L. (2008). The economics of development and planning. Vrinda publications. Delhi. India. Pp. 4-5

Madu, U. A. (2012). Rural infrastructure: A pathway for sustainable Agricultural      development in Nigeria. International Journal of Social Science Tomorrow. 1(4):1-5.

Ndulu, B. (2006). Infrastructure, regional integration and growth in Sub-Saharan Africa: Dealing with the disadvantages of geography and sovereign fragmentation. Journal of African Economies 15(2): 212-244.

Ogunsanya. A. A. (2002). "Maker and Breaker of Cities" The Fifty-Ninth Inaugural Lecture, University of Ilorin.

Oguzor, N. S. (2011). Spatial analysis of infrastructures and social services in rural Nigeria: implications for public policy. GEOTROPICO. 5(1):25-38.

Oisasoje, O. M. & Ojeifo, S. A. (2012). The role of public infrastructure in poverty reduction in the rural areas of Edo State, Nigeria. Research on humanity and social science.  2(7).

Oisasoje, O. M. and Ojeifo, S. A. (2012).The Role of Public Infrastructure in Poverty Reduction in the Rural Areas of Edo State, Nigeria. Research on Humanity and Social Sciences Volume 2(7).

Olayiwola, L.M. & Adeleye, O.A. (2005). Rural infrastructural development in Nigeria: Between 1960-1990. Problems and challenges. Journal of social sciences. 11(2):91-96

Omofonmwan, S. I. (2004). Health service facilities in Esan Area of Edo State. A spatial perspective. Knowledge review. 8(2):6-14.

Oyewole, B. A. & Oloko, S. A. (2006). Agricultural and food losses in Nigeria: the Way out. International Journal of rural studies (IJRS). 13(1):14-16.

Oyugi. W. O (2000)," Decentralization For Good Governance And Development The Unending Debate", Regional Development Dialogue (RDD). United Nations Centre For Regional Development, Nagoya, Japan 2 1(1): 3-21.

Perkins, P. & Luiz, J. (2005). An analysis of Economic infrastructure investment in South Africa. South African Journal of Economics. 73(2).

Rotimi, D. A. (1994) "Regional Socio-Economic Inequality in Kwara State, Nigeria, A Spatial Analysis In Development Planning" Unpublished Ph.D. Thesis. University of Ilorin.

Seers, D. (1969). The Meaning of Development" Eleventh World  Conference of The Society For International Development, New Delhi, India

Todaro, M. P. & Smith, S. C. (2011. Economic development. Addison-Wesley. New York. Pp. 20-23

Umoh, E. A. (2000). "Infrastructure and Socio-Economic Development in Sahelian, Nigeria, The Case Study of Kaura Namoda", African Journal of Social and Policy Studies. 1(2):247-250

Umoren, V., Ikurekong, E. E., Emmanuel, A. & Udida, A. A. (2009). Development of road infrastructures as a tool of transforming Ibiono-Ibom local government area of Akwa-Ibom State. Global Journal of social science. 8(2):53-59.

United Nations (2011). Study on infrastructure for economic development and poverty reduction in Africa. Nairobi. UN-Habitat.

**Table 1: Standardized Scores of LGAs in Plateau State on Infrastructure Variables**

| LGA | Z1 | Z2 | Z3 | Z4 | Z5 | Sum Z | Rank | Category |
|---|---|---|---|---|---|---|---|---|
| Jos Central | 0.13 | -1.47 | 1.58 | 1.70 | 2.91 | **4.85** | 1 | Upper |
| Jos North | 1.09 | -1.02 | 0.52 | 1.88 | 2.02 | **4.49** | 2 | " |
| Mangu | 1.55 | 0.03 | 1.31 | 1.46 | -0.21 | **4.14** | 3 | " |
| Shendam | 2.16 | -1.59 | 2.11 | 0.52 | -0.61 | **2.59** | 4 | " |
| Pankshin . | 1.09 | 0.87 | 0.78 | -0.07 | -0.57 | **2.10** | 5 | " |
| Mikang | 0.94 | 0.47 | -0.02 | -0.90 | -0.09 | **0.40** | 6 | Middle |
| Quan'an Pan | -0.72 | 1.08 | -0.81 | 0.55 | -0.05 | **0.05** | 7 | " |
| Kanem | -0.72 | 0.67 | -0.02 | 0.75 | -0.66 | **-0.16** | 8 | " |
| Langtang- S | -0.33 | 1.56 | -0.28 | -0.93 | -0.74 | **-0.72** | 9 | " |
| Wase | -0.39 | 1.04 | -0.81 | -0.53 | -0.25 | **-0.94** | 10 | " |
| Bokkos | -0.54 | 0.19 | 0.25 | -0.93 | 0.03 | **-1.00** | 11 | " |
| Jos East | -0.32 | -1.35 | -0.02 | -0.51 | 0.60 | **-1.60** | 12 | Bottom |
| Barkin Ladi | -0.04 | -0.34 | 0-81 | -0.19 | -0.37 | **-1.13** | 13 | " |
| Langtang- N | -1.06 | 1.04 | -081 | -0.46 | -0.53 | **-1 82** | 14 | " |
| Bassa | -1.20 | -0.50 | -0.28 | 0.08 | -0.17 | **-2.07** | 15 | " |
| Kanke | -0.53 | 0.23 | -1.34 | -1.05 | -0.61 | **-3.30** | 16 | " |
| Riyom | -0.14 | -0.90 | -1.34 | -1.37 | -0.70 | **-4.45** | 17 | " |

Source: Authors