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ELECTRICITY SUPPLY AS BASIS FOR SUSTAINABLE RURAL DEVELOPMENT IN ISIALA NGWA, ABIA STATE

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Abstract
The paper examined the supply of electricity as the basis for rural development in Isiala Ngwa, Abia State. To achieve this, three hundred and fifty copies of questionnaire were distributed to the communities receiving electricity supply from Mbawsi Distribution centre. Results from the field indicated that in 2004.The mean value for average duration of supply of electricity in the area was 16.36hrs while in 2014 it decreased to 7.45hrs representing a reduction of 219.59% at the same daytime demand. The electricity decreased from a positive mean value of 5.2 hrs to 3.5hrs. Among other things, it was recommended that the power sector should be completely privatized. This is to enable interested parties to be enrolved in, generation, distribution and marketing of electricity.

Keywords: *Electricity supply, Duly duration, Daytime demand, Rural development.*

Background to the Study

Rural development centers on all efforts made by government, individuals, cooperate bodies, super or supra bodies in assuring that the rural areas are made more self-sufficient, dependable for service and opportunities geared towards more productivity and higher standard of living, which can be sustained in the future.

The need for basic services in the rural areas has greatly risen to the optimum. This is because they provide an ease to the life pattern of the rural dwellers and their empowerment.

Electricity is one of the infrastructures which have been seen as playing a major role in fostering the development of the rural areas. "There is no doubt that the extension of electricity to the rural areas will encourage industrial development at the local level, promote economic growth and reduce migration from rural to urban centers" (Nze, 2002).

Electricity if made available in the rural areas as obtains in the urban centers is capable of increasing the use of tools and skills for the attainment of a level of economic development. One clear fact remains that an individual cannot embark on a project that is more than his income. So there are limits to things he can do. Hence electricity supply is one project that requires the collective efforts of both government and the masses.

The need for the development of the rural areas has cumulated to various efforts aimed at ensuring that electricity is provided in the area. One of which is through Community Participatory Developmental Approach, where, rural communities involve themselves in development projects according to their felt need without waiting for government.

Communal self-help can be seen as a movement. The massive local involvement, which has helped popularize the initiative of the local people in efforts to develop their areas, Ekong, (1988) sees the idea of self-help as a strategy aimed at supplementing government efforts with the efforts of the people. Many states in the country have communities that participate in self-help project. The former Bendel state was really noted for its leading efforts in communal self-help projects. The area of operation of communities in rural development is the service approach. The peculiar feature of this initiative is that the people are satisfied with any project they execute themselves, because they ensure that embezzlement of funds is ruled out, local pressure and social sanctions are usually brought to bear on the people handling community funds. These pressures limit chances of embezzlement. (Idode,1998).

More impact would have been made in rural development efforts by communal self-help but all the failures on making much impact is embedded in these two short comings: (1) Faulty Project Prioritization (2) Lack of sizeable organization capacity.

Corporate Intervention

This involves the participation of firms and other corporations in community development. Their participation in rural development is enormous and systematic. Corporate bodies is elementarily a formal aggregate of two or more persons united for one or more specific purposes, sharing a common package of statutory, customary and/or moral rights and bound by the set of rules, liabilities and obligations. (Igbozurike, 1991).

The corporate bodies have made enormous efforts in rural development. Their level of operation is not limited to service approach like the communal self-help. Example is Shell Petroleum that has stood out clearly in their contribution to development especially in which provision of water, schools, agricultural extension programmes and canals to shorten distances between riverine communities. Apart from Shell Petroleum, most financial institutions like banks have contributed immensely in aspects of rural development in Nigeria. One of the major problems confronting corporate intervention is socio-political and cultural problems as well as environmental problems which constitute great constraints in infrastructure provision e.g. topography. Since most of these corporate bodies have strong financial base, their contribution far outweighs that of individual and communal self-help.

Supra National Organization

Government of most countries do not function independent of supra national organization in their development efforts. They rely on these organizations which are international oriented for support. Specified principles and strategy based entirely on continuity and sustainability, integration, equity and four play as well as clearly defined confines of operations.

This assertion led Imo State Government to embark on rural electricity provision in the late seventies and eighties through the provision of Regional/Community generating units, like the Amaraku Mbano Power Station. Also the old Bendel State established rural electricity Board in 1972 charged with the responsibility of electrifying all the rural communities in the State with an Objective of encouraging the establishment of rural industries, and improving the living standard of the people. Unfortunately the problem of sustaining the projects to maximize its gains became stumbling back to the full actualization of these projects (Uwaga, 2005).

Theoretical Framework

The theory of evaluation is well apt to underscore argument for this paper. Carincross, *et al*, (1980) defined evaluation as an assessment of a desired activity to ascertain its level of performance in line with the stated objectives. It revolves between initial objectives, predicted performance, and actual achievement of objectives and performance.

Evaluation is releasing the passes criteria which will enable quick and unbiased judgments. Kayode, (1989) stated that evaluation criteria should be based on few issues.

1. The level of projection implementation
2. Contribution of the project to the stated goals.

Alternatively, Carincross *et al,* (1980) observed that evaluation should be based on technical economic, social, financial, political, legal and administrative effectiveness. As Alozie, (2001) equally observed, the rate of project compliance to technical details, (i.e. design and quality compliance) and types of materials selected, the level of service, the regional distribution of schemes and the overall size of the budget for any infrastructure would also determine the success of any project.

Similarly, Koyode, (1988) argued that multiple objectives are most times complementary, it is then conceivable that the best and most balanced views about project evaluations should come from the consumers who are generally very appreciation of the improvement in infrastructural provisions and understand well the defects that may exist but cannot classify present efforts as meaningless. This paper is in agreement with Kayode, (1988)in assessing if electricity supply in Isiala Ngwa, Abia State as the basis for rural development.

Study Location

Sequel to the creation of Abia State alongside with eight other states, Isiala Ngwa North emerged with 10 wards. It has its administrative headquarters at Okpuala Ngwa and is found in Abia Central Senatorial zone. It covers a total area of about 420 square kilometer and lies between Long.7°20E' to 7.35'E and latitudes 5°20' N to 5°28'N (see Figs 1 & 2). The population size stood at 142852 by 2006 (NRC, 2006), but increased to 160,782 in 2010 at 3% annual projection.

Isiala Ngwa North falls within the wet tropical climate with clearly marked dry season and double maxima rainfall in June and September. The Harmattan is noticed intermittently in December and intensely in January, while dry season commences from November, to February. The area is located within the equatorial rain forest characterized by Swamps and secondary forests (whichare made up of wild and cultivated oil palm trees).

Geologically, Isiala Ngwa north falls within the margins of the extended coastal plains (Awuzie; 1990). The Land surface is that of gently rolling slopes smoothly down to the west towards the lower Imo River. The Drainage system in the area is not well developed.

Imo river is well developed in the area with well amplified tributaries like; Ohia, Obingwu and Etu. Other rivers still prominent in the area include; Achara, Umunkolo, Nkara and Neme.

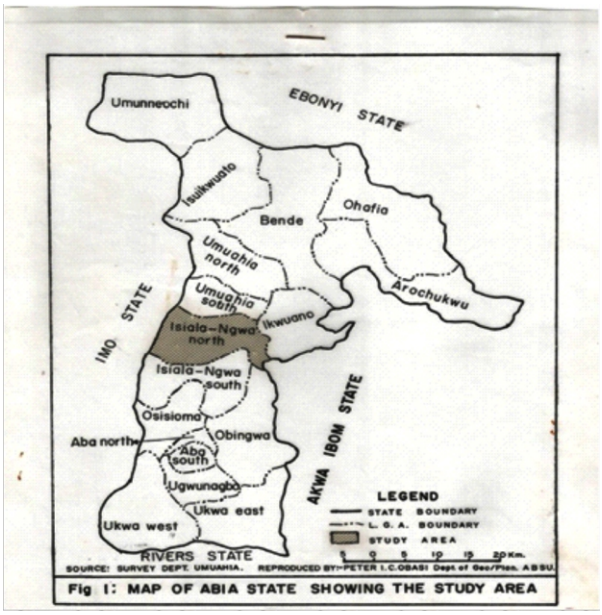

Fig 1: MAP OF ABIA STATE SHOWING THE STUDY AREA

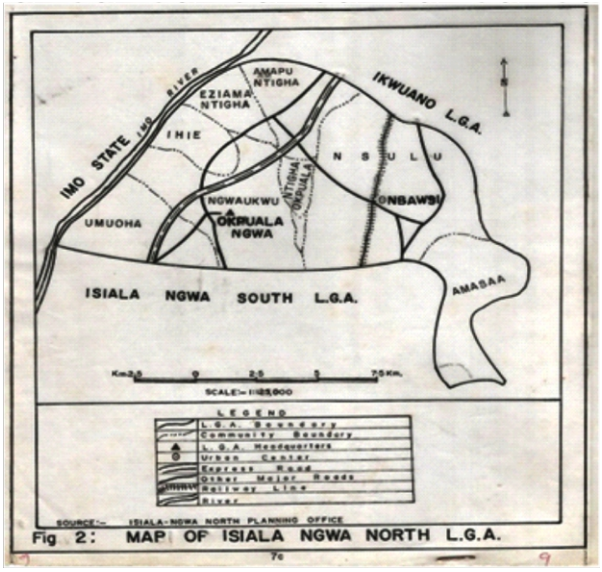

Fig 2: MAP OF ISIALA NGWA NORTH L.G.A.

Methodology

Field survey was conducted in the area which enabled the administration of questionnaire in very specific and spatially oriented manner. It covered the most identifiable business activities in the area and measures how much each of these activities receive electricity in a day, week and month.

The communities that were selected for interview are the major communities deriving their energy supply from Mbawsi Main Distribution Centre. Allocation of respondents for interview to the selected Communities is presented in table 1 below.

Table 1: Selection of Respondents for Interview

Community	No of Respondents Selected	No of Respondents that required their questionnaire	No of Respondents that did not respond.
Mbawsi	60	50	10
Amuala	52	40	12
Umuati	45	38	7
Umuosu	52	40	12
Total Number of Respondents	**209**	**168**	**41**
Respondents Rate (%)	**100**	**80.38**	**19.62**

A total of Two hundred and nine respondents were selected for interview in the area; while the stratified random sampling technique was adopted to identify the various communities for questionnaire Distribution and administration. The random sampling technique was also used to identify the specific respondents to interview in each of the selected communities. Results retrieved from the field were analyzed using frequency tables and means. At the end of the exercise, 80.38% responded, while the remaining 19.62% of the respondents declined to neither comment nor return the copies of questionnaire sent to them.

Results and Discussions

Previous records of daily duration of electricity supplied in the area for 2004 was obtained from the research conducted by Uwaga, (2007).These were compared with recent investigation conducted in the same locations to ascertain the variability of results.

Table 2: Response to the Daily Duration of Electricity Supply by Power Holdings in the Area for 2004.

Community	**Duration of Time In Hours**				**Total**
	0-6	6-12	12-18	18-24	
Mbawsi	30	40	20	14	104
Umuala	20	25	15	10	70
Umuati	12	26	18	12	68
Umuosu	22	39	26	14	101
Total	**84**	**130**	**79**	**50**	**343**
Mean	**21**	**32.50**	**19.75**	**12.5**	**85.75**
Mean percentage	**24.49**	**37.90**	**23.03**	**14.58**	**100**

Source: Uwaga,(2007)

From the table above, average daily duration of electricity supply in the area is between 0 to 24 hours. A less but significant 14.58% of the respondents noted that daily supply of electricity lasts up to 15 hours and more. Nevertheless, the time duration of 5-10hrs attracted more response of 37.90%. Uwaga, (2007) noted that electricity supply in these communities in 2004 were effective in engineering economic development since average supply is 16.3hrs daily.

Table 3:Response to the Daily Duration of Electricity Supply in 2014 in the Area

Community	**Duration of Time In Hours**				**Total**
	0-5	6-12	12-18	18-24	
Mbawsi	24	16	6	4	50
Umuala	20	13	4	3	40
Umuati	18	13	7	-	38
Umuosu	22	11	7	-	40
Total	**84**	**53**	**24**	**7**	**168**
Mean	**21**	**13.25**	**6**	**3.5**	**43.75**
Mean percentage	**48**	**30.28**	**13.71**	**8.01**	**100**

Given the result presented in the table above, daily duration of electricity in 2014 is reduced considerably when compared with results in Table 2. Summary of both results (i.e. for 2004) is presented in Table 3, to ascertain the rate of deviations.

Table 4: Comparison of Daily Duration of Electricity Supply for 2004 and 2014

Duration in hours	**2004(Mean Value)**	**2014(Mean Value)**	**Deviations Subtract (2004 Values from 2010)**
0-6	21	21	0
6-12	32.50	13.25	19.25
12-18	19.75	6	13.75
18-24	12.5	3.5	-9
∑ Of Means	**85.75**	**43.75**	**-42**
Mean of Means	**21.43**	**10.937**	**-10.5**

Source: Field Survey,2014

Our reliance on the assessment of electricity supply in the area is based on the principles of evaluation as outlined in the theoretical framework, which states that proper assessment of public projects can only be made by users, (Kayode,(1988), Carin Cross, *et al* (1980) and Alozie, (2010).

Based on this mean response values decreased from 32.50 in 2004 to 13.25, with a deviation of 19.25 for 6-12hrs range. While the 18-24 hours range decreased from 12.5 in 2004 to 3.5 in 2014.
The ability of the electricity supply in supporting economic activities in the area constitutes critical points for development of the rural areas. Categories of users of electricity in the area include: Commercial, Domestic, Industrial, and Institutional Purposes. The essence of electricity supply is to provide energy to light homes and power domestic appliances, tailoring machines, hair dries, electric irons, washing machines, battery, fabrication and metal works, and borehole operations. Given the daily duration of electricity in the area as presented in Tables 2 and 3, it could be stated that, economic activitieshas been slow in the area since daily electricity supply had reduced considerably, 16.3hrs to 7.4hrs. Alternative sources of power generation may have been adopted by the users to argument public power deficiencies.

Table 5: Some Economic Activities and Daytime Demand for Electricity in 2014.

Economic Activity	Duration of day time demand in 2014	Summary in Hrs.	Average Daily Supply in HRS	Difference in Hrs.
General metal works	8am-5pm	9	16.36	+7-36
Tailors/Hair Dressing Salons	8am-3pm	11.30	16.36	+4.54
Borehole Operations	8am-8pm	12	16.36	+4.36
Video Clubs	8am-8pm	12	16.36	+4.54
Battery Charging Machine	8am-7.30pm	11.30	16.36	+4.54
Business Centres	8am-6pm	10	16.36	6.36
Total		**66**	**98.16**	**+31.52**
Mean (X)		**11**	**16.36**	**+5.25**

Source: Uwaga (2007)

Uwaga, (2007) observed that, daily average supply of electricity in the area was 16.36hrs and when marched with average daily demand of electricity it showed a positive mean value of 5.25hrs.

However, in 2014, the result showed a significant variation, (see Table 4)

Table 6: Some Economic Activities and Daytime Demand for Electricity in 2014.

Economic Activity	Duration of day time demand in 2014	Summary in Hrs.	Average Daily Supply in HRS	Difference in Hrs.
General metal works	8am-5pm	9	7.45	-1.55
Tailors/Hair Dressing Salons	8am-3pm	11.30	7.45	-4.15
Borehole Operations	8am-8pm	12	7.45	-4.15
Video Clubs	8am-8pm	12	7.45	-4.15
Battery Charging Machine	8am-7.30pm	11.30	7.45	-4.15
Business Centres	8am-6pm	10	44.7	-21.10
Total		**66**	**44.7**	**-21.10**
Mean (X)		**11**	**7.45**	**-3.5**

Source: Field Survey, 2014.

A survey carried out in 2014 indicated that average daily supply of electricity has reduced from 16.36hrs in 2004, to 7.45hrs in 2014 representing a decrease in power supply of about 219.59%. at the same daytime, demand for electricity supply decreased from a positive 5.26hrs to a minus 3.5hrs indicating that deficiencies in electricity supply must be sourced by the consumers in order to meet with needs.

Implications of Electricity Supply for Sustainable Rural Development in the Area

In 2004, average daily and daytime supply of electricity was reasonable to support economic growth. While demand for electricity would increase ordinarily, due to the geometric rise in population size, enhanced living standards, social status upliftment, and demand for political rights and dividends. Electricity supply dwindled subsequently, between 2004 and 2014. It reduced from average daytime of 16.30hrs in 2004 to 7.4hrs in 2014. Although several sociological, political, economic, technical and physiographic reasons have been canvassed as responsible for the reduction in power generation; economic development of the rural areas is also inevitable and must be pursued with great vigour.

Thus the Millennium Development Goal Programme vigorously canvassed by United Nations is a pivotal in this direction. In line with the objectives of rural development, which include among other things; to improve the quality of life and standard of living of the majority of the people in the rural area; Akpobasas (2004) noted that the MDGs project was intended to enable Nigeria achieve a turn ground and grow a broad based market oriented economy that will enhance the opportunities of the rural areas. As the objective is farfetched and may not be feasible. It is therefore the opinion of this paper that the following recommendations would be necessary to improve power generation in the rural areas as well as the nation.

Recommendations and Conclusion

Partial privatization of the power sector had already been concluded; the privatization only affected the down-stream sector while the upstream sectors which includes power generation and distribution is still in the hands of government. Based on this, we recommend that there should be total and full deregulation of the entire process.

Secondly, the entire realm could be split into divisible units with regions, states, cities and local areas contracted out to interested parties to generate, distribute, commercialize, and regulate Power utilization. In addition, there is also the need to diversify sources of power generation; wind, nuclear, solar, and geo-thermal energy. The use of ethanol as the source of fuel, as well as water is still a technology within the convenient reach of our indigenes technology.

We therefore conclude by stating that our rural areas are rich in resources, (both natural and man-made) improving electricity supply would unleash these resources for eventual development of the rural areas, reduce rural-urban migration, increase employment opportunities, and enhance living standards, and individual incomes, develop comparative advantage and specialization and increase food production.

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