



Research Article

## On Evaluating the Effects of Power Outage on Maiduguri and its Environs

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### ABSTRACT

Power outage in Maiduguri occurred on the 26<sup>th</sup> January, 2021. In this study the effect of power outage on the livelihood of Maiduguri residents were investigated. A carefully prepared questionnaire in line with the objectives of the study on the respondents; the study area is Maiduguri Metropolitan City (MMC) with target Population size(N) of 822,000; where a random sampling technique was used to select Sample size (n) of 400 using Yamane's formula at (0.05) level of significance but only 380 Samples out of 400 sample size was accounted for the study. The recent power outage in Maiduguri was caused by insurgency (militants/terrorist activities), Wrong location of transmission power lines and kidnappings of local and foreign experts and obsolete and non-functional transmission and distribution equipment. It was discovered that power outage constituted a major challenge to the standard of living, economic growth, education, health status and security of lives and property of Maiduguri. based on the findings this study recommends that government should encourage the use of alternative sources of energy such as gas for cooking and heating in order to reduce the demand for electricity. This could be achieved if government partners with the private sector to make the products available. This study also recommends that Government should engage the Private sector operators in joint partnerships in order to stimulate and sustain necessary investment and make the power sector more efficient.

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## INTRODUCTION

Power outage is the state of complete absence of electricity at the consumer(s) end (CEIDS, 2001). This phenomenon comes in different forms – planned, unplanned, unanticipated faults and burnouts. Generally, power outages are as a result of gross shortage of energy.

Energy poverty is a perennial problem among most developing countries including Nigeria. Statistics shows that 1.4 billion people, about one quarter of the world population has no access to electricity and that a further 1 billion lack reliable access. Interestingly, 80% of these are in South Asia and Sub-Saharan Africa (IEA, 2002; IEA, 2011). Record has it also that four out of five people without electricity live in rural areas of the developing countries. Only 5% of sub-Saharan rural populace, for instance, has access to electricity (Davidson and Mwakasonda, 2015). Many people in the world today rely on traditional bio-mass wood, agricultural residues and dung for cooking and heating owing to shortage of modern fuels.

Electricity provides lighting in households and powers appliances thus extending the day, providing additional hours for reading and work. The presence of electricity has huge impacts on education as well. The usage of electricity for heating and cooking saves women and children many hours of work. Most households in developing countries rely However, this an entirely different condition to one who has tasted the standardized and comfortable impact of having electrical power supply and of a sudden; arises unplanned blackout with no date of restoration- the recent condition of Borno State capital and environs. The foundation laying ceremony for 50 Megawatts Electrical power supply in Maiduguri and Environs under the umbrella of Maiduguri Emergency Power Project (MEPP) overseen by the Governor of Borno State, Professor Babagana Umara Zulum.

The sitting of the gas turbine power project was in compliance with President Muhammadu Buhari's directive for an "emergency power supply" by the Nigerian

heavily on wood fuel which negatively impacts their health and social-economic status (Cerny, 2013).

A structural shortage of electricity supply in Nigeria remains one of the country most critical challenges (Ariel Goldberg, 2015). Energy plays a vital role in the economic, social and political development of our nation. Inadequate supply of energy restricts socio-economic activities, limits economic growth and has adversely effects on the standard of living of the residents in Maiduguri. Despite Nigeria being energy resource abundant, there are still constant power outages. Industries and individuals cannot rely on electricity from the national grid for high productivity (Claudius, Awosope, 2014).

Since militants of the Islamic State in the West African Province blew up the power grid transmitting power to Maiduguri on 26<sup>th</sup> January, 2021, the residents of the Borno State capital have been plunged into darkness with motorised boreholes relying on electric power to operate, business and daily life have been severely disrupted in Maiduguri and this remains one of the State's most critical challenges that need to be evaluated for possible solutions.

To an individual, State, city or locality who hasn't being connected or ever had access to electrical power supply at all, this may be a normal living condition.

National Petroleum Company (NNPC). According to the Group Managing Director (GMD) of NNPC, Mele Kyari, with the destruction of power infrastructure by the insurgents in Maiduguri and its environs, the Transmission Company of Nigeria (TCN) reportedly lost N1.7 billion in nine months.

Various reasons have been attributed to the poor power generation, transmission and distribution and the gap between the installed capacity and the available capacity. Some of the reasons are; poor power infrastructure maintenance, Militant activities, corruption and lack of energy mix. Each of the problems has diverse degree of impact on the level of power generation while some are more critical

others are less critical. There is therefore, the need to identify those ones that are more critical so that more attention can be given to them in the face of meagre resources available for power infrastructural development in Nigeria (Olaoye *et al.*, 2016).

#### MATERIALS AND METHOD

Maiduguri is the capital of Borno State. It is located in the Sahel Savannah region of the north-eastern Nigeria at Latitude 11° 05' North and longitude 13°05' East and about 350m above sea level. Maiduguri has mean annual rainfall and temperature of about 630mm and 32°C respectively, but temperature can go as high as 45-80°C in the months of March to May. It is the largest city in the north-eastern Nigeria (Borno State Diary 2015).

The population for the study targeted all residents in Maiduguri Metropolitan City

(MMC) with current (2022 Statistics Borno State news) figure at 822,000.

The study adopted Survey research design because it is simple and can help in collecting quantitative data or qualitative data for analysis. The outcome helped the study to infer from the descriptive and inferential statistical results study. Survey helps to scan wider field of issues, population and program in order to measure and generalize the findings of a study and thus proven to be economical and efficient.

In this study, Quantitative research technique was used for the collection of data. The data used was Primary collected through the use of closed-ended self-developed structured questionnaire. A sample of size 400 was obtained from the Population size

(N) = 822,000 using Yamane's formula:

$$\{n = \frac{N}{1 + N(e)^2}\} = \frac{822,000}{1 + 822,000(0.05)^2} = \frac{822,000}{2056} = 399.805 = 400 \text{ e=level of significance (0.05).}$$

In presenting the data, descriptive statistics was used and this included the use of frequency and percentages. The study generated a frequency table for the analyses of data. The study utilized 380 questionnaire out of 400 administered, as 9 were not returned

and 11 were discarded due to errors made during completing the questionnaire.

Research questions (Close ended) were formulated to get the views of people on the aim of the objective. The responses are presented below.

**Tale 1:** Factors behind Power Outage in Maiduguri

S/No.	Statement	SA	A	D	SD	UD	Total
1.	Power outage in Maiduguri is caused by militants/ terrorist activities.	305 (80.26%)	50 (13.16%)	20 (5.26%)	3 (0.79%)	2 (0.53%)	<b>380</b> <b>(100%)</b>
2.	Wrong location of transmission lines is responsible for power outage in Maiduguri	120 (31.58%)	100 (26.32%)	70 (18.42%)	55 (14.47%)	35 (9.21%)	<b>380</b> <b>(100%)</b>
3.	Power outage in Maiduguri was caused by fallen transmission towers due to rainfall and Erosion	65 (17.11%)	70 (18.42%)	89 (23.42%)	150 (39.47%)	6 (1.58%)	<b>380</b> <b>(100%)</b>

4.	Kidnappings of local and foreign experts contributed to power outage in Maiduguri	270 (71.05%)	90 (23.70%)	13 (3.42%)	7 (1.84%)	0 (0%)	<b>380</b> <b>(100%)</b>
5.	Obsolete and non-functional transmission and distribution equipment caused power outage in Maiduguri	120 (31.59%)	62 (16.32%)	100 (26.3%)	55 (14.47%)	43 (11.3%)	<b>380</b> <b>(100%)</b>

## Field Survey 2022

Table 1 showed that 305 respondents corresponding (80.26%) strongly agreed that power outage in Maiduguri was caused by militants/ terrorist activities, 50 (13.16%) agreed, 20 (5.26) disagreed, 3 (0.79%) strongly disagreed that power outage in Maiduguri was caused by militants/ terrorist activities while 2 (0.53%) were undecided on the matter. This implies that power outage in Maiduguri was caused by militants/terrorists activities.

The second item in table 1 showed that 120 respondents equivalent to (31.58%) strongly agreed that wrong location of transmission lines was responsible for power in Maiduguri, 100 respondents corresponding to (26.32%) agreed to the submission, 70 (18.42%) respondents disagreed that wrong location of transmission lines was responsible for power in Maiduguri. However 55 (14.47%) and 35 (9.21%) strongly disagreed and were undecided respectively that wrong location of transmission lines was responsible for power in Maiduguri.

The third item in table 1 revealed that 65 respondents corresponding (17.11%) strongly agreed that power outage in Maiduguri was caused by fallen transmission towers due to rainfall and erosion, 70 respondents equivalent to (18.42%) agreed, while 89 respondents corresponding (23.42%) disagreed, 150 (39.47%) strongly disagreed that wrong

location of transmission lines was responsible for power in Maiduguri. However 6 correspondents (1.58%) were undecided. This implies that power outage in Maiduguri wasn't caused by fallen transmission lines due to rainfall and erosion.

The fourth item in table 1 showed 270 respondents corresponding (71.05%) strongly agreed that kidnappings of local and foreign experts contributed to power outage in Maiduguri, 90 (23.70%) agreed to the proposition, 13 correspondents corresponding(3.42%) disagreed and 7 (1.84%) strongly disagreed that kidnappings of local and foreign experts contributed to power outage in Maiduguri. This implies that kidnappings of local and foreign experts contributed to power outage in Maiduguri.

The Fifth item in table 1 presented that 120 corresponding amounting to (31.59%) strongly agreed that obsolete and non- functional transmission and distribution equipment caused power outage in Maiduguri, 62 (16.32%) agreed to this submission. Meanwhile 100 (26.31%) and 55(14.47%) correspondents disagreed and strongly disagreed respectively. However, 43(11.32%) correspondents were undecided. This implies that obsolete and non- functional transmission and distribution equipment caused power outage in Maiduguri.

**Table 2:** Effects of power outage on the people of Maiduguri

S/No	Statement	SA	A	D	SD	UD	Total
1.	Power outage constitutes a major challenge in standard of living of Maiduguri	214 (56.32%)	160 (42.11%)	5 (1.32%)	1 (0.26%)	0 (0%)	380 (100%)

Table 2: showed that 214 correspondents equivalent to (56.32%) strongly agreed that power outage constitute a major challenge in the standard of living of Maiduguri people.

<b>Regression</b>			
<b>Descriptive Statistics</b>			
	Mean	Std. Deviation	N
power outage in Maiduguri	1.6684	.80273	380
militants/ terrorist activities	.1605	1.59088	380
standard of living	1.5289	.60053	380

<b>Model Summary<sup>d</sup></b>										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate						Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.228 <sup>a</sup>	.052	.049	.78267	.052	20.677	1	378	.000	.124

a. Predictors: (Constant), Power outage in Maiduguri is caused by militants/ terrorist activities, Power outage constitutes a major challenge in standard of living of Maiduguri people

b. Dependent Variable: Factors behind power outage in Maiduguri

<b>ANOVA<sup>a</sup></b>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.667	1	12.667	20.677	.000 <sup>b</sup>
	Residual	231.555	378	.613		
	Total	244.221	379			

a. Dependent Variable: Factors behind power outage in Maiduguri

b. Predictors: (Constant), Power outage in Maiduguri is caused by militants/ terrorist activities, Power outage constitutes a major challenge in standard of living of Maiduguri people

SPSS analysis one found that  $X^2=0.52$  and F-calculated value of 20.67 was greater than table value at 0.05  $F_{3,78}= 2.72$  which was significant at 0.05 level of significance. Hence, “we reject” because the F-calculated value of 20.67 is greater than the critical table value- 2.72 the null hypothesis which states that “terrorist activities, militant are not behind power outage in Maiduguri”. This further shows that sufficient numbers of

factors like terrorist activities, militant and wrong location of power transmission lines and kidnappings of local and foreign experts, obsolete and non-functional transmission and distribution equipment caused power outage in Maiduguri.

## DISCUSSIONS

It was discovered by the study, that the power outage in Maiduguri was caused by factors which involved, terrorists/militant activities, wrong location of transmission lines, Obsolete and non-functional transmission and distribution equipment and the kidnappings of local and foreign experts.

On the effects power outages, it was unravelled that it constitutes a major challenge to the standard of living of Maiduguri people since electricity facilitates the storage of food items as well as powers electrical gadgets in homes thereby making life less stressful while adding value to leisure time. While its absence of electricity makes the refrigeration of food items and enjoyment of leisure time difficult therefore reducing their living standard as presented by (Jimenez, A. and Olson, K. 1998). Also, the study found out that power outage constitutes a major challenge to the health status of the people because it does not allow the safe preservation of vaccines and medications in community hospitals and health-centres. Clinics and health centres are known to function more effectively when electricity is available

The effect of power outage was also evidenced in the educational performance of the people as it discourages reading by students at night thereby increasing poor performances in examinations and promoting illiteracy among the populace. This is buttressed by (Barnes, Douglas F. 1988), (Brodman, Janice. 1982), (Foley, G.1990) and (Venkataraman, K. 1990) all of which held that electricity promotes literacy because students can read and study when there is no natural light.

Lastly, power outage poses a major challenge to the security of life and property of Maiduguri Metropolitan Council (MMC) because it encourages the perpetration of all sorts of crimes as people choose to do evil activities in darkness.

## CONCLUSION

Using the sample size of 380 aids the research to arrive at the conclusions that Power outage in Maiduguri was caused by Militants/terrorists activities. It was also caused by wrong location of transmission lines and power supply towers and that Maiduguri power outage was also caused by kidnappings of local and foreign experts related to power fields. Power outage in Maiduguri was caused obsolete and non-functional transmission and distribution equipment, Power outage constitutes a major challenge in the standard of living of Maiduguri people.

## RECOMMENDATION

based on the findings this study recommends that government should encourage the use of alternative sources of energy such as gas for cooking and heating in order to reduce the demand for electricity. This could be achieved if government partners with the private sector to make the products available. This study also recommends that Government should engage the Private sector operators in joint partnerships in order to stimulate and sustain necessary investment and make the power sector more efficient.

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