

Examining the Effects of Boko Haram Activities on the Livelihood of the Communities Within and Around Sambisa Forest of Nigeria

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abstract

This study examines the effects of the activities of Boko Haram on the livelihood of the communities within the Sambisa Forest of Nigeria. Both qualitative and quantitative research designs were adopted for this study. Primary and secondary data were employed in this study. The primary data includes data on the livelihood (economic, food, health, education, employment, water, sanitation among others) of the communities, and they were sourced with the aid of questionnaire. Secondary data include data on the population of the study area and other documented information on Sambisa Forest. This research made use of the multistage sampling techniques, involving three stages. Four hundred copies of questionnaires were administered to the Local Government Areas. The hypothesis that Boko Haram activities have no significant effects on the livelihood of the communities within the Sambisa Forest was tested, using the General Linear Model (multivariate analysis). The livelihood indices analysed include agricultural productivity before and during the emergence of Boko Haram, how often they go to farms and markets, sources of energy generation in the communities, job opportunities, their food intake, education as well as their income generation. Majority of the respondents (362 respondents representing 90.5%) noted that before the emergence of Boko Haram, agricultural productivity was very high. Furthermore, before the emergence of Boko Haram, there was enough job opportunities as noted by 313 respondents amounting to 78.3% of the total population sampled. The hypothesis that Boko Haram activities have no significant effects on the livelihood of the communities within the Sambisa Forest was tested using multivariate analysis and the result shows that truly, Boko Haram activities have serious effects on the livelihood of those communities ($F = 1.898, p < 0.05$).

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1. Introduction

Terrorism is a universal phenomenon that has extensive impact on the socioeconomic activities of any nation. Although Ukah et al. (2025) have asserted that terrorism is a more challenging concept to define. Terrorists' activities weaken state's ability to provide peace to its citizens. The damage of infrastructure is impulsive to an extent that billions of dollars are wasted in rebuilding structures (Matseketsa and Mapolisa, 2013). Terrorism overshadows every aspect of economic, social, cultural and political life. While it brings instability and disrupts peaceful coexistence, it directly also endangers the lives of people and brings varied types of violence in society. Terrorism destroys our sense of safety and normality and introduces new and often substantial stress and uncertainty in individuals and communities (Ursano et al., 2003). Durodie and Wainwright (2019) asserted that terror is a psychological state as it has to do with the mental factors governing terrorists' situation or activity.

Terrorism in Nigeria has been associated with the Boko Haram Islamic sect. In 2010, the first terrorist attack was carried out by the sect in Maiduguri, resulting in the death of four people. Several places in Borno, Yobe, Bauchi, Gombe and Adamawa States of Nigeria were bombed.

Waves of bombing began, with the suicide bomb attack of police headquarters in Abuja in August 2011 killing several police officers. Nnamdi et al. (2015) noted that in the north-eastern part of Nigeria, properties and lives have been damaged due to various activities of Boko Haram. Abubakar (2017) opined that within the last eight years of Boko Haram insurgency, its rampage across poverty-stricken north-eastern Nigeria has led to the displacement of several millions of civilians and thousands of casualties. The operation (such as bombing and suicide attacks among others) of the group has also resulted in the damage of private and public properties worth billions of naira and in some cases, the loss of lives. The activities of Boko Haram have seriously threatened national security and grossly affected socioeconomic activities in and around their areas of operation. UNHCR (2017) noted that the outbreak of the Boko Haram insurgency in 2009 has steadily become the single greatest cause of displacement in the Lake Chad Basin region, with over 2.3 million people becoming refugees, internally displaced people (IDPs) or returnees.

Environmentally, the ecosystem is affected directly by bombings and other toxic materials or gases. The people always pay suffer in the forms of killings, kidnapping, hostage-taking and the unleashing of violence such that their memories always bear traumatic and tormenting events. The persistent increase in the extent of the despicable activities of the sect in Northeastern Nigeria for over seven years has produced unpleasant humanitarian

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consequence to the region (Emmanuela, 2015). Businesses and life in the communities wrecked by the insurgency have been typically horrible and violent (Salkida, 2012). Shehu (2015) opined that violent attacks by Boko Haram have collapsed businesses, banking, tourism, transportation and investments in the affected region. The activities of the group have seriously disrupted agricultural production, the mainstay of the economy in the area. The drastic reduction in agricultural production has resulted in serious famine for millions of people in the violence-ravaged areas. Since the start of the terrorism, the north-eastern states have been completely denied civil normalcy as there are evidences of displacement in population, refugee catastrophe, inadequate medical facilities and the loss of livelihood. The sect usually carries out irregular hit-and-run attacks; and according to Nnamdi et al. (2015) the sect develops new brutal tactics of bombings, targeted shooting, ensnares and cutting throats of victims. The Islamic group usually attacks “security agents, Christians, traditional rulers, politicians, schoolchildren and teachers, Islamic scholars, public servants, traders and lately, anyone who is not a member” (Nnamdi et al., 2015). These operations resulting in mass deaths have assumed international outcry and condemnation.

Sambisa Forest is a vast location in Borno State. It is believed to be harbouring suspected members of Boko Haram Islamists sects. It was attacked in March 2014 leaving about 85 people dead, with properties worth millions of naira destroyed (Buhari and Soetan, 2018). When members of Boko Haram sect were dislodged by the Nigerian army and vigilante youths from Maiduguri, most of them moved to the Sambisa Forest, vandalised the game reserve, killed some of the workers and settled there. The objectives of this study include the assessment of agricultural productivity before and during the emergence of Boko Haram activities, the main source of energy generation in the communities, job opportunities before and during the era of Boko Haram, among others.

The area chosen for this study is justifiable because it is situated in the north-eastern part of Nigeria where the activities of Boko Haram have been on the increase for a decade. The Sambisa Forest is chosen or appropriate for this study because it is the only forest in Nigeria where Boko Haram activities, operations and plans are carried out. The unsafe nature of the region has had significant effects on the environmental and socioeconomic activities in the region. Secondly, this study deals with a topical issue that is of global concern. Terrorism is regarded as a global threat to peace and tranquility. Studies that empirically examine the effect of the activities of Boko Haram on the livelihood of the communities within and around Sambisa Forest of Nigeria are not handy. Hence, studies are required to examine how the operation of the deadly Islamic sect has impacted on the socioeconomic environment of the Sambisa Forest.

Materials and Methods

The study area

The Borno State is found or located in the North-Eastern part of Nigeria. The present Borno State is historically linked to an old caliphate which at one point in pre-colonial history was part of the famous Kanem-Bornu Empire. Borno State is made up of twenty-seven (27) Local Government Areas. The state is situated within the semi-arid zone of West Africa. It is located between latitude 10°0'13.473" N and 13°44'40.23" N and longitude 11°26'20.555" E and 14°34'11.581" E (Akawu et al., 2018) and at an elevation of 354m above sea level. It has total area of 72,609 km² (Land Survey department, Maiduguri). Borno State share borders with Adamawa State to the South, Gombe State to the West, Yobe State to the North-west, Republic of Cameroon to the East, Republic of Niger to the North and Chad Republic to the North-east (Liba et al., 2017). The Sambisa Forest is located at the north-eastern tip of the west Sudanian Savanna and the southern

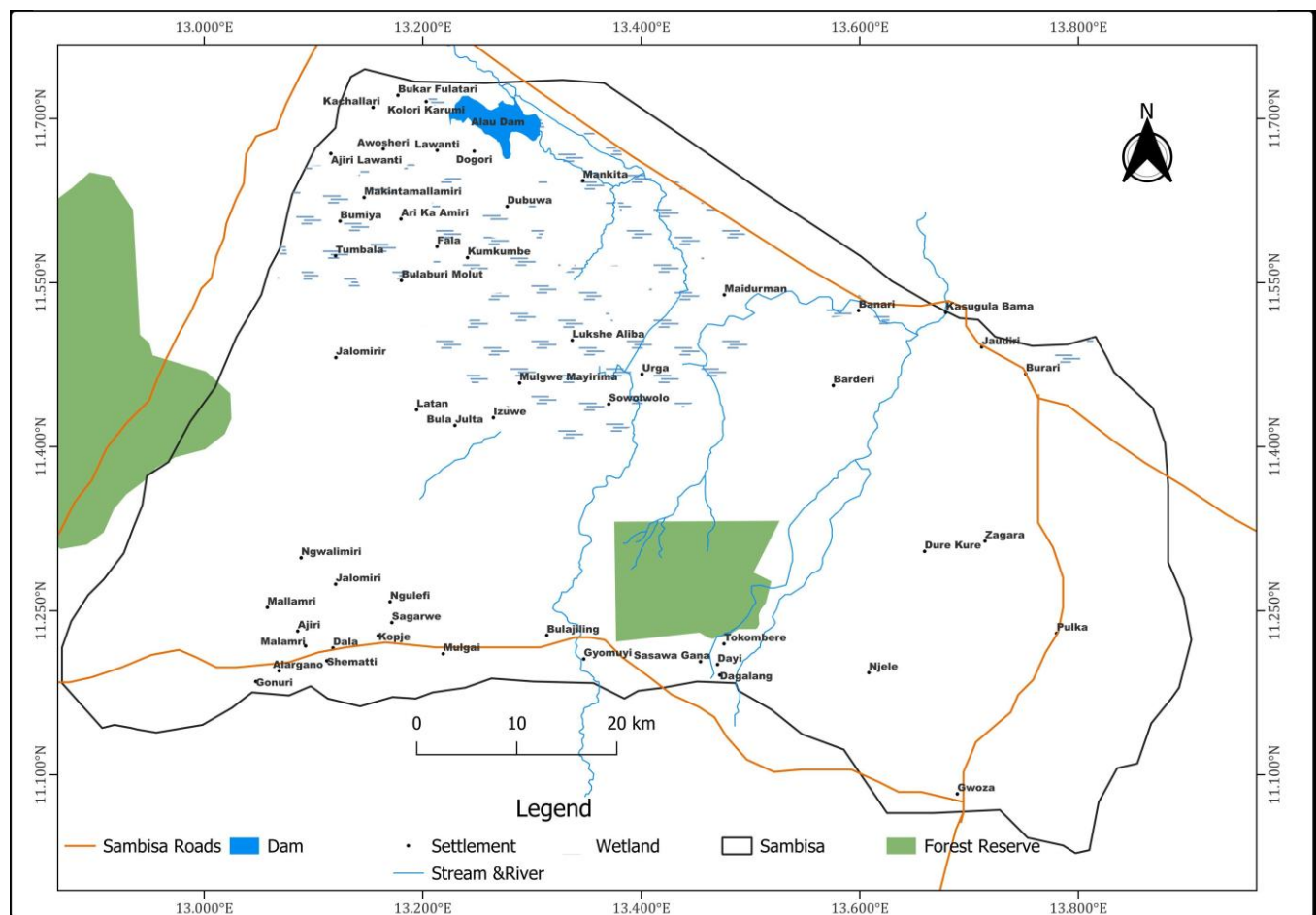


Fig 1 Map of Sambisa Forest and adjoining settlements
Source: Authors' construct, 2022

boundary of the Sahel Acacia Savanna about 60 km south east of Maiduguri, the capital of the state of Borno. It covers an area of 474km² (Fig 1). It is administered by the Local government areas of Askira/Uba in the south, by Damboa in the southwest, and by Konduga and Jere in the west. The name of the forest comes from the village of Sambisa which is on the border with Gwoza in the East. The Gwoza hills in the East have peaks of 1,300 meters above sea level and form part of the Mandara Mountains range along the Cameroon-Nigeria border.

The Sambisa village by the reserve has ethnic groups like the Gamarabu, Marghi also found in Gwoza and the Fulani who use the area as a grazing reserve. Askira Uba, is one of the LGAs bordering Sambisa Forest. It is one of the areas where the Christian Missionaries settled in Northern Nigeria (Borno State Government, 2016). The economy of Askira/Uba comprised of subsistence farming, transhumance and small trade. It is dominated by mostly the Chibok (Kibaku) and Marghi tribes, although different dialects and some Fulani in the upland areas. It is one of the settlement areas of the Christian Missionaries in Northern Nigeria (UN, 2017). The economy of Jere includes trade, rice growing, small agriculture and animal husbandry. Maiduguri on the same hand, is home to three markets which include an ultra-modern “Modern market” that has a spectacular satellite image view. There is an ancient museum, and the city is served by the Maiduguri International Airport. The city has one of the best layouts in Nigeria. The values of land and properties are high. A 2009 survey of property markets in Nigeria positioned Maiduguri as the third most expensive for buying and renting in after Abuja and Lagos. Maiduguri is the principal trading hub for north-eastern Nigeria. Its economy is predominantly service- and trade-oriented, with manufacturing accounting for only a modest share of output and employment. The city lies at the end of a railway line connecting Port Harcourt, Enugu, Kafanchan, Kuru, Bauchi and finally Maiduguri (UN, 2017).

Vegetables such as spinach, onions and tomatoes are equally common in the study area while grains such as wheat, sorghum, rice and millet are also present in the place. There are also root crops and nuts which are grown by the indigenes and taken to Maiduguri and Banki in Cameroon. These include groundnuts, cow peas, sweet potatoes and cassava. For the area around Jere Local Government Area, they equally farm Irish potatoes which a common delicacy in Borno even in the markets of the insurgents in the Sambisa. Gum Arabic which is grown all over the savannah is equally very common in Sambisa. It has become a major crop grown by the people along the corridor (Kayode, 2014). They live a lot on fruits and stem crops such as sugar cane and date palms which are very common in the Sambisa Forest. Date palm, called ‘debino’ in Hausa, is served to new Boko Haram initiates who agree to join the sect to fight propagators of Western education (Kayode, 2014).

Methods

Both qualitative and quantitative research designs were adopted for this study. The qualitative research provided insight and understanding of the problem setting, while the quantitative research sought to quantify the data and typically applied some form of statistical analysis. Primary and secondary data were employed in this study. The primary data included data on the livelihood (economic, food, health, education, employment, water, sanitation amongst others) of the communities, and they were sourced with the aid of questionnaire administration. The secondary data included data on the population of the study area and other documented information on Sambisa Forest.

Population of the study area

The Sambisa Forest spreads over four Local Government Areas namely; Askira/Uba, Damboa, Konduga and Jere out of which only two were accessible and were used for the study. The population of the study area comprised of two (2) Local Government Areas namely; Askira/Uba and Jere. Askira/Uba was chosen because it bounded Sambisa Forest in the south while Jere in the West. The population of Askira/Uba and Jere are 201,300 and 293,800 respectively (NBS, 2018 population projection).

Sample size and sampling procedure

The population of this study is a finite one; hence, the application of statistical formula becomes imperative in determining the sample size. The Taro Yamene (1967 as cited in Ukah and Ejaro, 2019) formula was employed to determine the sample size. This is mathematically represented as;

$$n = \frac{N}{1 + N(e)^2}$$

Where;

n = Sample size

N = Population of the study

e = Tolerable error (5% i.e. 0.05)

With the use of the above formula therefore, the sample size of the two Local Government Areas was 400. This value simply means that 400 persons in the two Local Government Areas were sampled or given questionnaire copies.

Table 1 No of questionnaire copies administered per Local Government Area

Local Government Areas	Population	No. of Questionnaire Administered in Relation to Population
Askira/Uba	201,300	201,300/495,000*400 = 163
Jere	293,800	237
Total	495,000	400

From Table 1, 163 copies of questionnaires were administered in Askira/Uba Local Government Area while 237 copies were administered in Jere Local Government Area.

This research used the multistage sampling techniques involving three stages. The first stage utilized the stratified sampling technique in which the area of study has already been stratified into different wards for easy administration. In the second stage of sampling, the use of random sampling was involved to select five wards from each of the Local Government Area using Table of Random Numbers (Askira/Uba has thirteen wards while Jere has 12 wards). The reason for choosing random sampling here was to allow all the units to have an equal chance of being selected. This was done by assigning the values 01 to 13 and 01 to 12, from which five wards were selected from each of the Local Government Areas. The final stage also involved the use of random sampling to administer copies of the questionnaire to the respondents.

The questionnaire was divided into sections and each section addressed specific items in line with the study’s objectives. The questionnaire has two sections (Section A and B). Section A has questions on the socio demographic characteristics of the people in the study area while Section B has questions on the livelihood of the communities living within and around the Sambisa Forest. During the questionnaire survey, the confidentiality of the respondents was guaranteed. The questionnaire administration was carried out within the period of three to five days. As such, random sampling was employed to sample the respondents. The copies of the questionnaire were administered to the respondents by well-trained enumerators who interpreted to them.

Qualitative and quantitative techniques of data analysis were employed to accomplish both descriptive and inferential analysis. This study made use of tables, simple percentages, averages and multivariate analysis. The hypothesis which states that Boko Haram activities have no significant effects on the livelihood of the communities within and around the Sambisa Forest was tested using the General Linear Model (multivariate analysis). Multivariate analysis was used to predict two or more dependent variables from two or more independent variables. Statistical analyses were carried out using Statistical Packages for the Social Sciences (SPSS) and Microsoft Excel Spreadsheet.

Table 2 Socio-demographic data of respondents

Socio demographic data	Frequency	Percentage	Valid percentage	Cumulative percentage
Sex				
Male	109	27.2	27.2	27.2
Female	291	72.8	72.8	100.0
Total	400	100.0	100.0	
Age				
<18 years	11	2.8	2.8	2.8
18 – 27 years	35	8.8	8.8	11.5
28 – 37 years	67	16.8	16.8	28.2
38 – 47 years	101	25.2	25.2	53.5
>48 years	186	46.5	46.5	100.0
Total	400	100.0	100.0	
Educational status				
No formal education	152	38.0	38.0	38.0
Primary education	111	27.8	27.8	65.8
Secondary education	97	24.2	24.2	90.0
OND/HND/BSc	34	8.5	8.5	98.5
MSc/PhD	6	1.5	1.5	100.0
Total	400	100.0	100.0	
Occupation				
Farming	202	50.5	50.5	50.5
Trading	117	29.2	29.2	79.8
Civil servant	48	12.0	12.0	91.8
Artisan	21	5.2	5.2	97.0
Others	12	3.0	3.0	100.0
Total	400	100.0	100.0	
Length of stay in the community				
<10 years	26	6.5	6.5	6.5
10 – 20 years	39	9.8	9.8	16.2
21 – 30 years	114	28.5	28.5	44.8
31 – 40 years	187	46.8	46.8	91.5
>41 years	34	8.5	8.5	100.0
Total	400	100.0	100.0	

Source: Author's fieldwork, 2021

Results and Discussion

Socio-demographic profile of the respondents

The socio-demographic profile of the respondents examined are sex, age, educational status, occupation and the length of their stay in communities. These socio-demographic characteristics give vital information concerning the people in terms of their level of knowledge concerning Boko Haram activities and their effects in the communities (Table 2).

Sex of the respondents

The results in Table 2 reveal that majority of the respondents were females as represented by 72.8% of the total population sampled while 109 representing 27.2% of the respondents were males. This is interpreted to mean that there are more females than the males in the study area and it could be attributed to the fact that most of the men have either left the communities or have been converted to Boko Haram members as suggested by a native of one of the communities.

Age of the respondents

Age is another socio-demographic characteristic that gives vital information concerning individuals and this could have influence on their behaviour and decisions they make. Table 2 shows that 11 respondents representing 2.8% of the total population were below the age of 18 years, 35 respondents representing 8.8% of the sampled population were between the age of 18 – 27 years, 67 respondents representing 16.8% were between the age of 28 – 37 years, 101 respondents representing 25.2% were between the age of 38 – 47 years while 186 respondents representing 46.5% of the total population were

between the age of 48 years and above. The implication of this result is that most of the people sampled were adults who have witnessed or must have experienced the activities of Boko Haram and its effects on socioeconomic livelihood of the communities as well as the fauna and flora composition of the study area.

The educational status of the respondents

The educational qualification of the respondents varies and ranges from no formal education to tertiary education. From Table 2, the result indicated that 152 respondents representing 38.0% of the total population had no formal education, 111 respondents representing 27.8% had primary education, 97 respondents representing 24.2% had secondary education, 34 respondents representing 8.5% had OND/HND/BSc while 6 respondents representing 1.5% of the total population had MSc/PhD. It can be deduced that the population of the study area are rural people who care less about their level of education thereby having majority of the people without formal education followed by those with primary school and then secondary school.

Occupation of the respondents

The results presented in Table 2 show that 202 respondents representing 50.5% of the total population sampled were farmers, 117 respondents representing 29.2% were traders, 48 of the respondents representing 12.0% were civil servants, 21 respondents representing 5.2% were artisans while 12 respondents representing 3.0% of the total population engaged in a form of work or the other. This depicts that the area under study is a rural area and as such the people engage more in primary economic activities mainly farming.

Length of stay of the respondents in the communities

Table 2 shows the length or duration the respondents have stayed or lived in the communities. From the result, 26 respondents representing 6.5% of the total population indicated that they have lived in the communities for less than 10 years, 39 respondents representing 9.8% opined that they stayed between 10 – 20 years, 114 of the respondents representing 28.5% noted that they have stayed for 21 – 30 years, 187 respondents representing 46.8 respondents stated that they have stayed for 31 – 40 years while 34 respondents representing 8.5% of the total population were of the opinion that they have lived in the communities for more than 41 years. This implies that majority of the population have stayed or lived in the communities for so long and therefore must be knowledgeable enough to know when there are changes in their communities and the resultant cause and effects.

The livelihood of the communities living within and around Sambisa Forest

This subsection examines the livelihood of the communities living within and around the Sambisa Forest before and during the emergence of Boko Haram.

Agricultural productivity before the emergence of Boko Haram

Agricultural productivity is a major livelihood indicator. This subsection is a description of the living condition of the area before and during the emergence of Boko Haram activities.

Table 3 Level of agricultural productivity before the emergence of Boko Haram

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Very high	254	63.5	63.5	63.5
High	108	27.0	27.0	90.5
Low	28	7.0	7.0	97.5
Very low	10	2.5	2.5	100.0
Total	400	100.0	100.0	

The results that I present in Table 3 reveal that 254 respondents representing 63.5% of the respondents agreed that the agricultural productivity in their communities before the emergence of Boko Haram was very high, 108 respondents representing 27.0% stated that the agricultural productivity was high, 28 respondents representing 7.0% believed that agricultural productivity was low while 10 respondents representing 2.5% were of the opinion that the agricultural activity before the emergence of Boko Haram was very low. This implies that the livelihood condition in terms of agricultural productivity was good before the emergence of Boko Haram.

Agricultural productivity during the era of Boko Haram

Table 4 Level of agricultural productivity during this era of Boko Haram

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid High	35	8.8	8.8	8.8
Low	116	29.0	29.0	37.8
Very low	249	62.2	62.2	100.0
Total	400	100.0	100.0	

Limitation of going to farms and markets due to Boko Haram

The people were asked if Boko Haram activities have limited them from going to their farms and markets.

From Table 5, 332 respondents representing 83.0% of the total population stated that Boko Haram activities have limited them from going to the farms and markets, 47 respondents representing 11.8% noted that Boko Haram activities have not limited them from going to their farms and markets while 21 respondents representing 5.2% indicated that they were not sure that Boko Haram activities have limited them from going to the farms and markets.

Table 5 Boko Haram activities have limited the people from going to farms and markets

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	332	83.0	83.0	83.0
No	47	11.8	11.8	94.8
Not sure	21	5.2	5.2	100.0
Total	400	100.0	100.0	

The main source of energy generation in the communities

The main source of energy generation in the communities was also analysed.

Table 6 The main source of energy generation in the communities

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Fuelwood	357	89.2	89.2	89.2
Gas	12	3.0	3.0	92.2
Kerosene	26	6.5	6.5	98.8
Others	5	1.2	1.2	100.0
Total	400	100.0	100.0	

Regarding the main source of energy generation in the communities, Table 6 shows that 357 respondents representing 89.2% of the total population sampled argued that their main source of energy was fuelwood, 12 respondents representing 3.0% indicated gas, 26 respondents representing 6.5% indicated kerosene while 5 respondents representing 1.2% noted that other sources of energy generation were used in the communities.

The source of fuelwood for energy generation

Table 7 looked at the source of fuelwood in the study area.

Table 7 Source of fuelwood for energy

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Sambisa Forest	188	47.0	47.0	47.0
Not from Sambisa Forest	46	11.5	11.5	58.5
Not always	166	41.5	41.5	100.0
Total	400	100.0	100.0	

Table 7 was to determine the source of fuelwood from respondents whose main source of energy is fuelwood indicated in Table 5.5. 188 respondents representing 47.0% of the total population sampled opined that they source the fuelwood from the Sambisa Forest, 46 respondents representing 11.5% noted that they do not source the fuelwood from the Sambisa Forest while 166 respondents representing 41.5% of the total population sampled were of the opinion that they do not always source the fuelwood from the Sambisa Forest. In a nutshell, majority of the respondents source their fuelwood from the Sambisa Forest.

Effect of Boko Haram activities on the sourcing of fuelwood

The results as shown in Table 8 revealed that 248 respondents representing 62.0% agreed that Boko Haram activities have affected the sourcing of fuelwood from Sambisa Forest, 19 respondents representing 4.8% noted that the activities have not affected the sourcing while 133 respondents representing 33.2% indicated that Boko Haram activities have not really affected the sourcing of fuelwood from the Sambisa Forest.

Table 8 Boko Haram activities have affected the sourcing

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	248	62.0	62.0	62.0
No	19	4.8	4.8	66.8
Not really	133	33.2	33.2	100.0
Total	400	100.0	100.0	

Job opportunities before the emergence of Boko Haram

The results presented in Table 9 indicate that the level of job opportunities before the emergence of Boko Haram.

Table 9 Job opportunity before the emergence of Boko Haram

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Very high	203	50.8	50.8	50.8
High	110	27.5	27.5	78.2
Low	77	19.2	19.2	97.5
Very low	10	2.5	2.5	100.0
Total	400	100.0	100.0	

From the analysis, 203 respondents representing 50.8% of the total population agreed that the level of job opportunities before the emergence of Boko Haram were very high, 110 respondents representing 27.5% believed that job opportunities were high, 77 respondents representing 19.2% opined that they were low while 10 respondents representing 2.5% of the total population opined that the level of job opportunities before the emergence of Boko Haram was very low. Some of the local job opportunities include security jobs, labouring jobs, sales personnel, among others.

The level of job opportunities during this era of Boko Haram

Table 10 Job opportunity during this era of Boko Haram

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Very high	11	2.8	2.8	2.8
High	19	4.8	4.8	7.5
Low	189	47.2	47.2	54.8
Very low	181	45.2	45.2	100.0
Total	400	100.0	100.0	

Table 10 shows the level of job opportunities during this era of Boko Haram, 11 respondents representing 2.8% of the total population stated that the level of job opportunities during this era of Boko Haram was very high, 19 respondents representing 4.8% believed it was high, 189 respondents representing 47.2% agreed that it was low while 181 respondents representing 45.2% accepted that it was very low as compared with before the emergence of Boko Haram.

Number of square meals per day before the emergence of Boko Haram

Table 11 assessed the number of square meals per day before the emergence of Boko Haram in the study area.

Table 11 Number of square meals a day before the emergence of Boko Haram

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Not sure	13	3.2	3.2	3.2
1 – 2	101	25.2	25.2	28.5
3 – 4	246	61.5	61.5	90.0
5 and above	40	10.0	10.0	100.0
Total	400	100.0	100.0	

Regarding the number of square meals per day the respondents take before the emergence of Boko Haram, 13 respondents representing 3.2% of the total population believed that they hardly eat in a day, 101 respondents representing 25.2% stated that they eat 1 – 2 square meals per day, 246 respondents representing 61.5% opined that they eat 3 – 4 square meals per day while 40 respondents representing 10.0% of the total population sampled were of the opinion that they take more than 5 square meals per day.

Number of square meals per day during this era of Boko Haram

Table 12 depicts the number of square meals per day the respondents take during this era of Boko Haram.

Table 12 Number of square meals a day during this era of Boko Haram

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Not sure	129	32.2	32.2	32.2
1 – 2	199	49.8	49.8	82.0
3 – 4	72	18.0	18.0	100.0
5 and above	0	0	0	
Total	400	100.0	100.0	

It is revealed that 129 respondents representing 32.2% of the total population sampled agreed that they hardly eat during this era of Boko Haram, 199 respondents representing 49.8% stated that they eat 1 – 2 square meals per day, 72 respondents representing 18.0% of the total population sampled were of the opinion that they take 3 – 4 square meals per day while none of the respondents indicated that he/she takes up to 5 square meals per day.

Boko Haram activities and education

Education is one of the key aspects of the economy and as such, it was also analyzed.

Table 13 Boko Haram activities have affected education in the communities

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	312	78.0	78.0	78.0
No	88	22.0	22.0	100.0
Total	400	100.0	100.0	

From Table 13, 312 respondents representing 78.0% of the total population sampled noted categorically that Boko Haram activities have seriously affected them and their children's education while 88 respondents representing 22.0% opined that Boko Haram activities have not affected them and their children's education in any way.

Income generation before the emergence of Boko Haram

Income generation before the emergence of Boko Haram activities was assessed.

Table 14 Level of monthly income generation before the emergence of Boko Haram

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Very high	206	51.5	51.5	51.5
High	116	29.0	29.0	80.5
Low	63	15.8	15.8	96.2
Very low	15	3.8	3.8	100.0
Total	400	100.0	100.0	

From Table 14, 206 respondents representing 51.5% of the total population sampled opined that their monthly income generation before the emergence of Boko Haram was very high, 116 respondents representing 29.0% indicated that their income generation was high, 63 respondents representing 15.8% stated that it was low while 15 respondents noted that their monthly income generation before the emergence of Boko Haram was very low.

Income generation during this era of Boko Haram

The results outlined in Table 15 revealed that 33 respondents representing 8.2% of the total population opined that their monthly income during this period of Boko Haram was high, 123 respondents representing 30.8% stated that it was low, 244 respondents representing 61.0% noted that it was very low while none of the respondents accepted that their monthly income during this era of Boko Haram was very high.

Table 15 Level of monthly income during this era of Boko Haram

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid High	33	8.2	8.2	8.2
Low	123	30.8	30.8	39.0
Very low	244	61.0	61.0	100.0
Total	400	100.0	100.0	

Test of hypothesis

Hypothesis one: The first hypothesis which states that Boko Haram activities have no significant effects on the livelihood of the communities within and around the Sambisa Forest was tested using multivariate analysis.

Table 16 Between-Subjects Factors

	Value Label	N
Have Boko Haram activities limited 1	Yes	332
you from going to your farms and 2	No	47
3	Not sure	21
Have Boko Haram activities affected 1	Yes	312
you or your children's education? 2		88

Table 17: Multivariate Tests^c

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.982	1.898E3 ^a	11.000	386.000	.000
	Wilks' Lambda	.018	1.898E3 ^a	11.000	386.000	.000
	Hotelling's Trace	54.092	1.898E3 ^a	11.000	386.000	.000
	Roy's Largest Root	54.092	1.898E3 ^a	11.000	386.000	.000
VAR00008	Pillai's Trace	.986	34.242	22.000	774.000	.000
	Wilks' Lambda	.202	43.025 ^a	22.000	772.000	.000
	Hotelling's Trace	3.023	52.895	22.000	770.000	.000
	Roy's Largest Root	2.674	94.063 ^b	11.000	387.000	.000
VAR00016	Pillai's Trace	.616	56.206 ^a	11.000	386.000	.000
	Wilks' Lambda	.384	56.206 ^a	11.000	386.000	.000
	Hotelling's Trace	1.602	56.206 ^a	11.000	386.000	.000
	Roy's Largest Root	1.602	56.206 ^a	11.000	386.000	.000
VAR00008 * VAR00016	Pillai's Trace	.000	. ^a	.000	.000	.
	Wilks' Lambda	1.000	. ^a	.000	391.000	.
	Hotelling's Trace	.000	. ^a	.000	2.000	.
	Roy's Largest Root	.000	.000 ^a	11.000	385.000	1.000

a. Exact statistic

b. The statistic is an upper bound on F that yields a lower bound on the significance level.

c. Design: Intercept + VAR00008 + VAR00016 + VAR00008 * VAR00016

From the analysis, Table 16 shows the result of Between Subjects Factors while the results in Table 17 is the main multivariate analytical result. From the result, $F(11, 386) = 1.898, p < 0.05$ significance level. This implies that the null hypothesis which states that Boko Haram activities have no significant effects on the livelihood of the communities within and around the Sambisa Forest is rejected and the alternative hypothesis accepted. The implication of this result is that Boko Haram activities have serious significant effects on the livelihood of the communities within and around the Sambisa Forest.

Discussion of major findings

The livelihood of the communities living within and around Sambisa Forest before and during this emergence of Boko Haram were examined. The livelihood indices analysed include agricultural productivity before and during the emergence of Boko Haram, how often they go to farms and markets, sources of energy generation in the communities, job opportunities, their food intake, education as well as their income generation. Ukah and Ejaro (2019) opined that the most important occupation of the people in the North-eastern part of this country was farming/rearing and farming/hunting as attested by 86.4% of the people in their study. Majority of the respondents (362 respondents representing 90.5%) noted that before the emergence of Boko Haram their agricultural productivity was booming while 38 respondents representing 9.5% of the total population argued that their agricultural productivity before the emergence of Boko Haram was poor. The implication of this finding is that the communities within and around the Sambisa Forest were producing very high quantity of agricultural products before the emergence of Boko Haram as a result of the safe nature of the area that period. The communities are rural communities and as such engage more in primary economic activities like farming as could be seen in Table 2. During this era of Boko Haram, 35 respondents representing 8.8% of the total population sampled agreed that agricultural productivity is still perfect while significant number of the respondents (365 persons representing 91.2%) lamented that the agricultural productivity is extremely bad. During this era of Boko Haram, agricultural productivity dropped drastically as a result of insecurity. Farmers are engulfed with the fear of the unknown due to Boko Haram activities, and this has seriously affected the agricultural productivity in the area. One of the respondents lamented on the incessant killings of farmers in their farms by Boko Haram members. This finding is in consonance with the work of Buhari and Soetan (2018) that everyone especially in the Northern part of Nigeria is living in perpetual fear of bomb blast and kidnapping and many people suffer immeasurable trauma from psychological instability. Mbaya et al. (2017) also noted that verse irrigation lands were abandoned around the river Alau dam for more than 6 years and the fishing activities of the inhabitants of the settlements around the Alau dam were seriously affected. There were other settlements where fertile agricultural lands were abandoned for years rendering the inhabitants jobless.

Similarly, 332 persons amounting to 83.0% complained that Boko Haram activities have limited them from going to their farms and markets while 68 persons amounting to 17% of the total population were indifferent. It can be deduced from this analysis, that Boko Haram activities have seriously limited the communities from going to their farms and markets. This also contributed to the low agricultural productivity in the study area. Awojobi (2014) confirmed that churches, schools, markets, clinics and mosques are potential targets of Boko Haram. He also noted that the markets have become deserted. This finding is in harmony with that of Sajo (2018) who also claims there is a reduction of goods in the market as a result of the Boko Haram insurgency. Additionally, the work of Mbaya et al. (2017) stated that many businesses have reportedly crumbled and many people have fled Borno State to southern part of the country. They went further to report that the Monday market in the city is reported to have been seriously affected as hundreds of shop owners especially the southerners are said to have closed their businesses and have left the trouble city.

On the issue of energy generation in the communities, majority of the respondents (357 persons amounting to 89.2%) indicated that fuelwood was their main source of energy generation while 43 persons amounting to 10.7% were of the opinion that they make use of gas, kerosene and other sources. On

the same hand, 188 persons amounting to 47.0% noted that they source their fuelwood from the Sambisa Forest, 46 individuals amounting to 11.5% accepted that they do not source their fuelwood from the Sambisa Forest while 166 persons amounting to 41.5% of the total population sampled were of the opinion that they do not always source their fuelwood from the Sambisa Forest. In addition, majority of the respondents 248 representing 62.0% noted that Boko Haram activities have seriously affected the energy generation in the communities, 19 persons amounting to 4.8% argued that the activities have never in any way affected their energy sourcing while 133 persons representing 33.2% of the total population opined that Boko Haram activities have not really affected the sourcing of energy in the communities. Furthermore, before the emergence of Boko Haram, there was an abundance of job opportunities as noted by 313 respondents amounting to 78.3% of the total population sampled, only 87 respondents representing 21.7% of the respondent argued that job opportunities were poor. While during this era of Boko Haram, 30 respondents amounting to 7.6% of the total population sampled agreed that job opportunities were good. 370 persons representing 92.5% stated that job opportunities were drastically low during this period of Boko Haram. This finding is in consonance with the findings of Ukah and Ejaro (2019) who stated that 65% of their respondents were of the opinion that since the emergence of Boko Haram insurgency, many of their youths have been relieved of their duties (jobs) in Yankari Game Reserve and other places.

With respect to the number of meals taken by respondents per day before the emergence of Boko Haram, significant number of the respondents, 246 amounting to 61.5% opined that they take 3 – 4 square meals a day, 101 persons amounting to 25.2% agreed that they take 1 – 2 square meals per day, 40 respondents stated that they take more than 5 square meals per day while 13 persons indicated that they do not always eat in a day. When compared with during this era of Boko Haram, majority of the people 199 representing 49.8% agreed that they eat 1 – 2 square meals per day, 72 persons representing 18.0% noted that they eat 3 – 4 square meals per day, 129 respondents representing 32.2% were of the opinion that they do not always eat in a day while nobody indicated that he/she eats more than 5 times in a day. This is a pure indication that Boko Haram activities have seriously caused mayhem in the communities as lamented by the people. They complained that there is hunger in the communities, that even the little they were managing now were given to them by the humanitarian agencies. In the same vein, most of the people sampled 312 amounting to 78.0% noted that Boko Haram activities have seriously affected theirs and their children's education while 88 persons amounting to 22.0% stated otherwise. This implies that the educational level of the communities has witnessed drastic reduction. This finding is in accordance with the findings of Mbaya et al. (2017) that the constant threat posed by the insurgents has led to a number of schools being closed down. In some cases, school enrolment dropped drastically. Whoever survived Boko Haram attack will not like to go back to school considering the fact that other students had lost their lives and number of classmates kidnapped at government girls' secondary school, Chibok. In addition, lecturers and teachers were also killed during these attacks. On the basics of monthly income generation before the emergence of Boko Haram, 322 respondents representing 80.5% of the total population sampled opined that their monthly income generation was very commendable while 78 persons representing 19.6% disagreed. 33 persons amounting to 8.2% of the people sampled indicated that their monthly income generation during this era of Boko Haram was high while most of the respondents, 367 persons amounting to 91.8% lamented that their monthly income generation was nothing to write home about. This shows that Boko Haram activities have direct effect on the monthly income generation of the communities.

The hypothesis which states that Boko Haram activities have no significant effects on the livelihood of the communities within and around the Sambisa Forest was tested using multivariate analysis and the result shows that truly, Boko Haram activities have serious significant effects on the livelihood of those communities ($F = 1.898, p < 0.05$). It has been observed that the incessant bombings and gun attacks in the Northern parts of Nigeria by the Boko Haram fundamentalists, have seriously affected the economic lives of individuals in the areas. Similarly, It was reported over the radio that Boko Haram invaded a

commercial town (Baga) in Borno State in 2014, killed hundreds of business men who engaged in fish business. Also, the result of Ukah and Ejaro (2019) indicated that Boko Haram activities have considerable effects on the livelihood of adjoining communities of Yankari Game Reserve.

Conclusion

The study has shown that Boko Haram activities have effects on the livelihoods of the communities living within and around the Sambisa Forest of Nigeria. 400 copies of questionnaire were purposively distributed to the respondents in order to evaluate the livelihood of the communities living within and around the Sambisa Forest. The hypothesis that Boko Haram activities have no significant effects on the livelihood of the communities within and around the Sambisa Forest was tested using multivariate analysis and the result shows that truly, Boko Haram activities have serious significant effects on the livelihood of those communities ($F = 1.898, p < 0.05$).

Recommendations

The study made the following recommendations

- i. The federal, state and local governments should make it a point of duty to assist the locals with intervention aid and modern appliances

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such as cooking gasses, etc. which will in turn regulate human interferences with the forest or subsidise alternatives to fuelwood for energy.

- ii. This study is not in totality suggesting that military should be mounted permanently within and around the Sambisa Forest, but the physical presence of the military within and around the Sambisa Forest during this period would help in regulating other anthropogenic activities of the locals in the area thereby assisting in the preservation of the forest.
- iii. The government, NGOs, as well as good spirited individuals should organize empowerment trainings and workshops for the locals on how to be self-employed rather than depending solely on the government.
- iv. Since agriculture is the main economic activity in the study area, the farmers should be provided with agricultural facilities such as farming inputs, improved seedlings, among others.

Declaration

The authors have no competing interests to declare that are relevant to the content of this article.

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