
Appraisal of Fuel Wood Consumption Trend in Jere Local Government Area, Borno State, Nigeria

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Abstract

This paper was carried out to assess the fuel wood consumption trend in Jere Local Government Area of Borno State Nigeria. Data of the research were collected through a survey and the used of structured questionnaire that was administered to 160 respondents randomly. Four out of twelve districts were randomly selected. Out of the selected districts, 40 respondents were randomly selected based on gender. From each area 10 men and 30 women were purposively interviewed using structured and open ended questionnaires. Data collected were analyzed using descriptive statistics (frequency and percentages). From the analyzed data, 70% of the respondents obtained their fuel wood from market and 56.9% consumed 3-4 bundle of fuel wood every day, moreover, 70.6% of the respondents spent N100-200 for cooking per day. Majority (75.6%) of the respondents indicated that forest provides fuel wood. However it was evident from the research that, our

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forest is always depleting as a result of overharvesting and pressure mantled by the respondent is search of fuel wood and charcoal and therefore recommends the establishment of community forest and plantation by the community members so as to prevent the depletion of the forest. The government and policy makers should also provide alternative sources of energy in cheap way to the populace.

Introduction

The forest provide the vital source of energy to both rural and urban dwellers in developing countries i.e. fuel wood. Fuel wood form about 80% of the total wood required and more than 60% of the total energy consumed in tropical Africa (Ogunsanye and Ajala, 2002). It occupies a unique position in rural energy systems due to the fact, it accounts for most of domestic energy consumption, and it is produced within the system itself (F.A.O, 2012).

It was noticed that among all the tree products, fuel wood is the mostly utilized in Nigeria (Ebe, 2006; Onoja and Emodi, 2012). Rural populace traditionally depends on their forest and various food products, fuel wood and (NFTPs), both for their own consumption and for scales to the urban sector. According to Abdullahi *et al.*, (2018) over 70% of the total population of Nigeria relies on fuel wood or charcoal as their major source of energy for cooking and heating purposes. The international food policy research institute (IFPRI) indicated that about 50% of Nigerians total energy consumed for Agriculture and other domestics food processing activities came from fuel wood. This observation was buttressed by another data published by the solar cooking Archive (2011) which shows the estimate of Nigeria fuel wood consumption as percentage of energy at about 87 percent.

Despite the significance of fuel wood in both rural and urban household in Nigeria, it is surprising to observe that not much research has been carried out to verify the supply determinant and other aspect of fuel wood consumption in Nigeria especially in the present study area. Most of the researcher's do not attempt to uncover the determinant of fuel wood and consumption trend in the state. This study therefore makes a bold attempt at closing the research gap.

Jere is an urban area with reduced vegetation, hence reduced fuel wood sources compare to the rural area surrounding it that has forest resources. The area has higher population due to present of refugees compare to the surrounding rural areas and population size determines the number of households and consequently demand for energy in the area. It is therefore assumed the utilization of fuel wood will differ over space. The aim of this research is to determine the trend of fuel wood consumption in the area with a view to find out where there is variation in the level of fuel wood consumption in the area.

MATERIALS AND METHODS

Study Area

Jere lies within latitude $11^{\circ}40'$ and $12^{\circ}05'N$ and longitude $13^{\circ}50'$ and $12^{\circ}20'E$ (Tijjani *et al.*, 2010). The area falls within the sahel savannah agro-ecological zone and the climate is characterized by dry and hot seasons, with minimum temperature ranging from 15 to $20^{\circ}C$ and maximum temperature from 37 to 43 C. Mean annual rainfall ranges from 300 to 500 mm per annum (NMA, 2012). The area covers about 868 km² with its headquarters in the Khaddamari (MLS, 2012). Jere has an estimated population of 247,860 (NPC, 2011).

The major ethnic groups are Kanuri and Shuwa-Arab, others include Marghi, Hausa and many immigrant settlers from within and outside Nigeria.

Sampling Procedure

A reconnaissance survey was carried out in the study area with a view to get acquainted with the terrain and locates areas with dominant of fuel wood users or consumption. It was noticed that the area has twelve districts and four out of the total were randomly selected. Out of the selected districts, 40 respondents were randomly selected based on gender. From each area 10 men and 30 women were purposively interviewed using structured and open ended questionnaires.

Data Collection and Analysis

Both primary data and secondary information were used for the research. The data obtained were analyzed using descriptive statistics. The statistical tool used includes frequency distribution and percentages.

RESULTS AND DISCUSSION

Sources of Fuel Wood Supply of the Respondents

The frequency distribution table in table 1 gives the percentages of different source of fuel wood in the study area. The result showed that most (70.0%) of the fuel wood consumed in the areas come from market sellers and 24.4% obtained from the forest. Few (5.6%) of the respondents did not respond and neither or no private or woodlots were involved in the supply of fuel wood. This is because the set of the respondent's do not practice or engage themselves in the tree planting which might be attributed to the literacy level in the important of tree planting. It was noticed that some of the existing forest where reduced due to the pressure of over harvesting and while those far is not accessible by the people because of the insurgency in the area. This result is in line with the work of Abdullahi, et al. (2018) which shows that many existing natural forest were being depleted due to the pressure mantle on them such as urbanization and over harvesting to meets peoples demand as in the case in; india and Bangladash, dryland forests in west Africa (Niger, Togo likewise Nigeria).

Table 1: source of fuel wood supply of the respondent

SOURCE	FREQUENCY	PERCENTAGE
NO ANSWER	9	5.6
MARKET	112	70.0
WOOD LOT	0	0.0
FOREST	39	24.4
PLANTATION	0	0.0
TOTAL	160	100.0

Domestic Consumption of Fuel Wood

Table 2 below shows the domestic consumption of fuel wood in the study area. It reveals that 56.9% of the respondents consumed 3-4 bundles of the fuel wood every day and 30.6% consumed 1-2 bundles of fuel wood every day. This indicate the quantity of fuel wood harvested from the forest is so

much that it always causes a lot of destruction to the remaining forest resources. If this pattern should continue, there could be shortage that can lead to increase in the distance covered by the rural household in search of firewood as the case now. This means there is effect to next generation whom they will not have forest close to them and enjoy its resources. The result also indicate that some of the respondents were not using the fuel wood as result they did not answered the questionnaire.

Table 2: Domestic consumption of fuel wood

RESPONDENTS	FREQUENCY	PERCENTAGE
NO ANSWER	20	12.5
1-2 BUNDLE	49	30.6
3-4 BUNDLE	91	56.9
≥ 5	0	0.0
TOTAL	160	100.0

Average Price of Fuel wood Consumption

Table below indicates the average price of fuel wood in the study area. About 70.6% of the respondents cost them between N100 to N 200 per day and 18.1% purchased it above N 200 daily. There were some of the respondents that do not know the price of fuel wood which most are of small family usually husband and wife or nuclear family that uses gas cooker in the family or charcoal. Findings from Macauley, 1989; Abdullahi, 2018 affirmed that, increase in fuel wood prices has provided an indication of changes in demand and supply situation of fuel wood. It is obvious from this research that the rural dwellers were not buying fuel wood before but nowadays, amount money is been spent on fuel wood purchase almost on daily basis even in the rural areas where firewood were freely within reach in the past due the insurgency that one cannot go far in search of fuel wood.

Table 3: Average Price of Fuel Wood/ bundle

RESPONDENTS	FREQUENCY	PERCENTAGE
NO ANSWER	18	11.3
N 100-200	113	70.6
ABOVE N 200	29	18.1

Other Alternative Source of Energy Use

Table 4 below revealed the outcomes of the respondents on the use of alternative source of energy. About 39.4% claimed they could not do without fuel wood and the remaining percentage confirmed that they would prefer alternative source to fuel wood. Majority that claimed they cannot do without fuel wood because of the vast available renewable energy source are not well develop and consequently not available. In a similar research conducted by (Isma'il *et al.*, 2014) affirmed that most of the rural populace cannot do without fuel wood because of unavailability and sustainability of the alternate source of the fuel wood. It also showed from the same research that there is a significant number of people hopping to stop using fuel wood and this number can be increase through educating and enlightening the populace on the environmental consequences of fuel wood consumption in the area. This therefore will go a long way to encourage and motivate the people in the area to switch to alternative cleaner sources of energy. The implication of this there will be reduction on over dependence on fuel wood in the area to achieve environmental sustainability. This is in line with Isma'il *et al.* (2014) who stressed the need to educate people on the causes of climate change as a prerequisite to motivate them to engage with climate change and take necessary action.

Table 4: Use of alternative source of Energy

RESPONDENTS	FREQUENCY	PERCENTAGE
FUEL WOOD	63	39.4
KEROSINE	29	18.1
ELECTRICITY	9	5.6
GAS	21	13.1
CHARCOAL	38	23.8
TOTAL	160	100.0

Respondents Awareness on the Importance of Forest

The result in table 5 showed that, the forest has a distinctive function as expressed by the respondents that includes; provision of fuel wood (75.6%), increase soil fertility (11.8%), protection against wind (6.9%) and with few (1.9%) that do not answered. Forest generally consist of community of trees that provides the above functions. According to World Agroforestry Center (2013), trees in forest improve livelihood of people through the provision of fuel wood, prevention against water and wind erosion as well as source of medicine. This implies that the presence of forest in in the community could help or enhance the livelihood of both rural and urban community.

Table 5: Awareness on the importance of Forest to Community

RESPONDENTS	FREQUENCY	PERCENTAGE
NO ANSWER	3	1.9
PROVISION OF FUEL WOOD	121	75.6
PROTECTION AGAINST WIND	11	6.9
SOURCE OF MEDICINE	6	3.8
INCREASE SOIL FERTILITY	19	11.8
TOTAL	160	100.0

CONCLUSION

It was evident from the research that, much of the fuel wood consumed was from the market sellers and others obtained from the forest. Most of the respondents do not practice plantation establishment. Alternative source of energy are either too cost or not available which make most of the respondent solely rely on fuel wood consumption. Quantity of fuel wood consumed every day indicates that people in the area inherited the habit of fuel wood consumption that makes it difficult for them to changes easily. However for continuous supply of fuel wood on a sustainable basis, there is need of establishment of wood lots and community forest. Furthermore, government and policy makers should provide alternative sources of energy at affordable and available to the populace in the area

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