



Forestry Resource Exploitation by Rural Household, Their Pathways out of Poverty and its Implications on the Environment. A Case Study of Toro LGA of Bauchi State, Nigeria

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ABSTRACT: In order to survive and thrive in their pathways out of poverty, rural households may engage in a livelihood strategy such as daily dependent on forest products resources that could have an implication on the environment. This study focused on a case study of rural households' daily dependent on forest products, their pathways out of poverty and its implication on the environment in the Toro Local Government Area of Bauchi State, Nigeria using a total of 200 questionnaires distributed in four wards of the study area. Data obtained show that the most exploited tree was *Parkia biglobosa* (64%) and this was due to its abundance in the study area. The study revealed gross unsustainable use of forest and forest products due to poverty, unemployment (34%), illiteracy (76.5%), house hold size (3.5-61.5%), poor income and high demand for forest and forest products for sale to increase income and improve family standard of living. Poor management of this challenge would create problems for the future generations and the goal of environmental sustainability would be far from reality. Government should set up strong regulatory frame work for the use of the forest resources, while checking indiscriminate felling of trees.

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It has been established that the socio-economic structure of a community has direct implication on natural resource utilization (Silverman, 2005). Poor or less privileged household are more dependent on the locally available natural resources for domestic use and generation of household income. A number of studies have shown that unemployment and poverty were positively correlated to high fuel wood exploitation for various uses including charcoal production for sales (Ikurekong *et al.*, 2009; Obua *et al.*, 2010). Ikurekong *et al.* (2009), also found that local fuel wood exploitation were mostly prevalent in communities with low income while Obua *et al.*

(2010), said that over exploitation and unsustainable use of natural resources is mainly prevalent in poorer communities because, poor people are often desperate for survival and hence use the most readily available resources including fuel wood for survival. The stark realities of poverty cannot be appreciated without understanding poverty per se. poverty is a social problem with precise and universally accepted definition. According to the U.S census Bureau (2020), poverty is a state or condition in which a person or community lacks the financial resources and essentials for a minimum standard of living. Poverty means that the income level from employment is so

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low that basic human needs can't be met. Poverty stricken people might go without having clean water, health, food and medical attention. According to World Bank (2002), the rural poor in Nigeria largely depends on agriculture, Fishing, hunting, and forestry. The deplorable living condition of the rural poor around the forest zones are a matter of concern. The effective management of the forest and its products cannot be sustained under conditions of abject poverty. An effort must therefore be directed towards eradication of poverty and provision of other alternative sources of energy. Plant and animal species have become extinct in recent times and many more are threatened or endangered by human actions and inactions.

For the forest to continue to sustain the over 1.1 billion rural people, it should be managed sustainably and this calls for formulation and implementation of policies and programs that will help check mate the unfriendly relationship between the forest and the rural poor. The deplorable living conditions of the rural poor around the forest zones are a matter of concern. The effective management of the forest and its product cannot be sustained under conditions of abject poverty. Plant and animal species have become extinct in recent times and many more are threatened or endangered by human actions or in actions.

Humans in all parts of the world have altered the environment. The environment should be used sustainably and this calls for formulation and implementation of policies and programs that will help checkmate the unfriendly relationships between the natural environments and the rural poor. Hence, this study seeks to assess the forest resource exploitation by rural households, their pathways out of poverty and its implications on the environment. A case study of Toro LGA of Bauchi State, Nigeria.

MATERIALS AND METHODS

The study was conducted in Toro LGA of Bauchi state. The respondents were fuel wood and charcoal producers who were systematically sampled using stratified sampling method. Total of two hundred respondents were sampled (fifty respondents per Stratum (wards)). This gave a total of two hundred (200) sample respondents. The questionnaires were interviewer administered, completed questionnaires were entered into Microsoft Excel Spreadsheet and later imported into Statistical Package Service Solution (SPSS) version 23 IBM. Simple statistical analyses (Frequencies and percentages) were carried out and results were summarized using tables. The qualitative data were summarized using thematic analysis

RESULTS AND DISCUSSION

The respondents consisted of 195 males and 5 females. of the 200 respondents, six (6) of them are in the employment roll of the state civil service either as casual or at the lowest cadre of employment 68 of them are unemployed while 116 of them are into full time farming (Table 1). This simply means that the respondents source their livelihood from the natural forest and forest products and if this is done on daily basis, the impact will be so harsh on the environment. The farmers also engage in fuel wood and charcoal production during the dry seasons when they are less busy on the farm. Due to large number of house hold size, the pressure on the natural forests will be high and some tree species may go extinct (Table 2).

Table 1: Employment Status of Respondents

Employment	Frequency	Percentage
Civil Servants	6	3
Unemployed	68	34
Farming	116	5
Full time producers	10	5
Total	200	100

Source: Author field Survey, 2021

Table 2: House hold size of respondents

House hold size	Frequency	Percentage
1-4	7	3.5
5-9	70	35
10 above	123	61.5
Total	200	100

Source: Author field survey, 2021

Table 3: Educational Status of Respondents

Education	Frequency	Percentage
Secondary	2	1
Primary	45	22.5
No formal education	153	76.5
Total	200	100

Sources: Author field survey, 2021

Table 4: Age distribution of respondents

Age (in year)	Frequency	Percentage
Below 20	0	0
20-29	9	4.5
30-39	32	16
40-49	148	74
50 above	11	5.5
Total	200	100

Source: Author field survey, 2021

From the FGD conducted on the respondents, the income realized from fuel wood and charcoal productions help them to pay school fees, buy food, some even bought motorcycle, built houses, purchase electronics and even marry new wives. They actually achieved a lot from the incomes generated. 153 of them had no formal education, 45 had primary education while only 2 had secondary education (Table 3; Table 4). This is an indication that majority of those involved in the business of charcoal and fuel wood productions are illiterates but in the economic

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active age. All the fuel wood users indicated that they prefer any of *Anogeissus leiocarpus*, *Isobalina doka*, *Parkia biglobosa* and *Vitellaria paradoxa* for fuel wood and charcoal production. Various reasons such as intensity of the heat produced by the species, its proximity to the village, long burning hours and its abundance were outlined for the choice of the species.

One hundred and twenty-eight (128) of the respondents indicated their preference to *Parkia biglobosa* due to their abundance (Table 5). Fifty (50) of them indicated their interest in the species due to their local availability at no cost. The last 7 of the respondent stated that they chose any of them on account of proximity to the ward.

Table 5 Choice of Tree species

Tree species preferred	Frequency	Percentage	Reason
<i>Anogeissus leiocarpa</i> (African Birch)	7	3.5	Proximity
<i>Isobalina doka</i> (Doka plant)	15	7.5	Heat intensity
<i>Parkia biglobosa</i> (<i>Dorowa</i>)	128	64	Abundance
<i>Vitellaria paradoxa</i> (shea tree)	50	25	At no cost
Total	200	100	

Sources Author field survey 2021

Sustainable development is an approach to economic planning that attempts to foster economic growth while preserving the quality of the environment for future generation. The rate at which the rural communities in the study area are harvesting the forest products does not show any sign of sustainability (Makhabane, 2002). Most of the respondents are not formerly educated and so are not fully conscious of the damage they are causing to the environment (Table 3). Thus illiteracy remains a major factor (Ajibade, 2011). They are only interested in using the resources to satisfy their basic needs. Furthermore, an overwhelming majority (95.5%) of the respondent indicated that there was no existing traditional practice that can directly be linked with sustainable use of forests. Part of a concerted effort towards achieving wood fuel sustainability will be a resuscitation of the traditional wood fuel conservation practices in the study area (FAO, 2013). Most people in the rural areas are often poor and less privileged. They have shortage in all the basic needs of human existence they lack education opportunity good shelter and good food, infrastructural development are very inadequate rural areas (Adedayo *et al.*, 2008). People always struggle to get out of poverty and lack and one of such means is fuel wood exploitation. Some people harvest and sell fuel wood as a source of income to meet their Socio-psychological /economics needs. Most wood sellers indicated that there were no restrictions in local wood exploitation. In the absence of clear harvesting frame works, local wood lands may be overexploited leading to domination by slow growing species often susceptible to fire. When this happens, the forest wood land may be converted to grass land. Most producers in the study area determine their prices based on two factors; distance travelled from the area of harvest to the road side and the comparative selling price of the heap of the same size with the other producers. Mainagwa (2010), noted that such simplistic market price determination does not take into account

environmental costs of unsustainable fuel wood extraction like soil erosion, species loss, loss of water catchments among others. All the respondent indicated that they used the income generated for the fuel wood/ charcoal production for household needs such as food, clothes, shoes, cooking utensils, pay school fees, inverting others business such on buying new motor cycle for transporting their goods to hereby customers and also invest in agriculture (Table 6). Health services were also part of what they used the incomes for. They also married new wives and purchased electronics etc. This is an important aspect of the positive impact that charcoal production has on the lives. The incomes are always used to improve their wellbeing and hence reduce their inadequacies (Daniel, 2022).

Table 6: Achievements from incomes generated from fuel wood/charcoal sales

Income from fuel wood /charcoal	Frequency (n=200)	Percentage
Purchase of food	120	80
Purchase of vehicle/ trucks	15	10
Moto cycle	90	60
Building house	18	12
Invest in agriculture	105	70
Start business	23	15.3
Purchase electronics	75	50
Pay children school fees	80	53.3
Obtain health services	95	63.3
Saving for future use	13	8.7
Other	52	34.7

Source: Author field survey, 2021 Note: Total not 200 because of multiple responses

Conclusions: Over exploitation of forest products as well as collaborative planning between the local authorities would help in setting up processes that will breed integration in natural resources management. This research envisages that such collaboration would result in integrative structure of decentralized management such that key players and actors are positioned to close the management gap. The was need for woodlot establishment at commercial scale,

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enlightened for sustainable forest product utilization, afforestation and reforestation through agro-forestry.

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