Assessment of Effects of Forest Resources Exploitation and Utilization Activities on the Livelihood of Rural Households in Benue State, Nigeria

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Abstract: **The study was carried out to assess the effects of forest resources exploitation and utilization activities on the livelihood of rural households in Benue state Nigeria. Multiple regression model was used to empirically quantify the 11 livelihood variables that were tested for their effects on the livelihood of rural households in the study area to achieve the objective of the study. The results of the study revealed that some livelihood variables such as: improved procurement of food items; increased households assets; improved expenditure on on-farm activities; improved households expenditure; improved expenditure on cultural festivals/ceremonies and ease of sponsoring wards in schools have significant effects on the livelihood of rural households in the study area at 1%, 5% and 10% level of significance respectively. The study concluded that the forest resources exploitation and utilization activities have positive effects on the rural households in the study area. It was recommended that: rural households should pool financial and available human resources at their disposal to establish and manage processing industries in the rural areas for processing the abundant exploited forest resources for generating households income as well as to meet national consumption and exportation; forest guards should be employed from the rural communities and be paid monthly by government to safeguard forest resources against irrational exploitation by exploiters; and rural communities should be mobilized to engage in self-help efforts for the rehabilitation of rural roads, construction of new roads and bridges for easy transportation of forest resources exploited to points of sale.**

***Keywords*-effects, exploitation, forest, resources, utilization**

I. INTRODUCTION

Historically harnessing and utilization of forest resources, including wood-forest resources and non-wood forest resources have played a key role in human societies. Today, developed and underdeveloped countries continue to harness and utilize timber for building and other construction purpose. Wood pulp is utilized for the production of paper in paper industries. In developing nations, almost three billion people rely on fuel wood for heating and cooking. The industrial revolution has led to productivity at an unprecedented rate with the demand for wood-forest resources and non-wood forest resources for industrial and domestic consumption increasing rapidly (Kumar 2012).

According to Madsen (2011), the utilization of forest resources has a long history. Wood from forest were harnessed and prepared for use as source of fuel, construction materials, means of transportation and as component of agriculture tools. Mmom (2013) state that the rapid development of the industries of iron-smelting and glass which placed high demand on charcoal in several Europe countries during the sixteenth and seventeenth centuries meant that forest were increasingly being harnessed right from time. Since then, large amount of forest-wood resource and non-wood forest resource have been needed for industrial and domestic use in most parts of the world. According to Morgen *et al* (2013), forest resources exploitation is an essential process of human existence, throughout history, humans have manipulated natural forest resource to produce the materials they needed to sustain the growing human population. Forest resources exploitation primarily refers to the unsustainable harnessing of wood and non-wood forest resources by humans to cope with the global needs of the growing human population. Maroto *et al.* (2010) emphasized that the basic forest resources commonly exploited and utilized by the rural households are the fauna and flora type. They further stressed that apart from the fauna and flora forest resources exploited by humans, other cultural and non-tangible values of forests such as: utilization as cultural sites (setting of shrines and cultural festive periods sites); sources of water for drinking; serve as water shade; for pollination effects; and aesthetic beauty of forests serves as sites for tourist attraction.

However, even though a very few studies have looked at effects of forest resources exploitation and utilization on the livelihood of rural households in the study area, yet there is a gap in empirical evidence on the various effects of forests resources exploitation and utilization on the livehood of rural households in the study area. Therefore this study was conducted specifically to assess the effects of forest resources

exploitation and utilization by rural households in the study area.

II. METHODOLOGY

The study was carried out in Benue State. The State was created in 1976 with Makurdi as the State capital. It is found in the middle belt region of Nigeria, approximately located between latitude $6.5^0$and 8.5^0N and longitude $7.5^0$and 10.5^0E of the equator. The State has a total land area of about 30,995 square kilometers and a projected population of about 2,780, 398 people (BNARDA), 1995) and (NPC, 1995) in (Atongo, 2013). The State shares boundary with five states: Nasarawa to the North, Taraba to the East, Enugu to the South west, Cross River to the South east and Kogi also to the south west. The south eastern part of the state shares boundary with the Republic of Cameroon. It is bordered to the North by 280km of River Benue, second largest river in Nigeria, which the state derived its name. The state is also traversed by 202 km of River Katisna-Ala in the in-land area with its catchment area from Cameroon.

A three stage sampling procedure was used for this study. In the first stage, out of 23 LGAs in Benue State, 2 Local Government Areas (LGAs) from zone A, B and C were purposively selected because of the forest resources availability in such LGAs giving a total of 6 LGAs (Katsina-Ala, Kwande, Makurdi, Tarka, Otukpo, and Okpokwu) covered for the study. During the second stage, 4 communities from each of the 6 LGAs were selected using simple random sampling balloting technique giving a total of 24 communities. During the third stage, 50 households were randomly selected from the 4 communities in each of the 6 LGAs using simple random sampling balloting technique giving a total of 300 respondents for the study.

Data for this study was collected from the households through the use of structured interview schedule to elicit information from rural households. It was subjected to both face and content validity to avoid ambiguity of items as well as to ensure its validity. The interview schedule contained relevant questions on the study. It was pretested in one of each villages sampled for the study, the reliability of the instrument was determined using the split half technique. Secondary information was collected through the review of relevant literatures, maps, pamphlets bulletins, biographies, previous projects, theses, dissertations and materials from internet sources.

Multiple regression model was used to estimate the contribution of each variable to the dependent variable to determine the best variable predictive of livelihood activities by rural households and their effects on the livelihood of rural households in the study area due to forest resources exploitation and utilization activities.

III. RESULTS AND DISCUSSION

Based on the finding in Table 1, the null hypothesis which states that there is no significant relationship between effects of forest resources exploitation and utilization activities and livelihood of rural households in the study area was rejected, this is because some livelihood effects variable such as: improved procurement of food items; increased households assets; improved expenditure on non-farm activities; improved household expenditure; improved expenditure on cultural festival/ceremonies; and ease of sponsoring wards in schools have significant effects on the livelihood of rural households in the study area as in Table 1a at 1%, 5% and 10% level of significance respectively.

The results of the multiple regression analysis are presented in Table 1. The result shows that the coefficient of multiple determinations R^2 was 0.568%. This implies that the variables in the model were able to explain up to 57% of the variation of effects of forest resources exploitation and utilization on the livelihood of rural households in the study area. The results revealed that: the forest resources exploitation and utilization on: improved procurement of food items; increased households' assets; increased expenditure on non-farm activities; improved households' expenditure; improved expenditure on cultural festivals/ceremonies; and ease of sponsoring wards in school at 1%, 5% and 10% levels of significance respectively.

The coefficient obtained for improved procurement of food items was positive and significant at 1% levels of significance. This means that the households' food expenditure have a direct relationship with the level of forest resources exploitation and utilization. The implication is that increase in forest recourses exploitation and utilization leads to increased income for increased expenditure on food items. Thankur (2013) reported that food expenditure of households has direct relationship with level of forest resources exploitation. He further noted that increased households' expenditure was found to be directly proportional to forest resource exploitation and utilization in rural communities in Nepal. In a similar vein, Morgen *et al.* (2013) observed that the procurement of food items of most rural households usually has a direct relationship with their level of forest resources exploitation and utilization. This is in agreement with this study which reveals direct relationship between improved procurement of food items and forest resources exploitation and utilization at 1% level of significance.

The coefficient obtained for increased households' assets was positive and significant at 1% level of significance. This means that households' assets have direct relationship with the level of forest resources exploitation and utilization in the study area. The implication is that increase in forest resources exploitation and utilization result to an increase in households assets. Takasaki *et al.* (2008) reported that rural households derived much benefits from income that accrue from forest resources exploitation for, acquisition of households' assets

such as motorcycles, bicycles cooking utensils, beddings, clothes and sewing machines. Townson (2012) similarly viewed that benefits derived by the rural households from forest resources exploitation and utilization are many. He pointed to the fact that as household's income from forest resources exploitation increases, their tendencies to acquire household assets increase as a mark of improvement in livelihood.

The coefficient obtained for improved expenditure on non-farm income was positive and significant at 10% level of significance. This means that improved expenditure on non-farm activities has a direct relationship with forest resources exploitation and utilization. The implication is that, increase in the forest resources exploitation results to an increase in level of non-farm activities of the rural households in the study area. Kamla (2010) in his findings upheld similar views that forest resources exploitation and utilization usually promote the non-farm activities of most rural households. He however observed that most rural households derived their income from forest resources exploitation activities such as sale of fuelwood, charcoal, bush meat, loading and off-loading of timber and sale of herbal medicines which improved household' economy. Hames and Vickers (2011) noted that majority of the rural households in developing countries, their expenditure on non-farm activities are derived substantially from the sale of surplus of resources exploited from the forests. However, they stressed that income from sale of forest resources exploited from the forests help the rural household purchase inputs for agricultural production and invest in other non-farm income diversified activities.

The coefficient obtained for improved household expenditure was positive and significant at 1% level of significance. This means that the improved household expenditure has a direct relationship with forest resources exploitation and utilization. This implies that increased forest resources exploitation and utilization result to increase in the household expenditure of the rural households in the study area. Belem *et al.* (2007) and Brockington (2008) observed that rural households improve their horizon of households' expenditure greatly through constant exploitation and utilization of forest resources. Kumar (2012) emphasized that rural forest resources benefiting communities in Southern India, their level of household expenditure greatly improved due to their increased income from forest resources exploitation to complement household' income. This is similar to this finding which revealed that the household expenditure of the rural household has increased at 1% of significance. This is in agreement with the view of Inoni (2009) who stressed that income from forest resources exploitation and utilization help to complement household' income.

The coefficient obtained for improved expenditure on cultural festivals/ceremonies was positive and significant at 5% level of significance. This means that this has direct relationship with forest resources exploitation and utilization. This implies that forest resources exploitation and utilization have increased the ability of rural households' expenditure on cultural festivals/ceremonies with forest resources exploitation and utilization activities. He stressed that such expenditure are always on new yam festivals; age grade festivals; traditional marriage ceremonies; naming ceremonies; fishing festivals and burial ceremonies. Similarly, Paolo and Piazzuola (2014) viewed that most rural households' that exploit and utilize forest resources derive appreciable financial gains that usually make them celebrate their cultural festivals/ceremonies more easily.

The coefficient obtained for ease of sponsoring wards in schools was positive and significant at 1% level of significance. This means that sponsoring wards in schools has direct relationship with forest resources exploitation and utilization in the study area. This implies that forest resources exploitation and utilization eased household' heads sponsoring of wards in schools. Bryant (2011); Bwalya (2011) and Kumar (2012) similarly observed that financial benefits derived by rural household from forest resources exploitation and utilization tremendously help them to carry out their cultural festivals/ceremonies at all times.

Table 1: A regression output on the of respondents' perception on effects of forest resources exploitation and utilization on their livelihood in the study area

Variable	Coefficients	Standard error	T- stat
Constant	63.31919	6.574213	9.631449
Improved procurement of food items	1.5E-05***	6.14E-06	2.51358
Improved expenditure on non-food items	1.78E-05	1.29E-05	1.385513
Increased household assets	8.85E-06***	2.42E-06	3.66E+00
Improved procurement of farm inputs	-4.1E-07	4.9E-06	-0.08451
Improved expenditure on non-farm activities	8.17E-06*	4.14E-06	1.94587
Improved expenditure on off-farm activities	-5.5E-06	4.15E-06	-1.3194
Increased livestock assets	-1.5E-06	8.53E-06	-0.18127
Improved household expenditure	5.3623***	1.442512	3.71734
Improved expenditure on cultural festivals/ceremonies	3.057403**	1.513909	2.019542
Improved settlement of hospital bills	-1.13968	1.957908	-0.58209
Ease of sponsorship of wards in schools	6.380909***	2.50748	2.544749
R Square	0.591		
Adjusted R Square	0.568		

Note: *** P< 0.01, ** P<0.05 and * P< 0.10

IV. CONCLUSION AND RECOMMENDATION

Based on the findings of the study, it was concluded that forest resources exploitation and utilization effected positively on the livelihood of rural households. It was recommended that: government, NGOs, commercial banks, agricultural banks and individuals should provide loans to rural households for non-farm income generating activities in the study area; rural households should engage in self-help community efforts to construct and rehabilitate rural roads and bridges for easy access to sale points of forest resources exploited; and ethno-biological survey nation-wide on forest resources in terms of vivid types, habitats, uses and population details should be carried out for the development and adequate attention to forest for its sustainable use.

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