

## **Assessment of Community Based Forest Management Practices in Benue State, Nigeria**

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**Abstract:** Forests in Benue State are depleting due to anthropogenic activities. Community based forest management had been suggested by various researchers as being capable of stemming the rate of destruction of forests. This study was therefore carried out to assess the presence, mode and level of participation in community based forests practices in Benue State with a view to corroborate or dispute the veracity of the practice. Stratified multistage random sampling method was adopted to select 240 Household Heads who were later interviewed using 240 pre-tested semi-structured questionnaire. Data were analysed using descriptive and inferential statistics. Participatory Index analysis (PI) was employed to determine the extent of peoples' involvement in various forestry practices. Likert scale rating was equally used to measure the factors motivating and inhibiting respondents' participation in identified community forestry practices. Modal forestry practice identified was boundary planting (91.2%) with PI of 0.95, followed by home gardens (PI=0.93). Participation in physical execution of work (85.4%) was highest while only 15.8% of the respondents participated in decision making process. Most of the people who participated did so because the practices were relevant to their needs (WMS = 4.30 > 3.05) followed by the fact that they themselves were part of the planning process (WMS = 3.90 > 3.05) while others said that level of literacy was not a hindrance to participation (WMS = 1.55 < 2.95). It was concluded that community based forest management practices existed in Benue State but participation in the practices was most in physical execution of work. It was recommended that people should be involved at the stage of planning, monitoring and evaluation to enhance better participation in Community Based Forest Management by the people.

**Keywords:** Community Based Management, forest depletion, participation.

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### **I. Introduction**

All humans are dependent upon forests and their products to meet a large number of their needs particularly the rural dwellers [1]. Forests play major role in soil regeneration, reclamation of marginal lands and prevention of soil erosion. Other functions of forests include food and medicinal products, shelter and weather amelioration, all of which are essential for the sustenance of life. The forests, therefore, more than any other biotic component of the ecosystem, are vital to environmental stability and the quality of life.

Despite their importance, forest management in Nigeria and indeed the world over is faced with increasingly complex challenges of reconciling the demands of various stakeholders [2] vis-a vis those of government agencies struggling to conserve them. In most cases, while government is trying to mobilise the economy, employment potentials as well as conserve the forest resources, communities as well as other private entrepreneurs try to fully benefit from the same resources without necessarily contributing to their sustainability.

For the rural dwellers, the quest to expand agricultural lands at the detriment of forest resources has continued to increase. The general trend in loss of forest cover in the tropics shows a decline in land area under close canopy forest from 49.1% in 1950 to 22.2% in 1987 with annual deforestation rate now estimated to be over 3.5%. The current status of Nigeria's forest estate as revealed by Land-use and Vegetation Survey of Nigeria conducted in 1998 and the Forest Resources Study completed by Forestry Monitoring, Evaluation and Coordinating Unit (FORMECU), indicated that agricultural practices had increased between 1976 and 1995 by about 8,200 Km<sup>2</sup> while the natural forest is being depleted at an alarming negative rate of 83,000 Km<sup>2</sup> [3]. As observed by [4] there has been an extensive depletion of forest land in areas close to settlements. It has also been observed that forest cover in Nigeria has decreased by 20% between 1978 and 1996, and the total forest estate which was 102 Km<sup>2</sup> of the country's land area in 1976 [5] is now less than 6%. In the same vein, the rising wave of uncontrolled and unmanaged exploitation of forests resulting in increasing rate of deforestation and the reservation of forest estates for different ways has been established. However, in some areas, forest management

has often excluded members of local communities that are the most significant for ensuring long-term sustainability [6]. In forest management strategies, the relationship between government officials and the local communities has been reported to be hostile [7], due to failures by government to effectively integrate the communities into forest management processes.

According to [8] designing intervention to involve local communities must take into account certain socio-economic and socio-cultural status and restrictions, which inhibit the ability of the local communities to participate fully in them.

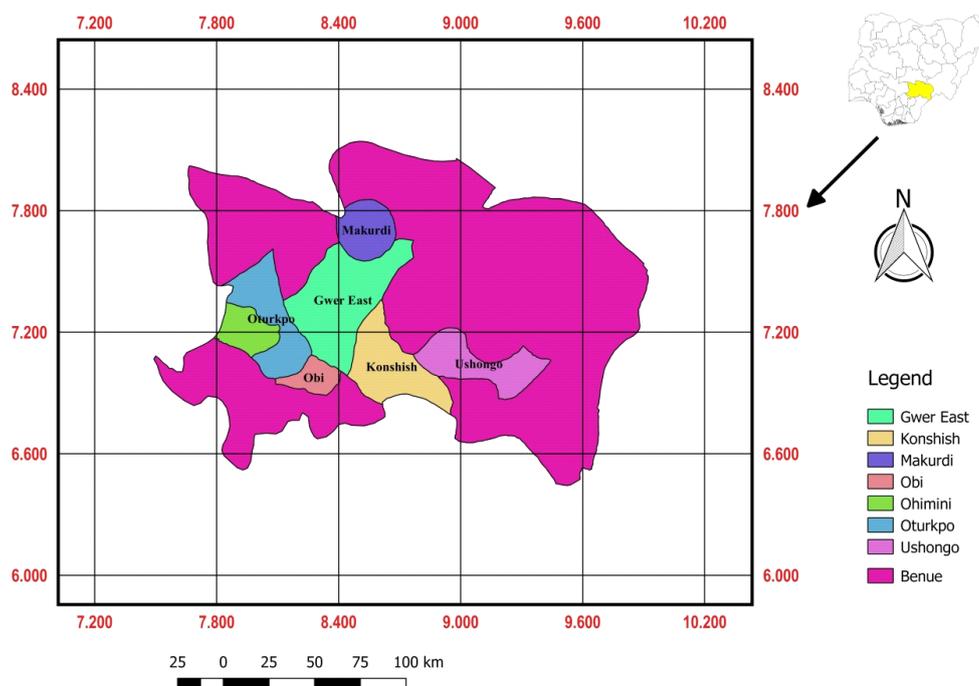
The adoption of the right of local communities to participate in decisions which affect their welfare, particularly in forest resources management, has been again advocated as alternative to mark the departure from seeing forestry as government concern, [9, 10]. In Nigeria, the contributions of communities to resource use and environmental conservation programmes have been strongly advocated. This was reposed by [9] who not only advocate involvement of local communities in the designing of strategies for participation, but to fully empower them to actively participate. He further stated that any forestry project that fails to include the needs and values of the local people is bound to fail totally or at best meet with strong local resistance.

Studies in Cross River State, [11, 10], showed that forests are better managed when people's voluntary participation is secured. Unfortunately, there are several communities in North Central-Nigeria where people's participation is not secured to ensure sustainable forest management.

Therefore, this study was conducted to identify the models of community based forestry practices available in Benue State with a view to determining the people's level of participation in them.

## II. Methodology

The study area covers Benue which lies within the coordinates of Longitude 7° 7' to 9°8' East and Latitude 6°25' to 7°75' North of the Equator. (Figure 1.) [12]. The State made up of 23 Local Government Areas (LGAs). It has an estimated land area of 48,331km<sup>2</sup> [13] and this represents approximately 5.2 percent of the total land area estimated at 927, 340km<sup>2</sup>.



**Figure 1.** Map of the Study Area [12].

### Sampling Process and Sample Size Selection

The study adopted a stratified multi-stage random sampling design in which the State was stratified into Agricultural Development Zones A, B and C. Multistage random sampling with 30% sampling intensity [14], was employed to select seven LGAs namely Ushongo and Konshisha in Zone A, Gwer and Makurdi in Zone B and Oturkpo, Obi and Ohimini in Zone C. Sample size of 240 household heads was selected as described by [15] and expressed as:

$$n = \frac{n_o + N}{n_o + (N - 1)}$$

Where:

$$n_o = 96.04$$

$N$  = Total size

Semi-structured questionnaire were used to elicit information. In addition, 5 focus group discussions (FGDs) with 5 members each were held in 10 villages randomly selected across the three zones of the State, [16][17]. The results from the discussions were recorded.

### Data Analysis

Descriptive statistics such as frequencies and percentages were used. A five point Likert scale rating as used by [18], was adopted to measure the respondents' reasons for not participating in community forestry practice in the study area. The weighted scale was derived based on the following values for specific questions put forward to the respondent, Strongly Agree (SA) = 5, Agree (A) = 4, Undecided (M) = 3, Disagree (D) = 2, Strongly Disagree (SD) = 1.

$$MS = \frac{\sum f}{n}$$

The Mean Score (MS) of the respondents is expressed as

Where :

f = Summation of the five point rating scale and

n = Number of points

$$MS = \frac{1 + 2 + 3 + 4 + 5}{5}$$

$$MS = 3.0$$

$$WS = \sum_{i=1}^n fixi$$

The Likert Weighted Score (WS) is expressed as :

$$WMS = \frac{\sum_{i=1}^n fixi}{N}$$

The Likert Weighted Mean Score (WMS) is expressed as :

Where:

f = frequency of respondent

x = Likert scale point

N= Total Number of respondents

Using the interval scale of 0.05, the Upper Llimit (UL) cut-off is  $MS+0.05$  ( $3.0+0.05 = 3.05$ ). The Lower Limit (LL) cut-off is  $MS - 0.05$  ( $3.0-0.05 = 2.95$ ). Based on these two extreme limits any variable with WMS below 2.95 ( $WMS < 2.95$ ) is considered 'Disagree'. Variable with MWS between 2.95 and 3.05, 'Undecided' any variable MWS greater than 3.05 ( $MWS > 3.05$ ), 'Agree'.

Participatory Index (PI) as used by [19] was adopted to analyse the extent of involvement of the people in each activity of the forest practices. The PI for the various community forestry practices were obtained using the formula.

$$PI = \frac{[(f_a^* 1) + (f_o^* 0.8) + (f_c^* 0.6) + (f_r^* 0.4) + (f_n^* 0.2)]}{N}$$

Where:

$PI$  = Participatory Index for a given forest practice

- $f_a$  = frequency of respondents always participating in a particular forest practice
- $f_o$  = frequency of respondents often participating in a particular forest practice
- $f_c$  = frequency of respondents occasionally participating in a particular forest practice
- $f_r$  = frequency of respondents rarely participating in a particular forest practice
- $f_n$  = frequency of respondents never participating in a particular forest practice
- $N$  = Total number of respondents for a given forest practice

PI is on a scale of 0 - 1, where zero means respondent has no chance of participating and 1 means always participating. Increase in PI values from 0-1 implies increase in participation level of the respondents with respect to the specific forest practice

### III. Results

#### Models of Community Forestry Practices available in the Study Area

The results, (Table 1) showed that 91.2% of the respondents confirmed the existence of boundary planting, 85.8% of the respondents were aware of home garden, while 82.5% identified scattered trees as community forestry practice. Other practices identified included woodlots (81.2%. It was also found that 87.1% of the respondents said there was no urban forestry practice. Other practices indicated as not being present included alley cropping (84%), amenity planting (83.8%), enrichment planting (82.1%) apiculture (70.4%) forest nurseries (57.9%) while no respondent indicated the presence of shelterbelts as a community forestry practice in Benue State.

**Table 1:** Distribution of Respondents according to Type of Community Forest Practices available in the Study Area

Community Forestry Practices	% Yes	% No
Forest Nurseries	42.1	57.9
Woodlots	81.2	18.8
Forest plantations	64.2	35.8
Orchards	80.8	19.2
Apiculture	29.6	70.4
Alley cropping	15.8	84.2
Amenity planting	16.2	83.8
Scattered trees	82.5	17.5
Live fencing	62.5	37.5
Enrichment planting	17.9	82.1
Boundary planting	91.2	8.8
Farm forestry	70.8	29.2
Afforestation of degraded lands	49.2	50.8
Urban forestry	12.9	87.1
Commercial use of non- timber forest products	49.2	50.8
Home gardens	85.8	14.2
Windbreaks	68.7	31.3
Shelterbelts	0.0	100

#### Preferences for Community Forestry Practices by Respondents

Table 2 reveals modal preference of 77.5% by respondents for boundary planting. This was followed by 72.9% of respondents preferring home gardens, 64.6% for scattered trees, and 52.1% for orchards while 51.3% preferred woodlots. Of the practices less liked as indicated by the respondents were: urban forestry (97.1%), amenity planting (92.1), apiculture (89.8%), enrichment planting (87.1%), alley cropping (85.9%), afforestation of degraded lands (84.6%), commercial use of non-timber products (83.8%), forest nurseries (67.1%) and farm forestry (66.2%).

**Table 2:** Distribution of respondents on preferences for type of community forestry practice

Community Forestry Practices	% Less Liked	% Preferred
Forest Nurseries	67.1	32.9
Woodlots	48.7	51.3
Forest plantations	60	40
Orchards	47.9	52.1
Apiculture	89.6	10.4
Alley cropping	85.9	14.1
Amenity planting	92.1	7.9

Scattered trees	35.4	64.6
Live fencing	62.1	37.9
Enrichment planting	87.1	12.9
Boundary planting	22.5	77.5
Farm forestry	66.2	33.8
Afforestation of degraded lands	84.6	15.4
Urban forestry	97.1	2.9
Commercial use of non-timber forest products	83.7	16.3
Home gardens	27.1	72.9
Windbreaks	57.1	42.9
Shelterbelts	0.0	000.0

**Participatory Index of Respondents in Community Forestry Practices**

Table 3 shows that the respondents participated more in boundary planting with Participatory Index (PI) of 0.95 than any other forest practices. This was followed by home garden (PI=0.93), amenity planting (PI=0.90) and woodlots (PI=0.88). Respondents' participation was observed to be lowest in urban forestry (PI=0.24), alley cropping (PI=0.27), scattered trees (PI=0.45).

**Table 3:** Participation Index of Respondents in Community Forestry Practices in the Study Area

Community forestry practice	PI
Forest Nurseries	0.56
Woodlots	0.88
Forest plantations	0.75
Orchards	0.85
Apiculture	0.95
Alley cropping	0.27
Amenity planting	0.90
Scattered trees	0.90
Live fencing	0.64
Enrichment planting	0.45
Boundary planting	0.95
Farm forestry	0.85
Afforestation of degraded lands	0.60
Urban forestry	0.24
Commercial use of non-timber forest products	0.55
Home gardens	0.93
Windbreaks	0.83
Shelterbelts	0.02

**Mode of Participation of Respondents in Forestry Activities**

Analysing respondents' mode of participation in community forestry practices (Table 4) showed that 85.4% of the respondents participated in physical execution of work, while 17.1% took part in issuance of advice or directives. It was also found that 49.2% helped to make contact, while 15.8% participated in decision making. Forty five percent donated materials, while 30% were involved in diffusion of ideas. It was observed that 11.3% and 10.8% of the respondents were involved in leadership role and monitoring, directing and or evaluation of projects respectively.

**Table 4:** Distribution of Respondents according to Mode of Participation in Community Forestry in the Study Area

Mode of Participation	% Yes	% No
Physical execution of work	85.0	04.6
Insurance of advice or directive	17.1	82.9
Helping to make contact	49.2	50.8
Participation in decision making	15.8	84.2
Donation of materials	45.5	54.6
Diffusion of ideals	30.8	9.2
Leadership role ( supervision)	11.3	88.7
Monitoring, directing and or evaluation	10.8	89.2

**Factors Motivating Participation in Community Forestry Practices in the Study Area**

Table 5 shows distribution of respondents based on motivating factors for participation in community forestry practices in the study area. The respondents indicated that relevance of the practice to the needs of the community members was most compelling factor (WMS = 4.30>3.05) followed by participating in the planning process (WMS=3.90>3.05), fairness of individual's contributions (WMS=3.84>3.05), awareness from project initiation stage (WMS = 3.82>3.05), my family will benefit from the practice (WMS=3.77>3.05), Good relationship with community members (WMS= 3.59 >3.05).

**Table 5.** Factors Motivating Participation in Community Forestry Practices in the Study Area

Reasons for Participating	SA	A	UD	D	SD	WS	WMS	Decision
Good relationship with community	72(360)	82(328)	26(78)	36(72)	24(24)	862	3.59	Agree
Ability of projects to meet community needs	147(735)	57(216)	23(69)	1(2)	12(12)	1034	4.30	Agree
Awareness from project initiation stage	90(450)	84(336)	22(66)	20(40)	25(25)	917	3.82	Agree
Individual contribution was fair	78(390)	85(340)	48(144)	18(36)	11(11)	921	3.84	Agree
Participating in the planning process	107(535)	62(248)	32(96)	17(34)	22(22)	935	3.9	Agree
My family will benefit from the practice.	84(420)	85(340)	22(66)	29(58)	20(20)	904	3.77	Agree

Number of Respondents (N) =240, Mean Score (MS) =3.0, Upper Limit (UL) =3.05 and Lower Limit (LL) =2.95, WMS =Weighted mean score.

**Note:** Values in brackets are products of Likert scale values and values outside the brackets are frequency of respondents

**Factors Inhibiting Participation in Community Forestry Practices**

The factors that could inhibit respondents' participation in community practices in the study area were shown in Table 6. Respondents disagreed on all the factors put forward to them that could inhibit their participation in community forestry practices in the study area as all the factors had WMS< 2.95UL

**Table 6.** Factors Inhibiting Participating in Community Forestry Practices in Benue State

Factors Inhibiting Participation	SA	A	UD	D	SD	WS	WMS	Decision
My age did not allow me to do so	10(50)	6(24)	14(42)	44(88)	166(166)	370	1.54	Disagree
I lacked the technical ability to do so	17(85)	28(112)	10(30)	31(62)	154(154)	443	1.85	Disagree
I could not read and write	9(45)	12(48)	8(24)	43(86)	168(168)	371	1.55	Disagree
My monthly income is small	20(100)	32(128)	9(27)	36(72)	143(143)	470	1.96	Disagree
I do not belong to any social organisation	10(50)	31(124)	10(30)	31(62)	158(158)	424	1.77	Disagree
I am not a leader in any form	12(60)	34(136)	15(45)	36(72)	143(143)	456	1.9	Disagree
My family size is too large	7(35)	18(72)	15(45)	40(80)	160(160)	392	1.63	Disagree
My gender did not allow me to do so	10(50)	8(32)	11(33)	47(94)	164(164)	373	1.55	Disagree
My type of job did not allow me	8(40)	15(60)	14(42)	46(92)	157(157)	391	1.63	Disagree
The community was not at peace	14(70)	9(36)	42(126)	42(84)	156(156)	472	1.97	Disagree
The project was not well planned	46(250)	26(104)	39(117)	49(98)	104(104)	653	2.72	Disagree
I was sick by then	4(20)	11(44)	9(27)	56(312)	160(160)	560	2.35	Disagree
I had no time by then	4(20)	14(56)	7(21)	55(110)	160(160)	367	1.53	Disagree

Number of Respondents (N) =240, Mean Score (MS)=3.0, Upper Limit (UL)=3.05 and Lower Limit(LL)=2.95

**Note:** Values in brackets are products of Likert scale values and values outside the brackets are frequency of respondents

**IV. Discussion**

**Types of Community Forest Practices**

It was found that almost all the community forestry practices namely woodlots, scattered trees, home gardens, plantation orchard, roadside planting, and amenity planting and live fencing were being practiced. This could be adduced to the culture of the people. Generally, the zone is noted for the production of fruit trees due to soil types. Apart from fruit trees, the zone is noted for growing trees along boundaries of farmland or settlement to demarcate or protect lands from animals and human encroachment.

During FGDs, it was gathered that, to reduce communal crises that constantly erupt among farmers or between farmers and animal producers, trees or shrubs are planted to serve this purpose. In addition to these practices,

woodlots are established to provide fuel-wood for community members. Scattered tree practices are also common to provide shade or other tree products. They may be in a particular pattern or haphazardly planted. Home gardens are also a common feature among the people of the area. In this practice, trees are planted with vegetables and food crops in free spaces around homes. They could be arranged in multi-storey association with animals, crops and small livestock. The emphasis is on food and fruit production including fodder for animals and shade around homestead [8].

It was revealed during FGD sessions and personal observations, that urban forestry practice was not common in the study area. These observations were in agreement with the findings of [19] who stated that urban forestry practice is still on a low scale in Nigeria. This situation could partly be due to inadequate education or lack of awareness and understanding regarding the tangible and intangible benefits of trees in urban settings which include municipal watersheds, wildlife habitats, outdoor recreation opportunities, landscape design, and tree care generally.

### **Preferences for Community Forestry Practice**

On the whole there was high participation in boundary planting, woodlot establishment, home-garden, windbreaks, scattered tree practice, plantation establishment and to some extent amenity planting practices. However, there was low participation in urban forestry in Benue.

These findings agree with [20], [21], [22], who found in separate studies in the semi-arid region that participation of farmers in woodlot development, boundary planting, live fencing, and scattered trees was very high in the semi- arid region generally. Although the study area is in Guinea Savanna, there was high demand for fuelwood for domestic purposes hence the need to establish them. The work of [22] also found low participation among farmers in windbreak practice. During FGDs, it was learnt that the decision to choose any particular practice was informed by the need for the practice.

### **Participation in Community Forestry Practices**

Low participation was seen in practices such as shelterbelts practice, apiculture, urban forestry, amenity planting and enrichment planting. The study by [23] identified household characteristics likely to influence participation to include wealth, education, occupational and caste categories, age and peer group pressure. In their own view, [24] identified provision of incentives such as cash, provision of inputs, access to some parts of forest reserves, tax incentives, community development, and increase of royalty to local community to secure peoples' participation. [2] found that local participation in community forestry would increase if people were dependent on forests or when there was an increase in forest products, low average levels of education in the family and high levels of education or greater involvement of women in the community. These findings were in agreement with those of [25], [26], [27] and [28] who observed low level participation in community forestry.

### **Factors Motivating Participation in Community Forestry Practices**

Factors such as felt needs of community members, family, benefit margin after investment, awareness about establishment of the projects are some of the factors that usually attract participation in any project. These findings agreed with the observation of [28] that people tend to participate in projects that are beneficial to them.

On the other hand inadequacy of government assistance and lack of awareness can turn out to be a major constraint to grassroots participation in community forestry participation. The issue of non-sharing of benefits has always been a constraint to participation in many projects. Participation trends experienced in the study area could be as a result of one or all of the above factors.

## **V. Conclusion**

Many community forest practices do exist in the study area. The boundary planting was most preferred forest practice in the study area. The respondents participated more in boundary planting practice than any other forestry practices The Mode of participation commonly found in the area was physical execution of work. Poor or lack of incentives like benefit sharing and awareness creation were largely responsible for low participation in community forestry practices.

## **Recommendations**

Adequate awareness should be created for the people to see the need for participation themselves. Also, adequate incentives such as benefit sharing and free access be given to the people. The people should be allowed to participate in different stages of the project such as planning, monitoring and evaluation to enhance greater participation in community forestry practices.

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