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Land Hunger in Omo Forest Reserve, Area J4, Ogun State Prospects: Of Creating Harmony among Land Users

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ABSTRACT: The study verified the extent of land hunger in Omo Forest Reserve, area J4, Ogun State, with a view to creating harmony among land users. Five villages/communities (Osoko, Aberu, Fowowa, Bashiru and Oloji) in Omo Forest Reserve, area J4, Ijebu East, Ogun State were selected for the study due to the level of their involvement in farming activities. Data was obtained using two set of structured questionnaire and analyzed using descriptive statistics and binary logistic regression at $\alpha = 0.05$. A high level of land hunger was proven and its main causes (population increase and area of forest reservation) were identified. Good governance in the affairs of the reserve, followed by the empowerment of the people to have a say in the management of the forest reserve and a holistic land use policy, with odd ratios of 3.85, 2.73 and 2.37, respectively would highly influence the reduction of conflict between farmers and foresters in Omo Forest Reserve (J4).

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Peace and harmony among the stakeholders in an organisation are major factors of development, since economic activities that bring about development can only thrive in a peaceful atmosphere. However, achieving peace seems to be a huge task, especially in Africa, where forest reserves have become spots of major conflicts. FAO (2012) observed that conflict is natural in forest management because it has different objectives and therefore, many stakeholders (local forest users, different government agencies (in and outside the forest administration), civil society, and the private sector) who often have competing interests. According to Agbeja and Otesile (2011), land hunger has been one of the major problems causing conflicts in Omo Forest Reserve, Area J4, Ogun State. As the population of the people living within the communities increases, the need for land to meet social and economic needs (like food, shelter, infrastructure and income) also increases. The scarcity of land outside forest reserves to accommodate the increasing demand makes farmers without secure rights of access to land see the reserves as a favourable alternatives as a result of the ease of access. Over the years, the clearing of forest lands for agriculture, which contributes significantly to greenhouse gas emission (Agbeja, 2010), has led to serious conflicts between farmers and foresters. A type of multiple land use (taungya) was introduced to solve this problem and it was successful for a while. But over time, farmers started planting tree crops on the land, thereby laying claim/right of ownership on the land constituting the forest reserve. A clear knowledge of the extent of land hunger in the state forest reserves according to Agbeja and Otesile (2011) is presently lacking, hence, the need to address the following queries. What is the extent of land hunger among farmers in Omo Forest Reserve Area J4, Ogun State? What are the causes of land hunger in Omo Forest Reserve Area J4, Ogun State? What are the factors that can help in the reduction of conflicts among land users, thereby harmonizing the farmers and foresters within the reserve? In other to provide answers to the preceding questions, the objective of this paper is to identify the cause and extent of land hunger in Area J4 of Omo Forest Reserved and determine the institutional factors that will reduce conflict amongst land users in Ogun State, Nigeria.

MATERIALS AND METHOD

Study Area: Omo Forest Reserve is located between latitudes 6^0 35' to 7^0 05' N and 4^0 19' to 4^0 40' E in the eastern part of Ijebu area of Ogun State, Nigeria. It is about 135km north-east of Lagos, about 120km east of Abeokuta and about 80km east of Ijebu Ode. The terrain of the reserve is undulating and the maximum elevation of 150m above sea level is towards the west

while the lowest parts of the reserve are in the south where the River Omo joins River Oni (the reserve's eastern boundary) before flowing into the Lekki peninsular on the Atlantic coast (Isichiei, 1995). It covers an area of about 130,500 hectares or 322,247.53 acres (Ojo, 2004).

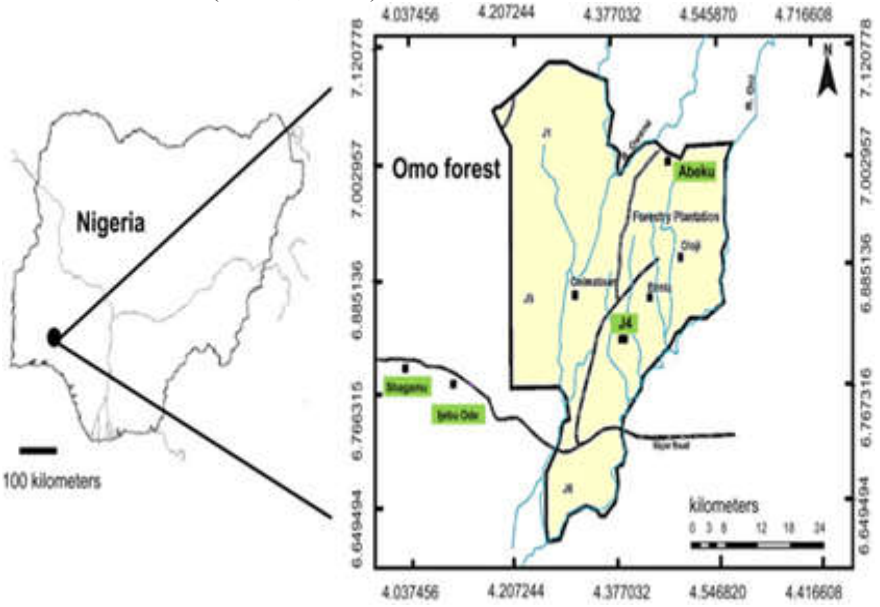

Fig 1: Map of Omo Forest Reserve (Area J4), Ogun State, showing some of the villages constituting the study area. Source: Attah *et al*., (2016)

Data Collection and Analysis: Primary data was obtained through two sets of structured questionnaire and an oral interview. Five villages (Osoko, Oluoji, Fowowa (J4), Aberu and Bashiru) were purposefully selected due to their level of involvement in farming activities. The sampling intensity used was in conformity with the recommendation of Diaw *et al.,* 2002 that a sampling intensity of 10% can be used to represent a population that is not more than 100. Since hypothetical population of each of the communities was over 200 (adults; male and female), 20 respondents from each village and 20 forestry officials were randomly selected and interviewed. The data collected were subjected to descriptive analysis (such as tabular presentation, which includes frequency analysis and percentages) and the binary logistic model (STATISTICA Version 7 software was used)

The binary logistic models are very useful in situations where the dependent or response variable is binary in nature. This implies that they can have only two possible values. Distinct information provided by logit is the odds ratio and it is defined as the ratio of the odds of an event occurring in the group to the ratio of it occurring in another group (Altman, 2000). The logit of a response p between 0 and 1is given as:

$$logit\ (p) = \log\left(\frac{p}{1} - p\right) = \log(p) - \log(1-p)$$

The simplest form of the logit model is expressed as:

$$logit\ (pi) = a + bxi$$

Where, X_i= vector of prediction or independent variables, a and b= regression parameters

In binary models, the two possible results are assigned values of 1 or 0. Therefore, in this study, an affirmative response to a factor that would reduce conflict among land users was assigned a value of 1 but a negative response to a factor that would reduce conflict between land users is assigned a value of 0. Reduction of conflict between land users = f (x_1, x_2, x_3, x_4, x_5, x_6, x_7)

$$Logit\ (RCBLU) = a + bx1 + bx2 + bx3 + bx4 + bx5$$

Where: RCBLU = Reduction of conflict between land users,x_1 = Good governance in the affairs of land use, x_2 = Holistic land use policy, x_3 = Empowerment of the people, x_4 = provision of improved taungya, x_5 = Re-enforcement of laws governing the use of the reserve. The parameter for this study was analysed using the Quasi-Newton method under the logistic regression (logit) option of the STATISTICA Version 7 software. Chi-square tests of independence were also used to rate the interaction of the variables with others.

For the test to be assumed significant, the P-level has to be less than 0.05.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of the Land Users (Farmers): Table 1 show that, 31.4% of the respondents were between 41 and 50 years old while 27.1% fell within 51-60years age bracket. The distribution of ages show that youths (21-30) were not really involved in farming as only one respondent (1.1%) fell within that age range while the rest of the farmers in the reserve were between the ages of 41 and 60. Most of the respondents (59%) had secondary education while the remaining 40% had primary education. The result also shows that 82% of the respondents were primarily farmers who planted either cash or food crops for sale. So apart from forestry, farming can be said to be the main stay of the economy in J4.

Table 1: Demographic Characteristics of the Respondents (Farmers)

Gender	Frequency	%
Male	69	69
Female	31	31
Total	100	100
Age	Frequency	%
21-30	1	1.1
31-40	16	17.3
41-50	28	31.4
51-60	25	27.1
61-70	9	9.8
71-80	8	8.8
81-90	4	4.3
Total	100	100
Level of education	Frequency	%
Primary	41	41
Secondary	59	59
Tertiary	0	0
Total	100	100
Number of years farmed	Frequency	%
0-9	29	29
10-19	30	30
20-29	21	21
30-39	16	16
40-49	1	1
50-59	3	3
Total	100	100
Primary occupation	Frequency	%
Farming	82	82
Others	5	5
Farming and others	13	13

Source: Field Study, 2018

Socioeconomics Characteristic of Foresters: Table 2 shows that 90% of the foresters are males and the majority (70%) were between the ages of 21 and 40; 90% had tertiary education and most of the respondents are not indigenes of Ogun State

Table 2: Foresters Demographic Information

Gender	Frequency	%
Female	2	10
Male	18	90
Total	20	100
Age	Frequency	%
21-40	14	70
41-60	6	30
Total	20	100
Level of education	Frequency	%
Secondary	2	10
Tertiary	18	90
Total	20	100
Years of work	Frequency	%
1-20	14	70
21-40	4	20
Missing	2	10
Total	20	100
Nativity of foresters	Frequency	%
Yes	5	25
No	15	75
Total	20	100

Source: Field Study, 2018

Extent of Land hunger and its possible cause: Table 3 shows that, approximately, 80% of the respondents farmed on a land area that is less than 1(one) acre. The respondents with a land area that was above 30acres were chiefs or village heads and their property was inherited from their parents. The result also shows that the level of land hunger in Omo Forest Reserve, area J4, is very high as an area of land that is less than 1acre is too small for commercial farming, which seems to be the culture in this area. The main cause of land hunger, according to 53.4% of the respondents, was the area of forest reservation (area covered by the forest reserve). Those who attributed it to population increase constituted approximately 27%

Table 3: Land hunger and its causes in Omo Forest Reserve

Area of land (acres)	Frequency	%
Less than 1	79	79
1-5	10	10
6-10	4	4
11-20	4	4
Above 20	3	3
Types of crops grown	Frequency	%
Cash crops	38	38
Food crops	39	39
Both	22	22
Food crops and others	1	1
Total	100	100
Availability of land in the area	frequency	%
Adequate	24	24
Inadequate	76	76
Total	100	100
Possible causes of land hunger	Frequency	%
Population increase	8	11
Area of forest reserve	39	53.4
Population increase and farm expansion	1	1.4
Population increase and area of reserve	22	30.1
Population increase, area of reserve and farm expansion	3	41

Source: Field Study, 2018

Institutional Factors That Can Help to Reduce Conflicts among Land Users in Omo Forest Reserve: Binary logistic regression analysis was used to investigate measures that will reduce conflict and bring about harmony between foresters and farmers in Omo Forest Reserve. The institutional measures investigated were Good governance in respect of land use in the reserve (GG), Holistic land use policy (LUP), Empowerment of the people to have a say in the management of land in the forest reserve (Emp), provision of improved taungya (Impt) and Re-enforcement of laws governing the use of the reserve (Laws). The dependent variable was Reduction of Conflict between Land Users (RCBLU) and the independent variables were the investigated institutional factors listed above. The response of the foresters (20) and those of the farmers (93) were pooled. The model obtained for the study is presented as follows:

$$logit\ (pi) = a + bxi$$

$$RCBLU = -1.92 + 1.35GG + 0.86LUP + 1.01Emp + 0.68Impt - 0.06Laws$$

Final loss = 57.87; Chi square (df, 5) = 32.62; p = 0.00001*

Odd ratios unit change: constant (0.15) ; GG (3.85), LUP (2.37) ; Emp (2.73) ; Impt (1.98) ; Laws (0.94),

Where: RCBLU = Reduction of Conflict between Land Users in Omo Forest Reserve (yes =1; no =0), GG = Good Governance in the Affairs of Land Use in the Forest Reserve (yes =1; no =0), LUP = Holistic Land Use Policy (yes =1; no =0), Emp: Empowerment of the people to have a say in the management of land in the forest reserve (yes =1; no =0), Impt = Provision of Improved Taungya System (yes =1; no =0), Law = Re-enforcement of laws governing the use of the forest reserve (yes =1; no =0)

The equation presented above for reduction of conflict between land users in Omo Forest Reserve, Area J4, Ogun State gave an overall significant fit going by the Chi-square value (0.00001) that is significant at $p<0.05$.This implies that the regression parameters in the model were statistically significant.

Table 4 shows that the RCBLU would be most positively influenced by GG, followed by Emp and lastly by LUP as they had odds ratios that are greater than 2: 3.85, 2.73 and 2.37 respectively. The implication of this result is that if there was good administration in the affairs of land use in the reserve, if there was less bureaucracy and more of just and fair rules and judgement, if perpetrators of offences are duly punished without putting their level or rank as foresters or their influence in the villages into consideration, there would be harmony among the land users. The second most influential factor was the empowerment of the people to have a say in the management of the land in the forest reserve. Research has shown that people tend to obey more the laws they help in formulating, Adebayo (2019) noted that little was achieved in the reservation of 25% of the country's land area due to stiff resistance by local community dwellers who rightly established their claim to the land. So if the people are empowered through various forest extension and empowerment approaches to see the forest more as a benefit/blessing to all and their representatives are allowed to participate actively in taking major decisions concerning the managements goals, objectives and resource assessment of the forest reserve, the level of conflict among foresters and farmers will be reduced to the barest minimum. The least influential factor was holistic land use policy. Agbeja (2010) opined that a nation without a comprehensive land use policy will surely face a lot of land-use problems. Also, a nation that inadequately implements its land-use policy will face similar problems. According to Johnson (2010), a holistic land use policy that will cater for the needs of both the agricultural and forestry sector will bring about harmony between the two sectors. A holistic land use policy is the solution to most land-use conflict issues.

Table 4: Binary logistic nature of Institutional Factors That Can Help to Reduce Conflicts among Land Users (foresters and farmers) in Omo Forest Reserve

Dependent Variable		
RCBLU		
Constant	**Coefficient**	**Odds ratio**
	-1.95	1.15
Independent variables	**Coefficient**	**Odds ratio**
Presence of good governance	1.35	*3.85
Holistic land use policy	0.86	*2.37
Empowerment of the people	1.01	*2.73
Provision of improved taungya system	0.68	1.98
Re-enforcement of forest laws	-0.06	0.94

Source: Field study, 2018

Conclusion: Land hunger is evident in Omo Forest Reserve and the resulting conflict is beyond boundaries as all stakeholders are affected. Therefore, government should manage the affairs of the reserve with equity and transparency, by enunciating a holistic land use policy that will define the place of agriculture within the reserve and put restrictions on all illegal practices. Alternative means of livelihood for the inhabitants of the forest communities should also be encouraged and forestry extension workers should be

sent to the reserve to increase their knowledge of the reserve.

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