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## LIVELIHOODS OF THE SURROUNDING COMMUNITIES IN KAINJI LAKE NATIONAL PARK NIGERIA: IMPLICATIONS FOR EFFECTIVE MANAGEMENT OF PROTECTED AREAS

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### ABSTRACT

The establishment and management of protected areas (PAs) has become the cornerstone of biodiversity conservation strategies, however, efforts aimed at managing these areas have paid little or no attention to the livelihoods of the communities surrounding these PAs. This study therefore assessed the livelihoods of surrounding communities of Kainji Lake National Park, Nigeria. Purposive and simple random procedures were used to select 382 households in Borgu and Zugurma sectors of KLNP. Interview guide was used to obtain data on livelihood assets and livelihood activities from households. Descriptive statistics and Chi-square were used to analyse the data. Result reveals that 97.4% and 70.0% of the respondents were involved in crop and livestock farming respectively as on-farm activities, 15.2% and 12.0% engaged in civil service and trading respectively as non-farm activities while 1.3% of the each of the respondents were into charcoal making and milling as off-farm activities. Average annual income made by household heads from on-farm activities was ₦272,727.00; ₦320,583.38 from non-farm and ₦198,875.38 from off-farm activities. The average annual total farm income of the households was ₦410,606.43. Assets such as household labour ( $\bar{x}=3.12$ ,  $SD=0.69$ ), health status ( $\bar{x}=2.97$ ,  $SD=0.74$ ), relation of trust and support ( $\bar{x}=2.72$ ,  $SD=0.89$ ), natural water ( $\bar{x}=2.65$ ,  $SD=0.84$ ) and equipment for livelihoods ( $\bar{x}=2.64$ ,  $SD=0.65$ ) were ranked good. In conclusion, the household livelihood assets of the communities were poor. In order to effectively manage the park, intervention programmes that will increase income generation from non-farm activities should be implemented using their social assets as an entry point.

**Keywords:** Livelihood activities, livelihood assets, incomes, protected area,

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### Introduction

The establishment and management of protected areas (PAs) has become the cornerstone of biodiversity conservation strategies the world over (Lele *et al.*, 2010; Ervin, 2013). PA is a very good idea and concept to mitigate the effect of climate change which is gradually altering life globally. However, in the establishment and management of PAs, human communities that have coexisted with the plant and animal communities within a landscape, are often not equally considered as essential elements of the biodiversity to be protected (O'Riordan and Stoll-Kleemann, 2002). Abukari and Nwalyosi (2020) opined that the outcome of such scenario

can be loss of biodiversity caused by human pressure on PAs.

In Africa, many depend on their environment as a major source of livelihood as forest provides important cultural and economic resources for rural people and urban poor (King, 2009). The case of people living in surrounding communities of PAs becomes more critical due to the taking over of a substantial part of their natural livelihood assets base for protection of plant and animal species.

Livelihoods according to Ellis (2000) has been described as comprising the assets, (natural, physical, human, financial and social capital), the activities and the access to these (mediated by institutions and social relations) that together



determine the living gained by the individuals or households. The livelihood assets available to the household represent the basic platform upon which the household livelihood may be built. Bebbington (1999) stated that assets are not simply resources that people use in building livelihoods: they are assets that give them the capability to be and to act.

Much attention in the past has been on the management of the PAs with little or no attention on the livelihoods of the communities surrounding these PAs. Kainji Lake National Park (KLNP), Nigeria is one of such PAs. The park is the first established and second largest park in the country occupying 5340 km<sup>2</sup> in Niger and Kwara states of Nigeria. KLNP, since inception has enclaves or villages around it. Some of these communities also known as Support Zone Communities (SZCs) are situated within 3-5km boundary of Park. The SZCs are created to focus conservation and development assistance on those villages who bear the brunt of impacts arising from creation of the Park close to them and whose income and livelihoods have been adversely affected by the creation of the Park (Environ Consult, 2006).

It has been observed that the impacts of PAs on local livelihoods can be major determinants of attitudes of local communities towards conservation (Abukari and Mwalyosi, 2018). It then suggests that any effort to be made at achieving an effective management of the PAs must first consider the livelihoods of the communities, their livelihood assets, their livelihood activities as well as their incomes from these activities. This becomes necessary since many local livelihoods are sourced from the natural forest (O'Riordan and Stoll-Kleemann, 2002). Consequently, conservation policies and management strategies should more directly consider local livelihoods in the establishment and running of PAs. In view of the foregoing, this study was conducted to assess the livelihoods of the surrounding communities of KLNP Nigeria with the goal of deriving

recommendations for effective management of the park and by extension other PAs in Nigeria. The study specifically considered the livelihood activities and livelihoods assets of the communities.

### **Methodology**

The study was carried out in the surrounding communities Kainji Lake National Park, Nigeria. The Park covers a total land area of 5340.82sq kilometres and is composed of two non-contiguous sectors, the Borgu and Zugurma sectors. Each sector of the Park is further divided into ranges for administrative purpose. Zugurma sector has two ranges namely Ibbi and Kuluho ranges while Borgu sector has five ranges namely Doro, Kuble, Kali, Worumakoto and Kemenji ranges. Each range in both sectors comprise of communities or villages.

A purposive sampling procedure was used to select 18 villages from the Borgu sector and 8 villages in Zugurma sector due to their proximity to the park boundary (within 8km). This gave a total of 26 villages. Ten percent (10%) of the household population in all the selected villages was selected. The selection gave a total of 261 households in Borgu sector and 121 households in Zugurma sector arriving at 382 households as sample size of the study. An interview guide was used to obtain socioeconomic and other relevant household data from the household heads. Household population of the selected communities was obtained from the Micro Plan of the National Primary Healthcare Development, Ministry of Health, Niger State.

**Livelihood assets of households:** Livelihood assets was measured by asking household heads to rank the quality of households' livelihoods assets using rating scale of Very good = 4, Good = 3, Poor = 2 and Very poor = 1. The livelihoods assets components include natural assets, human assets, physical assets, social assets and financial assets. Based on responses of the household heads, any score below the mean score (2.50) indicated poor livelihood assets while a score



2.50 and above indicated good asset. The mean cut of point was obtained as follows:  $(4+3+2+1) \div 4 = 2.5$ .

Data were analysed with the aid of descriptive statistics such as chart, frequencies, percentages, means and standard deviations. A correlation analysis (using Chi-square) was carried out to ascertain the relationship between household heads' personal characteristics and the groups of livelihood activities.

## Results and Discussion

### Livelihood activities of the respondents

Table 1 shows that majority (97.4%) and (70.7%) of the households in the Park were involved in crop farming and livestock farming, respectively. This is an indication that farming was the major livelihood activity of the people who live in the surrounding communities of the Park. Previous study has shown that majority of the communities around Kainji Lake and Cross River National Parks were farmers (Obong *et al.*, 2013). Civil service (15.2%) and trading (12.0%) were the predominant non-farm activities of the respondents. A small proportion of the respondents were involved in non-farm and off-farm activities. The off-farm activities include charcoal making (1.3%), milling (1.3%), cassava processing (0.5%), yam flour processing (0.5%) and hunting (0.5%). Findings from this study corroborate the notion that dwellers in the surrounding communities were mainly farmers since very few of the households were generating income from non-farm and off-farm activities. The implication of this finding is increase in the pressure on the park owing to the increasing population of people living around the park. The

**Table 1: Livelihood activities engaged in by respondents**

Livelihood activities**	Frequency (n=382)	Percentage
<b>On-farm activities</b>		
Crop farming	372	97.4
Livestock farming	270	70.7
Fishing	20	5.2
<b>Non-farm activities</b>		
Civil service	58	15.2

expected consequences are encroachment of the park land for farming and increased poaching activities. The correlation analysis (Table 2) shows that sex, age, marital status, and level of education were significantly related to non-farm activities ( $p < 0.05$ ). The implication of this is that sex is a determining factor in involvement in non-farm activities. It was observed from the field work that women carried out some activities such as pottery and tailoring while men carried some other activities like transportation, bricklaying, barbing and many more. Fabusoro *et al.*, (2010) observed that sex was significant to local trade, formal employment and migratory wage services in Ogun state, Nigeria. The result also implies that age determines entry into these non-farm activities. Most of the non-farm activities in the area were carried out by more of the younger household heads than the older ones. These activities include transportation, trading, civil service, barbing, driving, bricklaying, tailoring and mechanic. Marital status had significant relationship with non-farm activities. 89.8% of those involved in non-farm activities were married people. Similarly, the level of education an individual possesses determines his ability to engage in non-farm activities. Reardon (1997) asserts that better-educated members of rural populations have better access to any non-farm businesses. The analysis also reveals that household size was significantly related to on-farm activities. The implication is that household size can affect farming activities since farm labour especially in rural areas is determined by household size. The larger the household size, the more the labour available for farming activities.



Trading	46	12.0
Commercial motorcycle	33	8.6
Tailoring	3	0.8
Barbing	7	0.8
Islamic teacher	7	0.8
Clergy	4	1.1
Bricklaying	5	1.3
Blacksmithing	2	0.5
Driving	8	2.1
Mechanic	4	1.
Pottery	2	0.5
<b>Off-farm activities</b>		
Cassava flour processing	2	0.5
Yam flour processing	2	0.5
Charcoal making	5	1.3
Hunting	2	0.5
Milling	5	1.3

Source: Field Survey, 2013 \*\*Multiple responses provided

**Table 2: Chi-square analyses of the relationship between respondents' personal characteristics and livelihood activities**

Parameters	On-farm activities	Non-farm activities	Off-farm activities
Sex			
$\chi^2$	0.05	5.49	0.12
P<0.05	0.83	0.02*	0.73
Age			
$\chi^2$	0.77	8.24	0.39
P<0.05	0.38	0.004*	0.53
Education			
$\chi^2$	3.93	24.38	0.28
P<0.05	0.14	0.000*	0.87
Marital status			
$\chi^2$	0.15	11.15	9.05
P<0.05	0.99	0.03*	0.06
Household size			
$\chi^2$	11.002	1.34	3.48
P<0.05	0.004*	0.51	0.17
Migrant status			
$\chi^2$	0.43	1.63	0.29
P<0.05	0.51	0.20	0.59
Years of residence			
$\chi^2$	0.50	4.97	2.93
P<0.05	0.78	0.08	0.23
Farming experience			
$\chi^2$	1.97	17.15	0.50
P<0.05	0.37	0.00*	0.78
Land tenure arrangement			
$\chi^2$	10.61	6.87	4.28
P<0.05	0.23	1.07	0.83

\*Significant at P<0.05



## Livelihood assets of households as ranked by household heads

### Income generated from different livelihood categories

Table 3 shows that 96.1% of the respondents generated income from on-farm income sources with a mean annual farm income of ₦272,727.00. This is an indication that on-farm activities were the major income sources of people in the study area. The mean annual income figure obtained here is lower than ₦165,177.20 reported by Aromolaran (2014) farm income in Southwest Nigeria. The reason for this may be that the farmers in the study area had relatively larger farm size 3.6Ha compared

to 1.9Ha farm size reported for farmers in Southwest Nigeria (Idowu *et al.*, 2013). The mean annual non-farm income generated by the households in the study area was ₦320,583.83. Though the proportion of people involved in non-farm activities (33.5%) was much lower than those involved in on-farm activities, it was observed that non-farm activities still contributed more to the total household income. The mean annual off-farm income was ₦198876.92. The average total household income was ₦410606.43. The value is slightly lower than the average estimate of ₦456324.58 obtained by Idowu *et al.*, (2013) in a study conducted in Southwest of Nigeria.

**Table 3: Income from different livelihood activities of respondents**

Income per annum (Naira)	Freq.	%	Mean	SD
On-Farm Income	367	96.1	272727.00	269663.00
Non-Farm Income	128	33.5	320583.38	240633.59
Off-Farm Income	26	6.8	198875.38	157113.00
Total Household Income	374	97.9	410606.43	385666.00

Source: Field Survey, 2013

Table 4 shows that natural water ( $\bar{x}=2.63$ ) and forest resources ( $\bar{x}=2.60$ ) were ranked good by the respondents. Agricultural land ( $\bar{x}=2.48$ ) and mineral deposit ( $\bar{x}=1.41$ ) were ranked very poor. The general notion as pointed by Aromolaran (2014) is that land is available in rural areas for farming activities which is the major occupation of the people. However, observation from this study reveals the contrary. Respondents claimed that a greater portion of their farm lands had been taken over by the government for the establishment of the Park. This situation according to them had reduced the size of land available for farming activities. For human assets, household labour ( $\bar{x}=3.12$ ) and health status ( $\bar{x}=2.97$ ) were ranked good. This is an indication of sufficient household labour for livelihood activities. The relatively large household size of the respondents in the Park is a justification for the good status of household labour ranking by the respondents. The

educational status ( $\bar{x}=2.06$ ) and skill in other livelihoods ( $\bar{x}=1.80$ ) were ranked poor. This situation has very serious implications for the livelihoods of the households. Education has great significance for improving livelihood prospects of people as poverty is closely related to low levels of education and lack of skills (Ellis, 1999). This result has negative implications for the people's livelihoods since they were encouraged to get involved in non-farm activities in order to reduce pressure on the Park. The result implies that the health status of the respondents are good enough to enable them pursue their livelihood activities despite the poor state of healthcare services in the study area. Equipment for livelihoods ( $\bar{x}=2.64$ ) was ranked good while the other physical assets were ranked poor indicating that the households had sufficient equipment to pursue their livelihood activities. Over 90 percent of the sampled communities did not have good access roads, electricity and



portable water. Infrastructure is especially important for facilitating livelihood diversification. Social network ( $\bar{x} = 2.62$ ), community responsibility ( $\bar{x} = 2.62$ ) and relation of trust and mutual support ( $\bar{x} = 2.72$ ) were ranked good. The implication of this result is that there was a good social network among the respondents through interaction and communication. This situation is typical of most rural areas where there is a strong social cohesion among the people as they tend to cooperate, pool their resources together and give moral and financial support for members in their

community. Rural dwellers especially in sub-Saharan Africa are known to be reliant more on social networks for their livelihood development as they might provide money, income generating activities, advice, food, or even business opportunities to their members (Houweling, 2009). All the components of financial assets of the respondents were ranked poor, an indication that the financial assets of the people were too poor or grossly insufficient to support their livelihoods or enable the people invest in other forms of livelihoods.

**Table 4: Livelihood assets of households as ranked by household heads (n=261)**

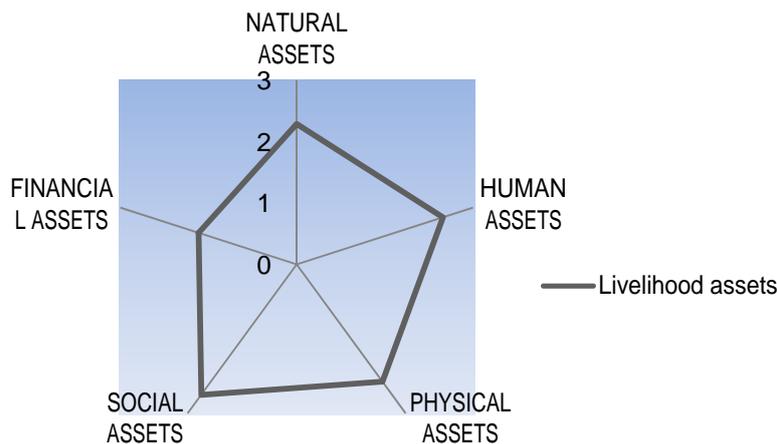
Assets	Mean	Std
<b>Natural Assets</b>		
Natural water	2.65*	0.84
Agricultural land	2.48	0.66
Forest resources	2.60*	0.66
Mineral deposit	1.41	0.66
	<b>2.29</b>	
<b>Human Assets</b>		
Household labour	3.12*	0.69
Educational status	2.06	0.95
Skill in other livelihoods	1.80	0.79
Health status	2.97*	0.74
	<b>2.49</b>	
<b>Physical Assets</b>		
Building and housing	2.45	0.60
Infrastructure	2.02	0.65
Equipment for livelihoods	2.64*	0.65
Household appliances	2.26	0.79
	<b>2.34</b>	
<b>Social Assets</b>		
Social network	2.62*	0.76
Community responsibility	2.62*	0.78
Cosmopolitaness	2.48	0.79
Relation of trust and support	2.72*	0.89
	<b>2.63</b>	
<b>Financial Assets</b>		
Cash at hand	1.89	0.73
Cash in bank	1.56	0.75
Investment worth	1.89	0.79
Remittances	1.53	0.72
Credit facilities	1.48	0.73
	<b>1.67</b>	
<b>Grand mean</b>	<b>2.38</b>	

\*Good (mean = 2.50) Source: Field Survey, 2013

### Livelihoods assets pentagon of the households

The mean scores for each asset were used to generate the livelihoods asset pentagons (Figure 1). The pentagon was developed to produce visual information about people’s assets, hence showing the inter-relationship between the various assets. The centre point of the pentagon, that is, where the various lines of the assets meet represents zero access to assets while the outer perimeter represents maximum access to assets. The respondents’ social assets could be categorised as good thus a good entry for policy intervention. The implication of this finding is that the social asset of the people could be explored by government and other intervention

agencies to introduce changes that could improve their livelihoods. The poorest asset was the financial asset implying that a lot needs to be done in improving this particular asset since it constitutes probably the most important entry point for accumulation of other assets and one of the best indicators of moving out of poverty (Moser, 2006). Physical and natural assets of the respondents were also poor implying that improvement is needed also in these assets. The poor state of the natural assets of the people suggests the need for diversification to non-farm activities through the provision of alternative livelihoods for the people other than farming which is their major occupation.



**1:Very poor; 2: Poor; 3:Good and 4: Very good**

**Figure 1: Livelihood assets pentagon of KLNP**

### Conclusion and Recommendations

Households living around KLNP were mainly farmers although a few of them were involved in non-farm activities. The household livelihood assets of the communities were poor thus restricting their ability to improve their livelihoods especially through non-farming activities. These alternative livelihoods are encouraged for better management of the park and other protected areas in Nigeria.

The following recommendations are made based on the major findings of the study:

1. Sustainable intervention programmes that will increase the capacity of the people to generate income from non-farm activities should be planned and implemented. This will reduce pressure on the natural resources of the Park.
2. Any intervention programme targeted towards the people should explore the social assets of the people including farmers groups, women groups and other associations as a point of entry.

### References

Abukari, H., and Mwalyosi, R.B., (2018). Comparing conservation attitudes of park-



- adjacent communities: the case of Mole national park in Ghana and Tarangire national park in Tanzania. *Trop. Conserv. Sci.* 11, 1e14. <https://doi.org/10.1177/1940082918802757>.
- Abukari, H., and Mwalyosi, R.B., (2020). Local communities' perceptions about the impact of protected areas on livelihoods and community development. *Global Ecology and Conservation*. 22:1. <https://doi.org/10.10106/j.gecco2020>
- Aromolaran, A.K. (2014). Assessment of rural households' livelihood security in Southwest Nigeria. An unpublished PhD thesis. Federal University of Agriculture, Abeokuta, Nigeria. Pp. 288-289.
- Bebbington, A. (1999). Capitals and Capabilities: A Framework for Analysing Peasant Viability, Rural Livelihoods and Poverty. *World Development* 27: 2021-2044.
- Ellis, F. (1999). Rural Livelihood Diversity in Developing Countries: Evidence and Policy Implications (ODI Natural Resource Perspective No. 40). London: ODI, London.
- Ellis, F. (2000). Rural Livelihoods and Diversity in Developing Countries, Oxford University Press.
- Environ-Consult. (2006). Development of Protected Areas Management Plan: Interim Report on Socio-economic and Natural Resources findings. Interim Report submitted to the National Coordinator, CEF-LEEMP Coordinating Unit, NPS, Abuja, FCT. p 68.
- Ervin, J. (2013). The three new 'r's for protected areas: repurpose, reposition and reinvest. *Parks*, 19.2, 75-84.
- Fabusoro, E., Omotayo, A.M., Apantaku. S.O and Okuneye, P.A (2010). Forms and Determinants of Rural Livelihoods Diversification in Ogun State, Nigeria. *Journal of Sustainable Agriculture*, 34:4, 417-438, DOI: 10.1080/10440041003680296.
- Houweling, E.V. (2009). Diversification and Differentiation; the Livelihood Experience of Men and Women in Samene, Chad. Unpublished MSc dissertation in the Faculty of The Virginia Polytechnic Institute and State University. Virginia. P 8.
- Idowu, A.O., Ojiakor, I.A and Ambali, O.I. (2013). Participation and Wage of Rural Female Headed Households in Nigeria Non-farm Employment. *European scientific journal* (13): 206.
- King, B. (2009). Conservation Geographies in Sub-Saharan Africa: The politics of national parks, community conservation and peace parks. *Geography Compass*, 3, 1-14.
- Lele S., Wilshusen, P., Brockington, D., Seidler, R and Bawa, K. (2010). Beyond exclusion: alternative approaches to biodiversity conservation in the developing tropics. *Current Opinion in Environmental Sustainability*, 2:1-7. DOI:10.1016/j.cosust.2010.03.006
- Moser, C.O.N. (2006). Asset-based Approaches to Poverty Reduction in Globalised Context. Global economy and development working paper. The Brookings Institution. 1775 Massachusetts Avenue, NW Washington, D.C. Pp. 1-41.
- O'Riordan, T., and Stoll-Kleemann, S., (2002). Biodiversity, Sustainability and Human Communities: Protecting beyond the Protected. Cambridge University Press, Cambridge, UK.
- Obong, L.B., Aniah, E.J., Okaba, L.A and Effiom, V.A. (2013). Sustainable Livelihood in the Cross River National Park (CRNP), Oban Division, Nigeria. *International Journal of Business and Social Science* 4 (16): 220-231.
- Reardon, T. (1997). Using Evidence of Household Income Diversification to inform Study of Rural on Farm Labour market in Africa. *World Development* 25(5):735-748.