

Comparative assessment of Livelihood activities of Fisherfolk at Geriyo and Rugange Lakes, Adamawa, Nigeria

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Abstract

The comparative assessment of Livelihood activities of fisherfolk at Geriyo and Rugange Lakes, Adamawa, Nigeria using structure questionnaires. The alternative livelihood activities engaged on by fishers in Geriyo and Rugange are farming, animal rearing, civil service, trading, poultry keeping and selling of vegetables. Apart from farming that ranked first at the two communities, other activities ranked differently. The fishers at Geriyo all claimed that money used in starting and running their fisheries business and other livelihood activities were from personal savings; although the fishers at Rugange attested to personal savings, cooperative society, help from friend and others sources as means of funding the business. Based on this study, there is need for proper management strategies to be put in place to ensure sustainability of the two water bodies.

Keywords: Reservoir; Fisherfolk; livelihood; Women in Fisheries

Introduction

The management of inland water bodies and conservation of fisheries resources in Nigeria has been principally in the traditional domain, where traditional strategies such as water tenure, taboos, ritual prohibitions, magic, closed seasons, gear restrictions and flood plain intensification are employed. Some of these traditional strategies are inadvertent or unintentional in that, they were initially put in place for reasons other than the management and conservation of the local fisheries, while others were termed intentional because they were designed to protect, conserve and increase some specific fisheries for particular events or reasons (Odusanya, 2008). However, Ladu et al. (2013) and Panda (2021) also observed some unintentional traditional strategies in Sokoto and Kano States in northern Nigeria, where seasonal rivers and flood ponds are closed for

fishing in the rainy season principally to protect the interest of the full-time farmer, who returns to part-time fishing in the dry season, rather than the protection of the fisheries. Since diversification often involves a change in income portfolio either by adding the portfolios or by expanding the existing ones. Although, the rural fishing economy is a complex one with various activities, however the majority of the fisher's diversity more in fishing, crop production, livestock, trading and other services Sogbesan and Baka (2017). The livelihoods approach seeks to improve rural development policy and practice by recognising the seasonal and cyclical complexity of livelihood strategies, helping to remove access constraints to assets and activities that complement existing patterns, and identifying ways of making livelihoods as a whole more able to cope with adverse trends or sudden shocks. A fundamental precept of the approach is that it seeks "to identify what the poor have rather than

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what they do not have” and “[to] strengthen people’s own inventive solutions, rather than substitute for, block or undermine them’ (Allinson and Ellis, 2001). The impact of livelihood diversifications among artisanal fisher folks is exhaustive, complex and sometimes it is debatable. On one hand, researchers like Bernard et al. (2014), Nse-Nelson et al. (2016) argue that non-farm diversification opportunities may take able farm labours from the agriculture sector and that eventually may cause a decline in farm productivity. FAO/World Bank farming system study noted the importance of five major household strategies for escaping poverty for 70 farming systems across the world: intensification, diversification, and increased asset base, increase off-farm income, and exist from agriculture. Diversification, which includes fisheries, was adjudged to be the single most promising source of farm poverty reducing in this millennium (Dixon et al., 2000). The current trend of increased production can be maintained either through intensification or expansion of area under aquaculture production.

Materials and Methods

Study Areas

The study area is Lake Geriyo and Lake Rugange located besides the dual city of Jimeta and Yola respectively, the capital city of Adamawa state, in the Semi-Arid, dry lands climate of north-eastern Nigeria. The Land mass of the two urban centers is 111.85 km² Jimeta and 719.0 km² Yola, having a total of 830.85 km² and their populations are 199,674 and 196,197 people for Jimeta and Yola respectively (Tukur and Barde, 2014). The area is geographically located between Longitudes 12° 20’ E and 12° 30’ and Latitude 9° 06’ N and 9° 19’ N along the bank’s of River Benue. Lake Geriyo is located at latitude 9°18’29”N and longitude 12°26’55”E and Lake Rugange is located at latitude 9°06’31”N and longitude 12°30’20”E. The altitude of the basin area varies from 145 to 149 m above mean sea level (Barde et al., 2019). The two lakes are important sources of water for drinking, irrigation, recreational, and cultural uses.

Population and sampling techniques

The population for this study comprise of Geriyo and Rugange Reservoirs. The major targets were the fishers where twenty were sampled from each of the communities. A total of Forty (40) fishers were sampled using simple random sampling method for administration of questionnaires.

Demographic Profile and Livelihood Assessment

The demographic profile, socio-economic livelihood of the fishers and their other livelihoods diversity was conducted using

semi-structured questionnaire to get information regarding fisheries enterprises profitability, women involvement in fisheries, Alternative/diversified livelihood means, Financial linkages/Financial Institution linkages. The issue of vulnerability to poverty by the fishing community needed to be documented for the two communities. Tafida et al. (2011) as modified by Ovie and Tafida (2013) and Sogbesan (2014) were adopted for wealth ranking using Participatory Rapid Approach method

Statistical analysis

Data analysis: The data collected were analyzed using T-test to correlates, the fish catch, Socio-economic activities of the fishers, Fish species found in the lake, threatened fish species and other contributing livelihoods activities in the fishing villages. Graph was used to represent some of the data collected. The economic status of each fisher was determined by calculating the weight in kilogram(s) of fish X N2,300.00, this was also used to evaluate the impact of fishing on the income of fishers and the population of the fishing community. T-test as used to compare the variations in fish diversity of the two water bodies.

Results and Discussion

The age, gender, educational status marital status, language spoken, family size, fishing experience are presented for Geriyo and Rugange on Table 1. Table 2 showed the different types of fisheries livelihood activities engaged in with the materials and equipment used by the fisheries. On the table, there is price of the equipment and mean cost was provided to compared prices at the two communities. Despite the fact that they are located in the same Adamawa, some of the prices are significantly higher for the same activity.

Socio-Demographic	Geriyo		Rugange	
	Frequency	Percentage	Frequency	Percentage
Age				
18-28	0	0.0	3	12.0
29-39	16	64	17	68.0
40-50	9	36	5	20.0
Total	25	100.0	25	100.0
Gender				
Male	19	76.0	18	72.0
Female	6	24.0	7	28.0
Total	25	100	25	100.0
Educational				

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Primary	5	20.0	10	40.0
Secondary	13	52.0	8	32.0
Tertiary	7	28.0	7	28.0
Total	25	100.0	25	100.0
Marital Status				
Single	3	12.0	0	0.0
Married	15	60.0	13	52.0
Divorce	7	28.0	12	48.0
Total	25	100.0	25	100.0
Language				
English	9	23.68	9	34.62
Hausa	11	28.96	9	34.62
Bata	9	23.68	7	26.92
Fulfulde	9	23.68	1	3.85
Total	38	100.00	26	100.00
Family size				
Below 3	3	12.0	4	16.0
4-6	17	68.0	19	76.0
7-9	5	20.0	2	8.0
Total	25	100.0	25	100.0
Fishing Experience				
Below 9 years	2	8.0	3	12.0
10-14	10	40.0	11	44.0
15-19	7	28.0	7	28.0
20-24	6	24.0	4	16.0
Above 25	0	0.0	0	0.0
Total	25	100.0	25	100.0

Table 1: Socio-demographic of Fishers at Geriyo and Rugange.

Geriyo				Rugange		
S/N	Livelihood Activities	Materials/ Equipment used	Price of the equipment	Materials/ Equipment used	Price of the equipment	Mean Price
1	Fish processing	Basin, fire-wood, matches, salt, smoking kiln, knife	113, 250.00	Basin, fire-wood, Gas, Spoon, knife smoking kiln	109, 857.00	111, 553.50

2	Catching of fish	Labour, net, gear, canoe, paddle, fuel	95, 833.00	Net, gear, Canoe paddle, labour	130, 000.00	112, 916.50
3	Selling of Fresh fish	Basin, tray, baskets, knife, motor-cycle	179, 575.00	Basin, tray, basket, knife, canoe	147, 875.00	163, 725.00
4	Selling of Processed Fish	Cartoon, Basket, Basin, Knife, water	75, 933.00	Basket, Tar-poulin, Basin, Trays, Revenue	147, 400.00	111, 666.50
5	Construction/ selling of gears and boats	Canoe, Paddle, Planks, Drag net, Gill net	164, 000.00	Drag net, Boat	170, 167.00	167, 083.50
6	Transport of fish	Basin, fuel, labour	23, 173.00	Basin, Motor-cycle, canoe, Paddles, Cartoons	38, 125.00	30, 649.00
7	Repairing of gears	Boat, Nets, Needle, Twine	55, 222.00	Boat, broken net, chairs, tables, needle, twine	163, 753	109, 487.50

Table 2: Different Types of Fisheries Livelihood Activities in Geriyo and Rugange.

Alternative Livelihood and their Ranking at Geriyo and Rugange

The alternative livelihood activities engaged on by fishers in Geriyo and Rugange are farming, animal rearing, civil service, trading, poultry keeping and selling of vegetables as showed in Figure 1. The table 3 showed the ranking of the alternative livelihood by the fishers at Geriyo and Rugange based on economic importance, profit and population involvement. In Geriyo, five livelihoods were ranked while in Rugange, six livelihood activities were ranked.

Apart from farming that ranked first at the two communities, other activities ranked differently. The fishers at Geriyo all claimed that money used in starting and running their fisheries business and other livelihood activities were from personal savings; although the fishers at Rugange attested to personal savings, cooperative society, help from friend and others sources as means of funding the business (Figure 2).

The 100% of the respondents from Geriyo were not member of Co-operative society while 10% from Rugange were members of co-operative society. The name of the cooperative society is Rugange Women Cooperative society, it is a registered cooperative society with 45 members and the respondents had joined for the past 5 years and had also benefited assistance for their livelihood. The table 4 contained information on the economic activities of the fishers at both geriyo and rugange fishing communities. The market linkages of the fishers at Geriyo and Rugange as shown on Table 5 indicated that fish are sold by the fishermen at the landing sites while some of the marketers take them also to the market as wholesalers and sell to retailers. The customers are fish processors, fish sellers, restaurant to mention a few.

In some small fishing communities livelihoods has been at subsistence level just to feed the family and at time little for sell, when the need arises in some places while the fishing communities at Geriyo and Rugange where fishing is done at a large scale artisanal level has suffered neglect in terms of development over the years as in comparison with other agricultural sector (Neiland et al., 2002; David et al., 2011). Those fishing areas were isolated and their community member depend on the natural resources (fishery), but its fast depleting due to poor management and over exploitation. This decrease in resource availability does not only resulted in poor income, but also well-being of fishing households. Where this is prominent livelihood diversification has been identified as a good option that lessens vulnerability, enhance well-being and improve rural economy (Petrere and Ribeiro 1994, Petrere 1996, Ovie and Belal, 2011) since fishing communities in Nigeria are generally still far from developed and the (fishers) are categorized among the poorest of the poor (Araoye, 2002; Williams, 2007). This important sector is faced with the challenges of dwelling resources over the years, following exploitation and lack of sustainable management leading to poor socio-economic well-being of the fishers.

The itemized challenges and solutions are shown on Table 6. All the respondents agreed that women do participate in Fisheries from

both Geriyo and Rugange. Women participate in processing (smoking /Frying/salting/drying), and selling (Fresh/Smoked). Alternative livelihood strategies enable fishers' households to become involved in different economic sectors, thus cushioning the effects of variations in fisheries' resources (Charles, 2011). Involvement in alternative livelihood strategies seemed to be the way forward for the Lake Rugange and Geriyo fishers since fishing income was no longer dependable. However, support from the fishery's stakeholders towards such strategies was needed. As such, there is a need for fishers to develop stronger collaborations with other stakeholders in order to attract their expertise and resources and help boost alternative income sources as was demonstrated by small-scale fishers and the government (Donda, 2017).

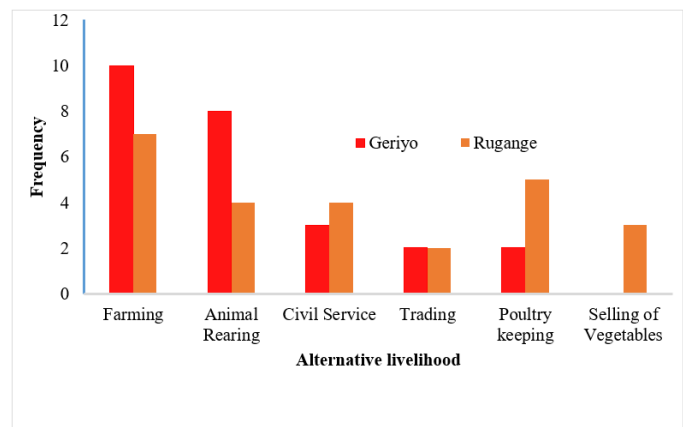


Figure 1: Comparison of Alternative livelihood of the fisherfolks in Geriyo and Rugange

S/NO	Alternative livelihood	Geriyo	Rugange
1	Farming	1 st	1 st
2	Animal Rearing	2 nd	3 rd
3	Poultry rearing	3 rd	2 nd
4	Civil servant	4 th	3 rd
5	Trading	5 th	6 th
6	Selling of vegetables		5 th

Table 3: Ranking of the Alternative livelihood by Fishers at Geriyo and Rugange.

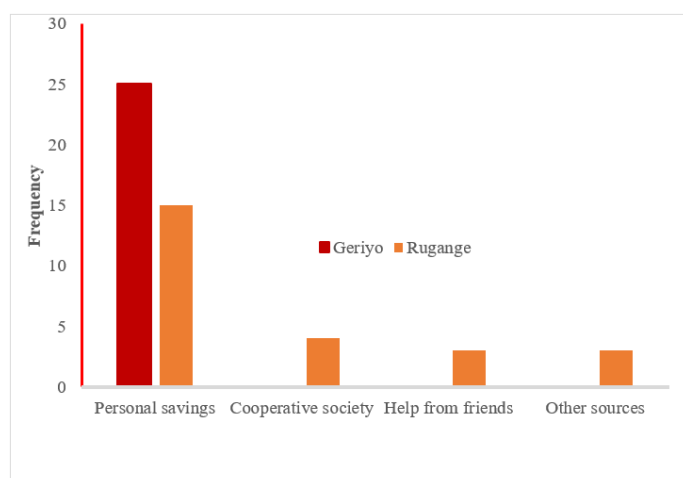


Figure 2: Sources of Funding of the Alternative Activities by the Fisherfolks at Geriyo and Rugange Lakes.

S/No		Geriyo	Rugange	Mean
A	Assistance			
	Family	12	10	11
	Hired Labourer	8	10	9
	Payment (N:K)			
	Daily	5,000.00	5,000.00	5,000.00
	Weekly	20,000.00	22,000.00	21,000.00
	Monthly	80,000.00	88,000.00	84,000.00
B	Type of Fish Species	Catfish	Catfish	
		Tilapia	Tilapia	
		Synodontis	Synodontis	
C	Forms of Selling them			
	Fresh	11	8	
	Fried	1	5	
	Smoked	6	6	
	Iced	0	0	
	Sundried	2	1	
D	Highest selling forms	Fresh	Fresh	
E	Highest Profit form	Fresh and Smoked	Fresh and Fried	
F	Period of the year with abundance fish	Dry Season (September – January)	Dry season (October – December)	

F	Period of the year with abundance fish	Dry Season (September – January)	Dry season (October – December)	
G	Species of fish readily available any time of the year	Catfish	Catfish	
		Tilapia	Tilapia	
		Synodontis	Synodontis	
H	Species of fish threatened	Lates niloticus	Citharinus	
		Gymnarchus	Schilbe	
		niloticus	Gymnarchus	
		Heterotis		
		niloticus		

Table 4: Economic Activities of the fishers at Geriyo and Rugange Reservoir.

	Geriyo	Rugange
Source of your fish	Geriyo Reservoir	Rugange Reservoir
Location of Sales	Landing sites, Markets	Landing sites, Markets
Customers	Processors, Restaurants, Marketers	Processors, Restaurants, Marketers

Table 5: Market linkages of fishers at Geriyo and Rugange.

S/No	Challenge	Solution
1	Lack of good market	Provision of good market stalls
2	Lack of storage facilities	Provision of storage facilities to fishers
3	Poor marketing/sales	Price control
4	Poor storage facilities	Improvement of fish storage facilities
5	Poor Processing plant	Provision of fish processing plant
6	Lack of Capital	Provision of loans/grants to fishers
7	Poor road linkage	Rehabilitation of the road
8	Lack of fishing gears	Provision of fishing gears

Table 6: Challenges and Solutions of Fisheries Livelihood at Geriyo and Rugange.

Recommendation

Funding is essential in the development of the alternative livelihood, so investors and agricultural bank can see this as an opportunity in giving grants to the fishers and creating perfect market linkages will be an encouraging factor to fishers

Conflict of Interest

There is no conflict of interest between the authors. All authors contributed to the field and manuscript writing

References

- Allison, E. H. and Ellis, F. (2001). The livelihoods approach and management of small-scale fisheries. *Marine Policy* 25 (2001): 377–388.
- Barde, M. M., Tukur, A. L., and Muhammadu, A. M. (2019). Detection and Mapping of Flood Prone Areas of Jimeta, Adamawa State, Nigeria. *ATBU, Journal of Science, Technology & Education (JOSTE)*, 7(2): 2019.
- Charles, A. (2011). Good practices in the governance of small-scale fisheries, with a focus on rights based approaches. In R Chuenpagdee (Ed.), *World small-scale fisheries contemporary visions*. Delft. Eburon Academic Publishers, The Netherlands. 285–98.
- Dixon, A.B. and Wood, A.P. (2003). Wetland Cultivation and Hydrological Management in Eastern Africa: Matching Community and Hydrological Needs Through Sustainable Wetland Use. *Journal of National Resources Forum* 27(2): 117-129.
- Donda, S, (2017). Who benefits from fisheries co-management? A case study in Lake Chiuta, Malawi, *Marine Policy*, 80: 147-153
- Ladu, B.M.B., Sogbesan, A.O and Tafida, AA. (2013). Fisheries and Fishing Enterprises In the Hadejia Jama,are Komadugu Yobe Basin, Nigeria: A Technical Report Submitted to Hadejia Jammare Komadugu Yobe Basin- Trust Fund, 60.
- Neiland, A.E., Ladu, B.M.B and Bene, C. (2002). Sustainable Development of African Continental Fisheries: A regional study of Policy Options and policy-formation mechanisms for Lake Chad Basin. *Final Report Brussels: Eu-INCO Programme*. 297.
- Ovie S.I and Tafida. A.A (2013). Wealth Ranking, Capital Assets Profiling and Livelihood Diversification in Two Artisanal Inland Water Fishing Communities: *World Rural Observer* 5(3): 18-22.
- Sogbesan, O.A and Baka, G.L (2017). Fish Biodiversity and Fishing Activities at Njoboliyo Lake, Adamawa State, Nigeria. *Journal of Fisheries and Livestock Production* 5(2): 226.
- Tukur, A. L., and Barde, M. M. (2014). The Geography of Politics: A Case for the Political Redistricting of Adamawa State, Nigeria. *IOSR Journal of Humanities and Social Science*.
- Tafida, A.A. Adebayo, A.A, Galtima, M, Raji, A, Jimme, M and John, C.T (2011). Livelihood Strategies and Rural Income: The Case of Fishing Communities in Kainji Lake. *Agricultural Journal* 6 (5): 259-263

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