

An Analysis of the Impact of Women in Small Scale Fisheries on Poverty Reduction: A Case Study of Lake Chad Basin Area, Nigeria

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ABSTRACT

The study is an attempt to analyze the impact of women in small scale fisheries on poverty reduction in Lake Chad Basin area, Borno State of Nigeria. Data for the study were collected through a structured questionnaire from 1st to the 30th of July 2017. The results showed that women fishers are lacking in support services that will enhance their role performance with literacy level close to 100% yet, their economic potentials cannot be underrated as they had immensely impacted on the household well-being. The result of the regression analysis indicates a significant relationship between socio-economic characteristics of the respondents and the roles performed in small scale fishing activities in the study area. It is recommended that government should make concerted effort in the improvement of the socio-economic characteristics of women in small scale fisheries in the study area in line with policies that will enhance their role performance in the sub-sector.

Keywords: Small scale fisheries; Poverty reduction; Socio-economic characteristics; Role performance; Women fishers.

INTRODUCTION

Small scale fishers and their families in fishing communities in West African Countries have no secure access to good or better management of the natural resources: lack access to basic and or facilitating infrastructure such as: electricity, pipe borne water, education, technologies, training, health and nutrition to list a few features which risk their movement toward poverty. More importantly these women lack a more secure access to financial resources as well as a policy that supports multiple livelihood strategies that promotes equitable access to competitive markets [1].

The objectives of the Nigerian national fishery policy were achievement of self-sufficiency in fish production within five years, as well as development and modernization of fish production, processing, storage, and marketing, including exports. The main strategies were focused on production modes and fish harvest from deep-sea trawling, fresh-water and artisanal sources based on ecological zones. Governments also provided economic incentives, developed capacity for fish investment services, created fisheries organizations, associations, supported

the supply of fingerlings and other inputs, ensured effective regulations, enforcement, and promote the improvement of the quality of life in fishing areas [2].

The economic problems of fishers in important communities in the fishing areas of Lake Chad are seen in the area of post-harvest losses and fish marketing and distribution, significant economic losses are being recorded annually as a result of lack of adequate fish processing and storage facilities. Most of the fishing villages are littered with great numbers of children and people, illiteracy level is close to 100%. Those communities that have schools at all, the primary school remains the highest level attainable as if that is not enough such schools hardly have teachers in their classroom. There is none of the fishing villages that can point to any social amenities they are enjoying.

If it is portable water, the best they have ever had is concrete well which are even unhygienic as well as inadequate to serve the communities. The situation of road is so terrible that most of the fishing villages hardly have road to take their fish products to the fish market for sale. Hospitals and health Centre are mostly not in existence or existing abandoned clinic buildings without drugs let alone medical personnel. Their findings also revealed

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that the fishers were unaware of what the National Fisheries Policy is all about let alone involving them in decision making process [3].

Gender participation in fishing activities revealed that some activities were gender specific, while some indicated overlap between the two sexes, fish processing (smoking) was exclusive to the female and few male children in the villages. Female children were however, not involved in fish catching but younger male children (12 years and above) were involved in hauling of canoe during fishing. Younger male children were also found to carry out small scale marketing of fresh fish at the landing site. Little percentage of females were involved in gear and craft fabrication and hauling of canoe during fishing [4].

The success or failure of the actualization of the government policy and developmental project is greatly being influenced by the socio-economic attributes of the people. It follows that for a reasonable level of success to be achieved by the fisheries policies, involving the people in taking decision on programs that is expected to have impact on their life is quite essential. On the contrary, the government is yet to appreciate the principles of the participatory rural appraisal, little wonder the level of achievement of the objectives of fisheries policies remain poor.

Government's management and development programs in fisheries have not ensured sustainable fish production and the improvement of the standard of living of the fishers. What is obtainable at the Lake Chad Basin fishing communities is a high level of infrastructural underdevelopment. Despite the fact that fishing has been a major source of food and as well as employment for Nigeria's teeming population and considering its importance in the National life, fishing has long been neglected in the scheme of things, the level of deterioration at the Lake Chad basin attest to the validity of this statement [5].

A lot has been covered in addressing gender sensitive issues in fishing communities. However, if the activities are not properly identified and studied, the programs can be counter-productive and further isolate the women beneficiaries. Since the declaration of the 'Decade of the Women' in 1975, efforts have been made to improve the living conditions of women and to correct the disequilibrium between men and women. This initiative was picked up by FAO and several governments in the developing world. These national institutions and FAO became committed to ensuring that women in general and in fisheries is recognized and supported [6].

Women constitute about half the population actively involved in fisheries development activities, programs, and projects. However, fisheries development projects and programs are often biased towards men and the involvement of women in planning and programming is very limited. Fisheries policies and programs addressing the specific issues of women are virtually nonexistent. The educational status of women in the fisheries sector compared to men is inferior and women do not have special programs for their training in technological improvements. They do not have access to credit and finance and enjoy limited attention in terms of expansion of their activities. Active participation in the fisheries sector requires the

empowerment of fishers. It demands motivation, active involvement, and organization.

Active participation demands that fishers who are the ultimate beneficiaries of programs participate in determining their needs and priorities and contribute to sustainability of actions and initiatives.

This requires that beneficiaries are organized and form an integral part of the information gathering system. But women are not fully involved in decision making processes and their level of organization and response to their needs are limited. Hence the emancipation of women in the fisheries sector in terms of freely expressing their needs and aspirations and effectively shaping their future is yet to be realized. It is therefore sad that with all the roles and responsibilities women shoulder within the fishing communities, their relative levels of education and participation in decision-making in society is still low, as customs still retard the progress of women emancipation [7].

Problem setting and research objective

Many countries in Africa are accelerating the implementation of Comprehensive Africa Agriculture Development Program (CAADP) and finalizing CAADP-Compacts, significant deficiencies have been identified in the way the fish sector has been integrated into the CAADP process. Some countries with large fish resources and aquaculture potential have failed to account for the contribution of the fish sub-sector towards the 6% annual growth agenda. Such a failure has led these countries to miss out on the great opportunity for fish to contribute to socio-economic development as well as enhance and diversify the key drivers to the 6% annual growth of the agricultural sector within the CAADP framework. There is a need for strategic support to African fisheries to ensure that the role of fish in the CAADP framework is fully accounted for and this should mainly focus on addressing the following challenges:

- i. Creating the platform under which the fish sub-sector will develop to its full potential in countries with substantial fish resources. One of the pillars of such a platform development of national fish policy frameworks.
- ii. Establishing strong fish institutions which will in return create supportive "innovation systems", including such prerequisites as human capital, technology, and ability to diffuse technologies in fisheries and aquaculture.
- iii. Build on the successes of fish production, management, processing and exporting in other African countries, to strengthen the role of fish in the strategic objectives of CAADP and New Partnership for African Development (NEPAD) in current and potential future contributions of inland fish, coastal and marine fish, and aquaculture.
- iv. Undertake assessment and adopt current standards of valuation and investment planning for the fish sector at national level in support of the CAADP stock-taking and investment planning [8].

Food and Agricultural Organization of the United Nations, FAO [9] identified ineffective fisheries policy development and fisheries management implementation as the major risk that

threatens the benefits from fisheries in most fishing communities in African countries.

Government's past efforts to boost small scale fisheries in Nigeria dates back to the early 60's when the first national development plan was put in place, but considering the achievement of the plan against plan objectives contained in the national fisheries policies, the story has hardly changed from that of little or no achievement. Considering the strategic position, the Lake Chad Fisheries occupies and its great importance within the small scale fisheries sub-sector of Nigeria, the impact of the failure of the government policies on small scale fisheries will be most felt by the Lake Chad Basin fishers due to the fact that the deterioration of the socio economic environment of the Lake Chad Basin is quite apparent and palpable is still holding sway and the level of deterioration even more sobering [3].

Women emancipation and their involvement as partners in development strategy will require proper organization and involvement in the decisions about the identification of their needs, aspirations and in the search for solutions and improvements of their socio-economic activities and programs for sustainability. Equal access to strategic resources, finance and improved technology is vital. Like in most other sectors, will require looking into the issues of means of production, gender relationships and positions to create equalities, development strategies and policy treatment, organizations, institutionalized credit and finance systems, all to be centered around the sustainability of actions and initiatives in the sector [7].

This research work was undertaken to fill the literature gap in enabling the need for the support systems be organized in a way that should bring about changes in the socio-economic status of women that might have resisted and will eventually promote the impact of women in small scale fisheries on poverty reduction in the study area. Small scale fisherwomen relations with fishermen have been biased would be complementary and mutually reinforcing. Consequently, the genuine desire to improve socio-economic status of women in small scale fisheries, recognition of their economic relevancy and women contribution in the fisheries sector to poverty reduction will be improved in the study area.

Data collection for the research work was carried out within the period of one month, from 1st to 30th July 2017. Within the period there was intensive fish marketing and associated fishing activities. Fish demand and supply was high at that period because of religious events and festivities.

METHODOLOGY AND DATA

The study area is Baga fishing community of Lake Chad Basin, Kukawa Local Government Area Borno State of Nigeria. It is in the semi-arid plain between latitude 12° 18'-13° 48' N and longitude 13° 18'-14° 48' East of the Greenwich Mean Time (G.M.T.) [10]. During the "Normal Chad" (stabilization of the Lake at normal size as a result of the influence of rainfall and volume of water flow in the major rivers that feed the basin), the composition of Lake Chad Basin comprised of Chad 11,000 km² (50%), Nigeria 5,500 km² (25%), Niger 3900 km² (17%),

and Cameroon 1800 km² (8%), during the "Little Chad" the open water is shared only between Chad 1200 km² (60%) and Cameroon 800 km² (40%).

The Nigerian and Niger portion are liable to complete drying, e.g., Sahelian drought of 1968 [11]. The study area has a population of about two hundred and three thousand, three hundred and forty-three (203,343) inhabitants with a land area covering about 4,901 km², National Population Commission of Nigeria [12]. The fisheries of the Lake Chad employ about 10,000 fishers including about 150,000 persons associated with the fisheries business [13]. The major tribes from Nigeria include the Agatu, Hausa, Jukun, Kanuri, Ijaw, Shuwa, Urhobo, Nupe, Ilaje and Ijebu and foreigners like Malian, Kotoko, Masaca, Buduma, Kanumbu.

The Hausa constitutes the majority (19%) fishermen on the Nigerians part followed closely by the Jukun (16%), and Agatu (11%); the Malians constitute majority of the foreign fishers on the Lake. Fishing is their major occupation consisting of fisheries activities including processing, preservation, transportation, and marketing. Other economic activities are farming, cattle herding, and trading, Federal Department of Fisheries [14], (Appendix).

Data for this study was obtained from primary source. The primary data was obtained through a questionnaire designed to elicit information from the respondents on the impact of women in small scale fisheries on poverty reduction in the study area.

The total population of Baga town in the Lake Chad Basin Area stood at 203,343 out of which, 160,000 were fishers and persons associated with the fisheries business. This study therefore involves all Small-Scale fisherwomen in the two fish markets in Baga. In this study, multistage sampling technique was employed for selecting the respondents. In the first stage, two fish markets (Doro International Fish Market and Baga fish Market) the predominantly large fish markets were purposively selected. The second stage involved random selection of the women involved in the fishery activities in the two markets.

The list of the registered women fishers was obtained from the records of Federal College of Freshwater Fisheries Technology (FCFFT), Baga in the institute's office Maiduguri, and Office of the Nigerian Union of Fishers and Sea Food Dealers (NUFAS), Maiduguri, Borno State. The list of the registered women fisher groups formed the sampling frame and a random selection of 100 respondents from Baga fish market while 165 respondents from Doro International fish market because of the higher fishing activities of the international market, making a sample size of 265 respondents were used for the study.

"Large Sample Estimation-HCC "as in Den-So [15] was used in the computation of the sample size. This was employed because of the reliability of the formula in dealing with large population sizes and in producing results with high degree of confidence.

Sample Size as in Den-So [15] is computed thus:

Sample Size

P=Population Proportion

ME=desired Margin of Error (expressed as a proportion)

P=Population Proportion

=0.79

=

=

Sample Size=265.

Descriptive statistics and inferential statistics were employed in the analysis of the impact of women in small scale fisheries on poverty reduction in the study area.

RESULTS AND DISCUSSION

Descriptive statistics (mean, frequency count and percentage) and inferential statistics (Multiple Regression) was used in the analysis of the data. Two hundred and sixty-five (265) copies of questionnaires were administered and copies were retrieved, making 100% return rate. The results were presented in tables and discussed according to the research questions.

Socio-economic characteristics of small-scale fisherwomen

Table 1 shows the various socio-economic characteristics of the respondents in the study area. The age distribution of the respondents shows that most of the women fishers were within productive age (24.91%) was recorded as high for respondents within the age range of 37-42, followed by 21.51% for respondents within the age range of 31-36.

This result indicates that most of the women fishers fell under productive age range. The high percent of more women fishers that were within the productive age range was consistent with the result of Obande, Tihamiyu and Itode (2005) the age distribution of most women involved in fishing activities along the Benue River of Nigeria was between the age range of 31-40 years. The educational status of the respondents in the study area shows (37.36%) of the respondents were illiterates. The result indicates that most of the respondents have no education. The high illiteracy level of women fishers has the implication of affecting the respondents in seeking for bank loan and contact with extension agents.

Table 1: Frequency Distribution of Respondents According to their Socioeconomic Characteristics (n=265).

Characteristics	Frequency	Percentage
Age		
Less than 24	18	6.79
24-30	56	21.13
31-36	57	21.51
37-42	66	(24.91)*
43-48	43	16.23

Greater than 48	25	9.43
Total	265	100
Educational Qualification		
Primary Education	84	31.7
Secondary Education	54	20.38
Tertiary Education	28	10.57
No Education	99	(37.36)*
Total	265	100
Household Size		
1-4	58	21.89
5-8	132	(49.81)*
9 and above	75	28.3
Total	265	100
Fishing Experience		
0-4	37	13.96
5-9	82	(30.94)*
10-14	63	23.77
15-19	35	13.21
20-24	25	9.43
25 and above	23	8.68
Total	265	100
Contact with Extension Agents (Monthly)		
None	101	(38.11)*
Once	92	34.72
Twice	72	27.17
Total	265	100
Income (Naira) Per Month		
Less than	47	17.74
	107	(40.38)*
	87	32.83
	24	9.06
Total	265	100

Marital Status		
Single	26	9.81
Married	191	(72.08)*
Widow	40	15.1
Divorced	8	3.02
Total	265	100

Source: Field Survey, 2017.

Note: the symbol (*) indicate high % recorded in each classification.

This result was inconsistent with the findings of Nlerum and Bagshaw [16] 67.5% of the artisanal women fishers in Akuku Toru Local Government Area of Rivers State of Nigeria, which had at least primary education. This indicates that more of the women fishers were of primary level education.

Household size of women fishers was noted with high tendency ratio as (49.81%) of the respondents that fell below 5-8 persons, 28.30% was for 9 and above persons while 21.89% was for 1-4 persons. Large household size offered free and cheap labor for the fishing households. This result disagreed with the result of Augustine and Monday [17], where substantial amount of fish produced was also consumed in the overall household income.

The result of the years of fishing experience of the women fishers in the study area shows high years of fishing experience of (30.94%) of the respondents that fell within years of 5-9 years followed by 23.77% fell between the years of 10-14 years. None of the remaining range of years of experience classified recorded more than 14% in the study area. This result indicates that the women fishers were experienced fishers. The more the years in each activity the more the experience a person acquires in that activity. This result agreed with the result of Raji and Omoyemi [2] most of the fishers had put in 6-45 years of fishing on the Lake Chad basin.

The result of monthly contact with extension agents of the fisher women in the study area shows fair result with (38.11%) high of the respondents in the study area has no contact with extension agents followed by 34.72% had once monthly contact and 27.17% had twice. This result was inconsistent with the findings of Lambeth and Abraham [18] monthly contact with extension agents was very poor with as much as 89.7% of the women fishers in the study area show no contact with extension service which indicates that women fishers were still practicing traditional methods of fishing. There were no contacts with extension agents to teach the fisher women new technique of fishing.

Monthly income analysis of the fisher women depended on their volume of fishing activities. The result shows that 17.74% of the fisher women earned less than N 18,000 per month, meant that as much as (82.27%) of the fisher women earned income which was equal to N 18,000 and above per month that meant that they earned more than the national minimum wage

of N 18,000 earned by the civil servants in the country Nigeria. According to Central Bank of Nigeria, [19] 1 US Dollars exchange rate was N305.08 as of 20th July 2017 when the questionnaires were administered. That meant the fisher women earned \$ 1.97 per day and \$ 59.00 monthly.

This result was an indication that the fisher women lived above the global poverty level which is 1 US Dollars per day. This shows that the impact of women in small scale fisheries is economically rewarding and could be useful in reducing poverty in the study area. The result confirmed that of Raji and Omoyemi [20] measuring poverty based on the Income Poverty Index (IPI) reveals that the fishers of the fishing communities cannot be regarded as poor. The fishers with the least income earned amounting to N 28,000-N 44,000 per month. At the other extreme monthly earning could be as high as N 228,000-N 244,000 per month. With these earnings, the fishers have been placed above the 1 US Dollars per day.

The result of the marital status of the women fishers in the study area shows that most women were married (72.08%). Widows were 15.10% while 9.81% were single and 3.02% were divorced. This result indicates that married women were more involved in small scale fisheries in the study area. The married women assist their husbands and hence contribute to the general upkeep of the family. The widows were also engaged in the small-scale fisheries to help their families as single parents. The divorcees and the singles were less involved in the small-scale fisheries in the study area. This meant that fishing had become major source of activity to all classes of women in the study area. This result agreed with the finding of Stella [1] since 80-90% of the African women live in rural areas, rural women supply about 80% of the labor force. In general, women usually fulfill multiple roles in their lives and careers making time allocation very critical issue.

Multiple regression showing the impact of small-Scale fisheries activities in relation to socio-economic characteristics of the respondents

Tables 2, 3 the result indicates a significant relationship between the socio-economic characteristics of the respondents and the impact of Small-Scale Fisheries activities in Baga, Lake Chad Basin Area, Borno State, Nigeria. This is because the probability values are less than the alpha value at (0.01, 0.05, 0.1) level of significance for the significant variables (age, educational level, fishing experience, monthly income) and no significant relationship for the non-significant variables (Marital status, household size and contact with extension agents). Hence, there was a significant relationship between the socio-economic characteristics of the respondents and the impact of small-scale fisheries activities in Baga, Lake Chad Basin Area, Borno State, Nigeria. The semi-log model depicted more signs of better fitness than the other three (linear, double-log and exponential) in that it had the highest R² value of 0.870. R² indicates 89% of the variation in the impact because of the explanatory variables included in the model. F-ratio explained the joint effect of the independent variables of the model. Since it was significant 1%, it implied that the model was fit and that the socio-economic factors in the model had significant joint effect

on the impact in small scale fisheries activities. Specially, age (-0.004) and fishing experience (0.001) at 1%, educational level (0.002) and monthly income (0.002) at 10% were the most significant socio-economic variables influencing the impact. Negative value of coefficients in marital status, age and household size meant that a unit increase in these variables would lead to decrease in the dependent variable (impact). This means that when the respondents are married, their impact decreases. Also, as the respondents' age increases, their impact in small scale fisheries reduces. In addition, as household size increases, the impact of the respondents' decreases. This result confirmed that of Obetta, et al. [21] indicated that marketing was the major contribution of women fishers in their role performance with (93.21%) followed by making and sales of twine (ropes) with 90.19%. Net making with 86.42%, transportation 82.26%, preservation and processing of fish with 81.89%, sorting with 80.00% and sales of fishing gears with 78.11% in the Lake Chad Basin Area, Borno State of Nigeria. The contributions of women fishers in role performance in other activities recorded in the area were all below 60% except that of packaging and unpack aging of fish which accounted for 61.51%. The least contribution was made under loading and off-loading activity with 43.77%.

Table 2: showing the Impact of Small-Scale Fisheries Activities in relation to Socio-economic Characteristics of the Respondents.

Variables	Coefficients	t-statistics
Constant (intercept)	0.002	4.625***
Marital status ()	-0.114	-8.928
Age ()	-0.004	-3.388***
Educational level ()	0.002	9.420*
Household size ()	-0.301	-0.543
Fishing Experience ()	0.001	37.390***
Monthly contact with extension agent ()	0.259	1.616
Monthly income ()	0.002	10.740***
R	0.87	-----
F-Statistics	0.008	7.786***

Table 3: showing the Impact of Small-Scale Fisheries Activities in relation to Socio-economic Characteristics of the Respondents.

Variables	Linear function	Semi-log function	Double-log function	Exponential function
Constant (intercept)	(4.625)	(19.980)	(31.225)	(5.325)

	-0.114	0.363	0.756	0.755
Marital status ()	-(8.928)	-(0.862)	-(0.976)	-(0.752)
	-0.004	0.007	0.017	0.011
Age ()	-(3.388)	-(4.363)	-(3.575)	-(2.346)
	0.002	0.002	0.082	0.026
Educational level ()	(9.420)	(1.199)	(1.722)	(2.160)
	-0.301	0.267	0.162	0.191
Household size ()	-(0.543)	-(1.166)	-(1.391)	-(0.133)
	0.001	0.000	0.000	0.000
Fishing Experience ()	(37.390)	(0.718)	(0.147)	(4.355)
Monthly contact with extension agent ()	0.259	0.199	0.285	0.276
	(1.616)	(2.962)	(3.117)	(1.117)
	0.002	0.007	0.002	0.239
Monthly income ()	(10.740)	(10.875)	(10.191)	(10.641)
R2	0.870	0.894	0.855	0.175
	0.008	0.000	0.000	0.000
F-Statistics	(7.786)	(8.160)	(7.688)	(7.668)

Source: SPSS output, version 23.

Note: the symbols (***), (** and *) indicates significant levels at 1%, 5% and 10%.

This result shows that mean contribution in role performed by an average woman in small scale fisheries in the study area was high 68.95%, the total contribution of role performed was 965.28% which was used in the computation of the multiple regression on relationship between socio-economic characteristics of respondents and impact in the activities of small scale fisheries on poverty reduction in the study area.

SUMMARY AND CONCLUSIONS

The results showed that women in small scale fisheries had immensely impacted on the household well-being in the area of income generation as a result of the fishers' involvement in diverse small scale fisheries activities which culminated to poverty reduction in the study area as the analysis showed significant relationship between the socio-economic variables of age, education, fishing experience and monthly income influencing the impact on poverty reduction. The analysis further showed no significant relationship between the variables; marital status, household size and contact with extension agent which does not directly influence the impact on poverty reduction in the study area. The following recommendations are made:

1. Concise effort should be made to increase the number of women fishers within the productive age range to heighten the level of participation in small scale fisheries production in the study area.
2. Government and non-governmental organizations should device a means of enabling the women fishers in acquiring formal or semi-formal education as applicable in the study area.
3. Empowerments of the women fishers with capital support and other essential facilities for further expansion of productive capacity in the study area.
4. An avenue for easy access to extension officers by the small scale fishers should be created by the government, non-governmental organization and other responsible bodies through embarking on publicity and awareness creation campaign on the importance of the extension officers in relation to fish production and other related opportunities.

Note: Contributions; Conceptualization: Babagana Zanna, writing original draft preparation: Babagana Zanna, Writing – review and editing: Mohammed Musa, Supervision: Mohammed Musa. All authors have read the manuscript and agreed for onward vetting, corrections, guidance for further consideration and approval and subsequent publishing of the final version of the manuscript accordingly. The research work was carried out by Babagana Zanna without any financial support from any agency or individual and finally the research work has no conflict of interest.

APPENDIX: STUDY AREA MAP (Figures 1 and 2).



Figure 1: Source: Abubakar (2007).



Figure 2: Source: Abubakar (2007).

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