Scholars Journal of Arts, Humanities and Social Sciences **ISSN 2347-5374 (Online)**
Sch. J. Arts Humanit. Soc. Sci. 2016; 4(1A):52-56 **ISSN 2347-9493 (Print)**

(An International Publisher for Academic and Scientific Resources) DOI: 10.36347/sjahss.2016.v04i01.009

Assessment of Morom River Basin to the Livelihood of the People in North East of Gombe, Nigeria

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Abstract: One of the basic necessities of man's life is water, especially fresh water. However, regardless of quality, rivers the world over supply substantial volume of water for man's diverse uses. Rivers in form of drainage basin is more than a geomopologic unit, it is also a hydranlic and hydrological unit having a unifying factor in water as a natural resource. A river channel with or without water possessess a utility that contributes to the livelihood of the people within and beyond it.This paper assess the contribution of Moron River Basin situated in the north-east part of Gombe to the livelihood of the communities residing within the basin. The work observed the uses of river system in the work of multidisplinary analysis of the Lake Chad Basin by Neitherland and Bene in 2002 and compared it with that of Morom River Basin in order to explore areas of similirities and more importantly to show case how Morom River Basin is put to use to alliviate poverty. A field questionnaire survey was conducted and the collected data were summrized in terms of means, proportions, and percentages and tested using chi-square statistical analysis.This study shows how Morom River Basin contributes significantly to the livelihood of communities where thousand of of people obtains their livelihood resources from the rivers. Furthermore, hypotheses tested revealed that the river basin significan influences the livelihood of the people and that the settlement pattern of the area is significantly related to the river system.
Keywords: Moron River, Livelyhood, River Basin, River, Gombe.

Introduction

Arill,brook, creek or river receives the water from an area that slopes down towards a channel. Channels therefore, occupy the part of landscape. The ridges of the surface- that is the rim separating the land that drains into one another- is called the divide. The area enclosed by the divide is called the drainage basin. All lands in the enclose supply water either by surface run-off, snow melt or underground flow to the channels that from the river basin [1]. Drainage Basin warant geographycal study for three reason.Firstly, because of their existence in the physical landscape and their significance for producing fluvial landforms. Secondly, because of their importance indirectly in relation to many other geographycal processes in fluvial landscape and thirdly, because of their significance to man.

Drainage basin have become important for economic and landuse planning. Rivers have been used as a source of water, for obtaining food, for transport, for defense, for energy, for power to drive machines, for bathing, for waste disposal, among other uses too numerous to mention. The contribution of the studied basin to livelihood has been looked upon from individuals rivers that made up the basin. The water contents varies spatially and temporally. Hence, the study looks at the river system at different seasons and at different locations.Along its entire course from the dry, isolated hills west of Gombe region to the plains of Dadin kowa, people have historically depended on the rivers basin for driking, irrigation, animal grazing, industrial uses, and for construction materials among other uses.

The study problems is to discover and assess the contributions of Morom River Basin to the livelihood of the people residing in the north-east of Gombe comprising of three local Government Areas of Gombe, Kwami and Yamaltu/Deba especially due to lack of documented informations about the Morom River Basin despite its numerous livelihood resources.Rivers are important to the residents of the study area because they supply their basic necessities of life in addition to being their source of livelihood.Due to the remoteness of the area, there is an information deficit, as such, it is currently difficult to make an accurate and up to date assessment of the economic activities taking place within the area. Planners and development agencies are constrained in their ability to generate and implement rural development policies to reposition the area in terms of the contemporary development needs.

The word livelihood meant nothing but "Occupation" or "employment"- that is way of making a living. More recently, the meaning of the term has expanded to include broader systems that emcompass the economic and other attributes. Within these livelihood systems various factors have effect on the strenthgth, resilence and vulnerability of peoples' way of life. These may be their assets, their work and other cultural activities and factors that help people get access to these assets and activities [2]. River Basin have numerous resources upon which communities along the basin can harness as a means of livelihood. It is therefore, necessary to analyse the various rural resources of the communities along riversystems in order to determine the economic status of populace in relation to the livelihood systems open to them. The choice of one or two livelihood systems may not be satisfactory unless there are some kinds of restriction enforced on the use of other systems.

This work reviews the work done on Lake Chad Basin Area by Bene and Neiland in 2002 who reserched on *The Contribution of Inland Fishers to Rural Livelihood in Africa*[3-6].The research by the two authors focused on the livelihood of rural communities living in the Lake Chad Basin region and in particular assessed the contribution of fishing activities to the livelihood of the Lake Chad Basin region and in specifically assessed the local population in their work, where a detailed socio-economic survey including a participatory poverty assessment was carried out in threemajor fishing regions of the basin. They completed their survey by a series of comparative analysis of the accessibility of fishing grounds and fishing gear ownership across different socio-economic strata of the population.

The central element of the survey was an activity ranking exercise combined with a participatory wealth ranking exercise. The authors used ditinct criteria for their survey: 1 the allocation of household's labor (time effort) over the whole season in each activity; and 2 the contribution of each activity to household's overall income. The results were then aggregated across villages of the same area.The comparatives analysis of the activity ranking exercise offered a good starting point in the role of fishing activities in the rural livelihood of the studied area. Their analysis revealed that the contributions of fishing to rural livelihood of the people vary between wealth groups within the same area but also between areas of same wealth groups.

The major conclusion they drew was that the original question which motivated their study i.e what is the contribution of fishing activities to the rural population livelihood can not be correctly answered. The second conclusion was that, although the access of fishing ground is strongly related to wealth, there is nothing like a one-on-one relationship between wealth level and the contribution of fishing activities to household livelihood.

An important lesson from their findings was that the way fishing activities contribute to household livelihood is remarkably complex and difficult to access and that the relationship betwee wealth or poverty and fishing activities is more than ambiguous. Chari Delta and Western shores of the lake were among the localities sampled in their survey. Infact, the livelihood analysis carried out in these localities revealed a situation where the poorest are too poor to be fishers! In those circumstances, the perception that "fishing rhymes with poverty" is far too simplistic to reflect the reality [2].

From the aforementioned it is not too suprising if the major conclusion they drew that what motivated their study cannot be correctly answered.It is hoped that this study will help in that direction coupled with the writer's intention to provide an academic reference and a source of information to students and reserachers.

Based on the aformentioned gap opened by the work of Bene and Neiland in the lake chad Basin, this study is goinig to explore other potential economic activities that can be found within a particular basin upon which the communities in the basin can harness for thier liverlihood .In view of the above, this work will look at the Morom River Basin which is the largest river basin in Gombe state, Nigeria with a view to assessits contribution to the livelihood of the people in North-east of Gombe.

Study Area

Most of the rivers in the north-east of Gombe, Morom inclusive, empty their waters into River Gongola. This study focuses on the tributaries of Morom River and the Moromriver itself which eventualy empty their water into Gongola River at Dadin-Kowa, a town east of Gombe city.

The length of the River Basin extends 58 km from the longest source of the river in the west of Gombe to the mouth of the river where it empties. The width of the basin from River Doho in the north of Gombe to River Zambuk in the South-east of Gombe is about 29.5km. The ariel extent of the study area measured up to 118.9 km.

Seven rivers make up the Morom River Basin-these are River Doho, River Gadam, River jarkwami, River Dumbe, River Gabukka, RiverKwadon and River Morom (Figure 1). the above seven rivers cut across three Local Government Areas of Akko, Gombe and Yamaltu/deba. The river basin lies between latitude $10^{o}19'$ and 10^{o} 20'N and longititude$11^{o}2"$ and 11^{o} 28" E. The length of the river system extentds to 58km from

the longest source in the west of Gombe to River Gongola where it empties. The width starts from River Doho in the north to River Zambuk in the south-east covers 29.5km.

There are 20 setlements in the Morom River Basin with a total Population of 53, 648 comprising of 26,567 males and 26,991 females (National Population Commission, 2006). The system comprises of 9 settlements in Yamaltu/Deba Local Government , 8 setlements in Kwami Local Government and 3 setlements in Gombe Local Government.

MATERIAL AND METHOD

Two sources of data collection techniques have been explored to achieve the objectives of the study. Basically, structured questionnaire and pictures of various livelihood resource serve the primary source. Information from books, journals and phamphets serve the secondary source. Other sources of this work include temprature and rainfall data obtained from NIMET office, Dadin-kowa Gombe state Nigeria.

Reconnaissance (recce) survey was conducted to identify the rivers and the communities that made up the study area;to identify possible study problem; to familirize and establish rapport with the communities; to establish a method of data collection and to observe special features. The recce also afford the researcher the opportunity to recruit and brief field assistance from the communities.

Simple random selection was made in communities situated along the seven rivers that made up the Morom Basin.Tha data collection was conducted from 25th June 2015 and 19th July, 2015 using socio-economic multi-activity survey technique. There were 23,774 people in Yamaltu/Deba L.G.A; 18,319 in Kwami L.G.A and 11,401 people along the rivers in Gombe L.G.A. A nearest neighbour analysis was used to observe household along the rivers being observed. The index R varies from 1.00 in Kwami and Yamaltu/Deba, to 2.01 in Gombe.

Using the krejcie and morgan table the sample size was determining from the population, and 381 questionnaires were administered on head of households.

RESULT AND DISCUSSION

Result are presented and discussed in relation to the following livelihood parametres: livehood system of respondents;number of hours spent on livelihood system per day;Contribution of the systems to overall household income.One of the essence of activities ranking exercise is to identify the source of people's livelihood and to observe wether the source is enough to sustain life [2]. In a situation where one source of livelihood is not enough to sustain, it becomes necessary for people to take up another job, to supplement their income

Questions were asked on the field on the types of job people do and what other types of jobs do they pursure to supplement their income. The identified economic activities of the people interviewed were found to be as follows:

Table 1: Economic Activities of Respondents

Economic Activities	Number of Respondents	percentage
Farming	129	33.85
Fishing	22	5.77
Animal rearing	83	21.78
Car wash	36	9.44
Sand mining	41	10.76
Trading	32	8.39
Civil service	28	7.34
Others	10	2.62
Total	381	100%

Field Work, 2015

The number of respondents is in each economic activity in the table above shows those activities in which each respondent pays more attention to and from which he/she rely most as a source of livelihood. It should however, be noted that most of the respondents engage in more than one activity mentioned above. For instance all the arable farmers questioned keep animals as well.

A statistical test (chi-square) taken to determine the level of significance of the econonmic activities of the respondents and their livelihood revealed that there is a significant relationship between the economic activities of the respondents and their livelihood in the Morom River Basin.

Note: $X^2 = \frac{\sum(O-E)}{E} = 303.01$

0=observed value E=Expected value
Df=n-1=8-1=7

Table values @ 0.1=18.05
@ 0.01=12.017

Looking at the statistical analysis above, we can discern that the chi-square value (303.01) is greater than the distribution table at both 0.1 and 0.01 confidence level. Hence the alternative hypotheses is accepted which states that there is a relationship between the economic activies of the respondents and their livelihood.

Contribution of the Morom River Basin to the Overal Household Income.

Uisng the minimum wage of Gombe state civil service of N 18,000($113.2) per month or ₦26,000($1358.4) per annum on GL 01-15, the reserach discovered that 15.4% of the respondents earn between N 291,000 to N 340,000 per annum from the livelihood activities they engage in within the basin.

Below is the income levels and the number of respondents/percentage of earnings in each level.

Table 2: Minimum wage and income levels of respondents

Income Levels (000)	Number of Respondents	Percentage
0-5	-40	10.4
51-100	43	11.2
101-140	51	13.3
141-190	20	5.2
191-240	46	12.0
241-290	21	5.5
291-340	59	15.4
341-390	22	5.7
391-440	23	6.0
441-490	24	6.2
491-440	23	6.0
541-590	7	0.0001
591-640	10	2.6
641-690	0	0
Total	**381**	**100**

Field Work, 2015

A chi-square test was employed to test the significance of the respondents activities to their level of income as shown below.

Table-3: Chy-Square table for the respondent income

Income	50``	100	140	190`	240	290	340	390	440	490	540	590	640
0	40	43	51	20	46	21	59	22	23	24	15	7	10
E=38113	29.3	29.3	29.3	29.3	29.3	29.3`	29.3	29.3	29.3	29.3	29.3	29.3	29.3
O-E	10.7	13.7	21.7	-9.3	16.7	-8.3	29.7	-7.3	-6.3	-5.3	-14.3	-22.3	-19.3
$(O-E)^2$	114.4	187.69	470.89	-18.6	278.89	68.89	882.09	53.29	39.69	28.9	204.49	497.29	372.49
$\frac{(O-E)^2}{E}$	3.90	6.40	16.07	0.63	9.51	2.35	30.10	1.81	1.35	0.95	6.97	16.97	12.71

$X^2=\frac{(O-E)^{2=}}{E}$ 109.72

Note: Where O= observed valuedf = n-1
=13-1
E= Expected Value = 12
Table value @ 0.1=18.54
@ 0.01=26.21

From the above statistical analysis it can be observed that the value at 109.72 is greater than the chi-square distribution table value at both 0.1(18.54) and 0.01(26.21) confidence level. Hence the null hypothesis is rejected and the alternative hupotherses which states that is a significant relatioship between the livelihood activities of respondents and their level of income in Morom River Basin.

CONCLUSION

The study analyses the socioeconomic activities of the people in the study area in relation to what the basin offers. This study revealed how Morom River Basin contributes to household livelihood of people in the North-east of Gombe state, Nigeria.A wide range of economic activities was found among the people in their domain. It has also discovered that greater percentage of people obtains their livelihood resources from the rivers.

Hypotheses tested revealed that the river basin significantly influences the livelihood of the people and that the settlement pattern of the area is significantly related to the river system.The conclusion one can derive from the discussions above is that in an effort to earn a living, thousand of people in the study area depend on what the enviroment provides (rivers in this case).

Recommedation

The policy framework for management river basin is to undertake the development of its water resources for multiple use. Therefore, both short-term and long-term policies have to be enected in order to manage the enviroment and its resources. This is necessary even though the actual allocation of resources lies in the domestic of a manger who may or may not be a geographer.

Generally it is recommended from the study to:

- Conduct a complete and comprehensive enviromental inventory of the area with a view to develop those resources which the people depend on.
- Develop a framework to appraise the diverse ecological setlings in order to meet the tenets of resource management which will represent the actual policy and practice regarding how resources are allocated and under what conditions it may be developed.
- Provide aids and facilities to the communities in the study area in order to enable them harness the full potential of the river basin which will in-turn improve the household's standard of living.
- Develop the concept of sustainability in the minds of the people for better tomorrow.

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