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Poverty and inequality among fishing households and implications for fishery resources management in Kainji Lake, Nigeria

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Abstract

Fishing has traditionally been a major source of livelihood for fishing households in Kainji Lake Basin (KLB). It plays a significant role to the rural and national economy in terms of employment, income and source of protein. However, the livelihoods of the primary actors (fishers) are being jeopardized by the depletion of fishery resources, mainly due to over exploitation and poor management. This paper examines poverty among the fishing households in KLB using empirical data. Foster Greer Thorbecke (FGT) Model was adopted for the analysis. The results reveal greater poverty (over 60%) with minimal inequality among fishing households. Finally, the paper advances reasons based on the implications of the study for designing intervention strategies by policy makers and the like.

Keywords: Livelihood, national economy, Foster Greer Thorbecke model.

Introduction

The alarming rate of fishery resources depletion and the deplorable condition of the fishers have compelled government and other concerned agencies at different levels to strategize different intervention measures, such as enhanced management, restocking, community participation among others, in order to sustain the resources and improve the livelihood of the actors (FAO, 2001; WFC, 2002). After several years of stride, neither the resources nor the people's conditions have been improved. Fish yield in Kainji lake basin (the second most important inland fishery source in Nigeria), for instance, has declined from 32,474MT in 1995 to 9,248MT in 2004 (Abiodun and Niworu, 2004). The situation can be associated with changes undergone by the lake over the years, particularly in terms of resources, technology, population and environment. Others are exploitation and weak resource management etc., which have affected negatively on the status of fisheries in the lake.

The continued level of poverty in small-scale fishing community and in the world as a whole requires that all those concerned take a fresh look at the problem. This depends critically on the availability of information to work with and unfortunately, at present there is dearth of data on the nature and extent of poverty and inequality in fishing communities. However, on a general note Fishers in Nigeria are said to live in condition of poverty and disillusionment (Araoye, 2002; Williams, 2007). While this may be a common phenomenon among fishers globally (Bene et al., 2003), the present study represents an initial attempt to document the fact about poverty and its implication on the fishery resources management and future sustainability of the resources using empirical data collected from 30 fishing villages in Kainji lake basin. Standard economic valuation technique-Foster, Greer, and Thorbecke (1984) poverty index was applied. The study specifically attempts to: determine poverty, its extent and inequality among the artisanal fishers, critically advance reasoning on its implication to resource management, and proffer policy recommendations that will contribute to poverty alleviation and resource sustainability in the lake.

Materials and Method

The study was conducted in Kainji Lake basin, located between longitude 4° 21 and 4° 45 East and latitude 9° 5 and 10°55 North. The lake cut across Niger and Kebbi states, with the greater part located in Niger state and the lesser part extended to Kebbi state. The Lake is second largest lake in Nigeria and the largest man-made lake in the country (Ayeni and Ddaihli, 1996). It was created in 1968 following the impoundment of River Niger by the construction of the Kainji Dam at New Bussa, in Borgu local Government area of Niger State.

The study used micro level data on 259 households in 30 fishing villages around the Lake Basin using stratified sampling technique and the elements were drawn using random sampling. The data was collected twice in January/February and August/September 2008, representing two distinct water flow regimes (high and low), which determines the abundance and scarcity of fish and equally coincides with dry and rainy seasons in order to capture seasonality and variability in income and expenditure. The study acknowledges the difficulties in construction of poverty line and it did not get involved into that, instead, National rural poverty line developed by the Federal Bureau of Statistics was adopted for the poverty analysis. This is to avoid measurement errors due to limited resources and in a way provide basis for comparison with other sectors of the economy at both local and national levels. Poverty estimates in Nigeria are based on household consumption expenditure (NBS, 2007), which was bench marked to the actual average expenditure in 1985 of which the household was able to consume enough food to meet the calories accepted by the National Planning Commission. The poverty line has been updated from year to year, using the relevant price indices (Kundu and Srivastava, 2007). The various measures of poverty ($P_{\alpha 0, 1 \& 2}$) were computed using the Foster, Greer and Thorbecke (1984) poverty index given by the following formula:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^{\alpha}, \alpha = 0, 1, 2$$

Where:

Z = food poverty line

Y_i = per capita food expenditure for i^{th} household ($i = 1, 2, \dots, q$) living below the poverty line

q = number of households below the poverty line

n = total number of sampled households $\alpha = 0, 1, 2$

Are the special cases for head count poverty index, depth of poverty and severity of poverty (P_0, P_1, P_2) when $\alpha = 0, 1, 2$, respectively.

Results and Discussion

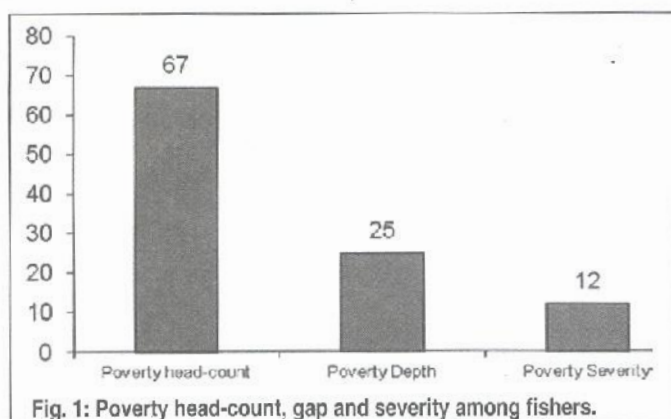


Fig. 1: Poverty head-count, gap and severity among fishers.

Incidence and extent of poverty among the fishers. The study discussed poverty in terms of the three well-known poverty measures: the head-count ratio (which measures the spread of poverty), the poverty-gap ratio (P_1 : which measures the depth of poverty) and the squared poverty-gap ratio (P_2 : which measures the severity of poverty). The three poverty measures are special cases of the Foster-Greer-Thorbecke (1984) measures. In analyzing the head count, which is simply the percentage poor among the fishers, 0.669 (67%) of the fishers are found to be poor, i.e. living below the poverty line, which is the expenditure level below which households cannot attain sufficient calories (basic energy requirement) even if they spend all their money on food (NBS, 2007). Poverty estimates (head count ratio) are commonly interpreted as a proxy for the

degree of food insecurity since households below the poverty line are not expected to have the purchasing power for buying the required amount of calories and therefore poor (Bourguignon and Chakravarty, 2003; Kundu and Srivastana, 2007).

The study found a poverty gap of 0.248 (25%) among the fishers, this shows how far fishers households are from poverty line. This is simply the aggregate shortfall of the poor relative to the poverty line (z) across the whole population.

According to Coudeoul et al. (2001), this represents the total resources needed to bring all the poor to the level of poverty line. In other words, is the amount that has to be transferred to the poor under perfect targeting to bring them out of poverty.

The poverty severity is found to be 0.117 (12%), this is the mean of the squared proportionate poverty gap; it reflects severity of poverty and is sensitive to distribution among the poor. Coudeoul refers to it as a situation when a higher weight is placed on those household who are further away from the poverty line.

Inequality profile among the fishers. Inequality is a broader concept than poverty in that it is defined over the entire population, not only that below a certain poverty line. Inequality is concerned with distribution. The study adopted the Gini coefficient index for measuring inequality (Coudeoul, 2001).

The Lorenz curve shows the inequality among the fishers in terms of expenditure within the community. The straight line indicates perfect distribution in terms of expenditure, thus,

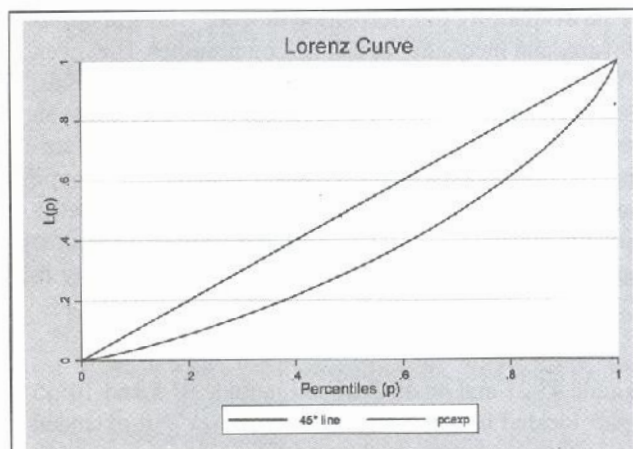


Fig. 2: Lorenz curve of expenditure distribution among fishers.

the further away from the line, the higher the inequality. Based on the mean per capita expenditure it is evident that level of inequality is relatively low among the fishers, this impliedly shows that 20% of the population control less than 10% of the cumulative expenditure, 60% controls less than 40% of the cumulative expenditure.

Implications to resources management

Majority of the fishers are poor and possess considerably low human capital endowment in terms of education, which is an important decision factor in terms of resource sustainability. FAO (2005) advanced reasons for exploitation of fisheries resources, stating that poor fishers are not ready to stay hungry in order to conserve the resources for future generation. On one hand, the attitude of exploitation of fishery resources through intensifying effort and application of obnoxious fishing methods is exerting a heavy toll on the fishery resources of the lake. On the other hand, the poor management of inland fisheries coupled with the inappropriate policy implementation and lack of institutional framework for establishing necessary environment to generate productive non-fishing employment opportunities further influence the fishers to intensify pressure on the resources, which is readily available to them. Subsequently, this threatens the resource sustainability and by implication further subjects the future of the fishing communities to an unpleasant (unprecedented) poverty situation. The linkages between poverty and resource exploitation is a kind of web and a continuous one which, calls for immediate and necessary intervention.

Conclusion

Poverty among the artisanal fishers in KLB is pervasive and severe, with more than 60% of the fishers classified as poor and 12% extremely poor and impoverished. Inequality amongst the fishers is low, which revealed the overwhelming poverty situation in the lake basin. Strong relationship exists between poverty and resource sustainability. Both the fishers and government have some key roles to play in addressing the situation for sustainable growth of the sector. There is still need for community sensitization, and enhancing fisheries management and governance are necessary and fundamental.

Recommendations

- There is need to devise a means to enhance the human capital endowments of the fisheries and create circumstances by which the fishing population can derive the maximum benefits from their productivity-enhancing attributes according to their individual and collective predisposition.
- Communal efforts need to be strengthened through establishing viable and effective cooperative societies in the fishing communities, through that over reliance on government for development activities will be minimized, and more importantly, it will bring about self-dependency.
- Community members should be encouraged to diversify into multiple livelihood portfolios in cognizance with the resource availability, their skills and prevailing circumstances. While doing that timing and combination of activities should be given attention.
- Sensitization on resource utilization and enforcement of fisheries laws and regulation where necessary will not be out of place.

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