

## Understanding Poverty and Vulnerability for Fisheries Resource Management in Nigeria: A review

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**Abstract:** The paper reviews poverty and vulnerability situation amongst small-scale fishers, which presents some peculiarities, and examines its relativity with fishery resources management, with the view to proffer solution towards reducing fishers' vulnerability and poverty for effective fisheries resource management. The significance of fisheries cannot be overemphasized, small-scale fisheries underpin the socio-economic fabric of many fishing households, which is characterized broadly as underdeveloped with a wide spread of food insecurity and resources depletion among other environmental factors. Majority of the fishers are found to be poor and vulnerable. They are constantly exposed to many risks due to negative environmental forces and lack instrument to manage them. Strong and direct linkages have been found between poverty/vulnerability and resource depletion. However, fishers in Nigeria locally adopt certain strategies to address the problems, these include diversifying their livelihood portfolios by engaging in other livelihood activities such as farming, livestock, petty trading, aquaculture, others are storage and migration etc. Effective institution and governance, improvement in literacy and provision of infrastructure among others are recommended as part of strategies to address the problem.

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### 1. Introduction

Natural resources play a significant role in the life of the poor. More than 1.3 billion people depend on fisheries, forest and agriculture for employment-close to half of all jobs worldwide (USAID, 2006). Within fisheries management and development policy, the importance of sustaining small-scale fisheries is being increasingly recognized (Allison and Ellis, 2001). Worldwide, about 38 million people are estimated to be fishers and fish farmers, 95 per cent (36 million) of whom are from Africa, Asia, and Latin America. Of these, around 68 per cent (26 million) are estimated to be involved in marine and inland small-scale capture fisheries (FAO, 2005). For the people of Africa, Asia, and Latin America, the fisheries of inland lakes, rivers and other freshwater ecosystems provide an important source of food and income, and for many these are the principal source of animal protein (Dugan, 2002). Inland water fisheries contribute significantly to national and household economies in terms of income, food security and employment and provide an important safety net for rural communities for whom agricultural production risks are high (Bene *et al.*, 2003).

In Nigeria, fisheries contribute about 4.0 % to agriculture Gross Domestic Product (GDP), while the contribution of agriculture to national GDP was 40% in 2007 (FDF, 2008). In terms of foreign exchange, the country's export of fish products was 0.005m mt worth US\$ 38.3M In 2007. Estimated employment in the primary sector was 8.23 million while that of secondary sector was 18.27million (FDF, 2008). These contributions, interestingly, are in spite of the long-standing neglect of the small-scale fisheries-a major sub-sector in fisheries. Growing concern for improved management of freshwater fisheries has been driven by the increased recognition of their role in supporting rural and urban livelihoods and in providing an affordable source of high quality protein and other economic benefits at local, national and regional levels. This brought about enhanced fisheries development over the years with attention centered on biological improvement, restocking etc. However, effective resource management can hardly be achieved without addressing the issues of poverty, vulnerability and natural resource utilization amongst fishers and other fisheries dependants.

The issue of fisheries resource management is particularly becoming critical in line with the

scientific prediction that by 2020, between 75 and 250 million people in Africa will be exposed to increased water stress due to climate change with yields dropping up to 50% (Thirsdai, 2010). For instance, a strong link between poverty and resource depletion has been established by FAO (2005) “poor fishermen are unlikely to deprive themselves with food (hunger) by not catching fish in order to conserve the resources for future generation”. Meanwhile, the understanding of poverty and vulnerability and resource sustainability vary greatly with the fisheries system and country, and with changing approach particularly on policy and institutional settings. Therefore, understanding poverty and vulnerability situation of a specific system and country is critical to fisheries resource management and the development of fisheries sub-sector of the economy. This would equally bring forth understanding of the most suitable approach in tackling the issue of poverty, vulnerability and fisheries resource management. Against this backdrop, the present paper extensively reviews key areas such as the status of inland fisheries, poverty and vulnerability in fishing communities and linkages between poverty and resource depletion in order to provide a better understanding of peculiarities in fisheries management that could guide policy.

## 2. Status of Inland fisheries in Nigeria: the case of Kainji Lake

Kainji Lake is the second largest Lake after Lake Chad and the largest manmade lake in Nigeria (Ayeni and Ddaihi, 1996). It was created in 1968 following the impoundment of River Niger at New Bussa, in Borgu local Government area of Niger State. The impoundment, which was primarily for hydropower generation, provided secondary opportunities for fishing. Shortly after impoundment, fish population increased momentarily from 17,000mt in 1969 to 28,639mt in 1970 (Bazigos, 1972). The yield attracted fishers from different parts of the country and even neighbouring Benin and Niger Republics. With the massive catch, the yield dropped drastically to 10,905mt in 1972. There was a peculiar boom in the year 1973 but dropped drastically afterwards till 1994, due to increase in fishing efforts. Although the practice was not legal, the weak enforcement of fishery laws and regulations attributed to the situation. Around 1999, the National Institute for Freshwater Fisheries Research New Bussa, with the support of the Federal government sought for collaborative project with the German Technical Cooperation (GTZ). The project goal was to attain sustainable fisheries resource management, looking at management in a holistic manner. To achieve the goal, different approaches were designed

among which was ban on the use of undersized mesh for fish harvest. The absence of catching clupeid brought down the yield to 16,351mt in 1999. However, at the expiration of the project, fishers resumed their obnoxious fishing methods. This, to a greater extent affected the fishery, the yield maintained downward trend to a tune of 9,248mt in 2004. Neiland and Bene (in press) reported that the yield might have dropped to 6000mt in 2006. This could be attributed to the increased fishing effort and bad fishing practices due to poor management. This calls for an in-depth understanding of policy and management practice as it affects the resources and livelihoods of the fishers.

## 3. Understanding Vulnerability

Practitioners from different disciplines use different meanings and concepts of vulnerability (Alwang, *et al.*, 2001). Also, see box 1, a working concept of household vulnerability adopted from Alwang (2002). According to Dercon (2001) vulnerability consist of four possibly quite different groups: the permanently poor, the becoming permanently poor in the future due to some trend evolution, those that are likely to become poor due to predictable events (such as seasonality) and those that are likely to become poor due to risk and shocks. Other works on vulnerability by Glewne and Hall, 1998; Cunningham and Maloney 2000, as cited by Chaudhui *et al.* (2002) defined vulnerability in terms of exposure to adverse shocks to welfare, rather than in terms of exposure to poverty. FAO (2005) conceptualized vulnerability to include risk exposure, or the nature or degree to which a household (or community) is exposed to certain risk, conflicts etc; sensitivity to risk, measured for instance through the dependence of the household (or community) on fishing activity for food security or income and adaptive capacity of the household (or community) to deal with risk-i.e. ability to cope with changes. In the case of fisheries, people may be exposed to physical risks (e.g., waves and high winds, accidents hauling nets), climate-induced risks (rising sea levels, water shortage, impacts of global warming on fish stock productivity), health risks (bilharzias, malaria, cholera), market risks (currency devaluations) and security risks (theft, conflict) among others. Their sensitivity to fishing-associated risks will be related to their dependency on fisheries, and their adaptive capacity may depend on their ability to adjust to, or avoid risks (e.g. by drawing on assets such as savings or education). The three elements of vulnerability may all be related to other dimensions of poverty (Allison and Horemans, 2005). For example: people living in poverty may be more likely to live in an area where they are exposed to health risks from poor

sanitary conditions; if their nutritional status is poor, they will be more sensitive to infection than a well-nourished person; and if they lack money for treatment their capacity to cope with and recover from infection will be lower than a rich person, who can pay for medicines. Overall, great number of people are engaged to endemic risk activities and their livelihoods are often subject to great uncertainty caused by the weather and natural calamities, sickness, fluctuations in the prices of their assets or in

the goods consumed by them, all sort of violence, unfavourable economic and political decision (Guimaraes, 2001). A review of the literature on poverty in fishing communities (Macfadayen and Corcoran, 2002 cited by Allison and Horemans, 2005) concludes that targeting the vulnerable - those with a high chance that they will fall into poverty - may be as important to poverty alleviation as focusing on those who are currently the poorest in income or material asset terms.

#### **A Working Concept of Household Vulnerability**

A household is said to be vulnerable to future loss of welfare below socially accepted norms caused by risky events. The degree of vulnerability depends on the characteristics of the risk and the household's ability to respond to risk. Ability to respond to risk depends on household characteristics – notably their asset-base. The outcome is defined with respect to some benchmark—a socially accepted minimum reference level of welfare (e.g., a poverty line). Measurement of vulnerability will also depend on the time horizon: a household may be vulnerable to risks over the next month, year, etc.

**Source: Alwang, 2002.**

### **3.1. Poverty and vulnerability-peculiarities in small-scale fishing communities**

Poverty is a complex phenomenon involving failure to meet a range of basic human needs and the denial of options that have consequences for opportunities to live long, healthy and creative lives (FAO, 2005). Among countries in the developing world, the people in fishing sectors are some of the poorest and most neglected, vast majority of them cannot afford to eat the fish they catch and handle (Worldfish, 2002). With such magnitude of deprivation, there is urgent need to critically examine the peculiarities of fishermen and fishing communities. Why are they so poor? Is it because they are fishermen or because of their location? Bringing their glossy issues to institutions, bodies and organizations concern with fisheries development will help in giving them the required attention.

It is a known fact that the multi-dimensional nature of poverty in fishing communities has been acknowledged, widely and for a long time. As early as 1974 FAO emphasized that “the people engaged in these (fishing) activities and their families continue with few exceptions, to live at the margin of subsistence and human dignity” (FAO, 1974, quoted in Copes, 1989 and cited by Bene, 2004). To buttress that Bailey (1988) summarizes the situation of fishing communities as “poorest of the poor”. Many reasons are adduced to be responsible for that. The work of Pollnac on Social and cultural characteristics in small-scale fishery development in 1985 emphasized that small-scale fishermen are generally located in rural and coastal area, mostly along the narrow

margins of lakes, rivers or sea, typically isolated and socially far from social and economic infrastructure that warrant any meaningful development (Pollnac, 1985). In another work by Copes (1989) tagged “conventional wisdom” poverty in fisheries was related to the level of exploitation of the resources.

Over exploitation in small-scale fisheries is linked to the open access nature of the fisheries, which allows more and more people enter the fishing sector, which leads to overexploitation of the sector and by implication poverty amongst the fishers. Still on the open-access Bailey and Jentoft further advance reason that unlike agricultural land, fishery resources are open access, which no boundaries exist and no restrictions are imposed on who may become a fisher or how the resource may be exploited. However, Cunningham (1993) thought that to really understand the situation, fisheries should not be looked at in isolation but in relation to other sectors of the economy, as they have direct influence on one another. This conform to the work of Smith (1979) and Panajotou (1988) where they both highlighted lack of alternative employment as a key –factor contributing to low standard of living in small scale fisheries. Although, Anderson (2002) asserted that most rural poor are exposed to many risks while often lacking instruments to manage them adequately, and so are highly vulnerable (Anderson, 2002). For instance, In Lake Chad (the largest inland fisheries source in Nigeria), fishermen occupy a harsh and fluctuating environment, representing both a marginal and challenging location for human habitation (Neiland, 2005). Similarly, in Kainji Lake

(the largest man-made Lake in Nigeria) Tafida *et al.* (2009) reported that infrastructure facilities are grossly inadequate as 86.7% lack tarred road, electricity and market while 96.7% of the villages lack financial institution. Infrastructure is vital for economic development in any rural community, as they permit diversification of livelihood portfolios. Still in Lake Kainji, a recent study revealed that the community members have weak financial and human capital (Tafida *et al.*, 2010).

More worrisome, in some cases, fishing is classified as one of the most dangerous occupation. WFC (2002) reported that a person is 10-15 times more likely to die while fishing than while mining. In addition, men fishing are often far away from home for long period, which can lead to increased drug use and visits to commercial sex workers. FAO (2006B) reported that in the last decade, it has become evident that fishermen in many developing countries fishing communities suffer from HIV prevalence rates often five to ten times higher than those in the general population. The above assertions point to an

important conclusion; poverty in fishery-dependent communities is not necessarily directly - or only - related to the resource or catch levels (Béné, 2003). For example, although resource over-exploitation may be a major cause of impoverishment for fishing communities, extreme poverty (in some dimensions) can also be observed in remote fishing camps where fishers catch and trade reasonable volumes of fish but lack access to health and other public services and are politically un-represented. Therefore, Poverty in fishery-dependent communities is not solely related to the abundance of catch, market opportunities or the state of the resource. It is critically dependent on whether a range of basic services (such as health, education, water etc) are provided among other basic necessities of life (FAO, 2005). Providing an appropriate risk-management instruments and supporting the critically vulnerable is thus one key pillar in an effective and sustainable rural poverty management. Slides one and two show a typical situation in some fishing communities in Nigeria; revealing poverty.



**Plate 1: Children with Dr Tafida at Tungan Mairuwa fishing community, Kebbi State, Nigeria**



**Plate 2: Typical poor housing in one of the Nigerian fishing communities**

### 3.2. Linkage between poverty and fisheries resource depletion

Facts about fishery resources are that they are renewable, widely dispersed and often found in common property areas where the poor can access them without owning them (USAID, 2006). It has also been established that these resources are depleting due to overexploitation by the actors and

affected by other environmental factors (Plate 3 and 4). To that effect, several schools of thought attempted to understand the linkage between poverty and natural resources depletion. In some cases, poverty is seen as a driver of biodiversity loss and environmental degradation with growing population adversely affecting finite natural resources (USAID, 2006).



**Plate 3: Invasive aquatic weed (Typha grass) at Likori fishing community, Hadejia, Jigawa state**

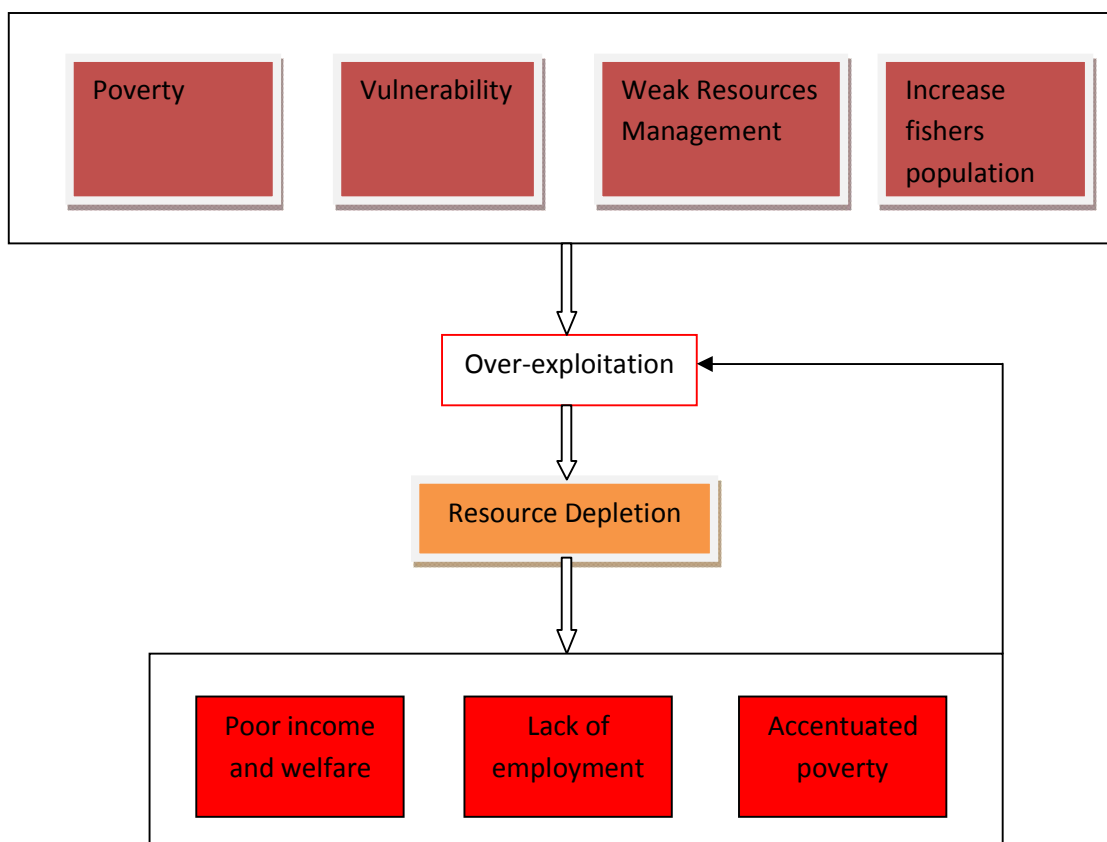


**Plate 4: Reduction in fish yield (both size and quantity) in Hadejia fishing community**

Government officials often see the poor as part of the natural resources problem and as the cause of deforestation, degraded landscapes and dwindling fisheries and wildlife resources. Figure 1 shows the Schematic representation of the situation in Nigeria. As mentioned earlier, majority of the fishermen are poor (Tafida, 2010) and generally vulnerable in terms of exposure to risks, sensitivity of their livelihood systems to these risks and limited assets to cope with and adapt to them (FAO, 2006A), yet there is inadequate natural resource management, under development and misplaced focus in conservation programme (Falaye, 2007). This leads to over-exploitation of the resources, as Ladu and Okaeme (2000) adduced reasons for overexploitation of the aquatic resources to the fishers' quest to meet their domestic needs, which often leads to the application of destructive gears and obnoxious fishing methods such as use of chemicals/poisons, dynamite, under size gears etc. This conform to FAO (2005) assertion that earnest advice about reducing pressure on fisheries resources are futile as hungry people will chose, quite reasonably, to survive in the short run, rather than to preserve or rebuild a resource that they might not otherwise survive to benefit. In another perspective, the incidence is linked to other

externalities such as pollution, habitat modification and poor fisheries (Welcomme and Bartley, 1997; Neiland and Ladu, 1997).

In any case, the consequence of overexploitation is enormous in destroying the dynamics that sustain fish population. Of concern is that the natural resources serve as a buffer and last resort to the fishing families in Nigeria when every other source of livelihoods fails. Often fish provides a source of livelihood for the whole family; a lower catch means less to process and market, and so none is left over for the family to eat (Worldfish, 2002). Therefore, the problem of declining fish stocks is often compounded within fishing households, reflecting in poor income and wellbeing, lack of employment and continued impoverishment. Today it is evident that the fishers cannot escape the characterization that they are the poorest of the poor and most neglected (Bailey, 1985; WFC, 2002). Therefore, policy makers, government, donor agencies, and non-governmental organizations and academicians concerned with resource management need to look at the sector holistically by looking at the primary actor's situation as an integral part of the overall fisheries resource management.



**Source: Authors concept**

Figure 1: linkage between poverty, resource depletion and its consequence

#### 4. Strategies adapted by fishing households in Nigeria

Vulnerability in fishing communities is unevenly distributed and therefore the strategies adapted to mitigate it vary regionally and even community wise (Allison *et al.*, 2005). Some of the strategies adapted by small-scale fishing communities in Nigeria are reviewed. Recent studies have shown that fishing alone is no longer business of the day amongst fishing households in Nigeria. Fishers are found to seriously engage in diversified livelihood activities such as farming, livestock keeping, petty trading, and other services such as transport, barbing, mat weaving, milling etc.(Tafida *et al.*, 2010). These activities form part of the complex and diversified strategies adapted to mitigate the problems of fisheries resource depletion, overcome their poverty and improve their well-being.

In the case of Lake Chad, in addition to rain fed agriculture, recession farming is practiced as flood water recedes, planting different crops such as cowpea, maize, guinea corn, and varieties of vegetables. The residual moisture left when the floodplains dry up is sufficient for growing

vegetables and crops. In drier areas where recession farming is not possible community members engage in small scale irrigation farming.

Fishing households in Nigeria have also imbibed the strategy of mass storage and local preservation of agricultural produce as a safety net for lean periods. The practice involves buying grains at periods of harvest when prices are low and storing for consumption and sale at periods of scarcity and higher prices. Many households have used this strategy to subsist during difficult periods of the year

Migration and mobility is another adaptation strategy employed by fishing communities to overcome poverty and vulnerability. In response to annual and inter-annual variation in lake water area, and fish yields, fishers and other fishing dependants engage in seasonal migration (away for more than three months) or mobility (away for less than three months) in search of better income and livelihoods from the fisheries. Migration and mobility have provided households in the region access to new and better fishing grounds and other economic opportunities that have enabled them construct new

and enhanced livelihoods portfolios for themselves and their households

Following the dwindling fisheries resources in Nigerian water bodies, fishers are found to also engage in aquaculture as a strategy to supplement catch from the wild in order to enhance their livelihood and well-being.

### 5. Conclusion and Recommendations

Aquatic resources, although renewable, are not infinite and need to be properly managed, if their contribution to the nutrition, economic and social well-being is to be sustained. Small-scale fisheries underpin livelihoods of many fishing households in Nigeria. Recently, this important sector is faced with problem of resources depletion subjecting the actors into abject poverty in addition to other vulnerability factors as a result of external environmental forces which the fishers have limited control over it. Linkages have been found between poverty/vulnerability and resources depletion, which in summary have effect on one another. To mitigate the problem, beside government efforts, fishers in Nigeria have adopted local strategies such as diversifying their livelihood portfolio and migration. Overall, it is recommended that developing rural infrastructure facilities, capacity building and strengthening institutional structure would go a long way in achieving the desired objectives of addressing vulnerability among fishing households and thereby increase food security, income generation and general well-being of various stakeholders in the fisheries industry.

To address the problem of poverty and vulnerability in order to conserve and sustain this important resources, the following strategies are suggested to guide the process:

- Engagement with literacy is essential for effective social participation, influencing people's access to rights and entitlements. As such, literacy can help to reduce the social marginalization and vulnerability faced by many small-scale fishing communities (FAO, 2006C)
- Governance of natural fisheries resources needs to be improved upon. In addition to overfishing and destructible fishing, many of the factors which have impacts upon the sustainability of coastal and inland aquatic resources are driven by actions outside the fisheries and aquaculture sectors (for example competing users of environment, climate and pollution)
- Support for existing diversified livelihoods, training and capacity building towards entrepreneurship will go a long way in reducing fishing efforts in the communities
- Provision of infrastructure such as roads, electricity, water, schools, hospitals will address fundamental health issues, encourage livelihood diversity and provide market access hence improve well-being and thereby resource sustainability.
- Effective institutions have long been recognized as vital to poverty reduction. Bad economic policy can not only slow growth and poverty reduction but also reduce the value of household assets through inflation as well as shift household livelihood from wealth creation to wealth protection.
- To meet poverty reduction goals, governance system must be effective to reduce corruption, and empower local communities to manage their own resources. Local people are more likely to conserve resources if they understand how their choices will increase their resilience to threats and improve their well-being.

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