Vulnerability in Inland Fishing Communities in Africa: lessons learned

KEY MESSAGES

- A critical first step in understanding vulnerability in inland fishing communities is to move away from classical fishery definitions that consider only the resource and harvest methods and, instead, recognize that fisheries operate across broad domains including the natural resource and its ecosystem, people and livelihoods, institutions and governance systems, and external drivers.
- Household vulnerability analysis structured around these four domains proved a powerful tool for understanding the diversity of vulnerability and identifying interventions to effectively address these issues as they emerge locally.
- Household vulnerability analysis in fishing communities in Nigeria and Mali revealed that, despite fishing being the primary livelihood, vulnerabilities related directly to the state of the fishery resource were ranked lower than those related to basic human needs, predominantly food insecurity and lack of access to health, education and credit services.
- When critical immediate needs cannot be met, the community's focus on short-term survival invariably takes precedence over any consideration of long-term sustainability.
- By addressing the pressing needs of daily survival through targeted interventions, the project aimed to alleviate preoccupation with them, thereby clearing the way for broader sustainability issues to come to the fore.

1. BACKGROUND

People living in rural inland fishing communities are often among the most vulnerable in developing countries. The classical view of a fishery — that it comprises the fish resource and harvest systems — brings discussion about improving well-being in these communities directly to issues of reducing fishing pressure or harmful fishing practices, and managing resources in a way that promotes sustainable use. From a livelihoods perspective, the thinking behind such an approach is clear: If we improve the state of the resource, the income-generating capacity of communities improves and, with it, their well-being.

Photo insert above: Tungan Mairuwa villagers, seen beside Lake Kanji in northern Nigeria at low water, said they are vulnerable mostly because they lack credit, food security and health services, not because of factors pertaining directly to the fishery. (Photo: D. Mills)

This simple pathway to improved well-being very quickly unravels when it runs up against the reality of multiple and diverse sources of vulnerability and these communities' typically limited political voice to influence policy or decision-making that directly affects their livelihoods.

A broader picture of vulnerability

A critical first step in moving beyond simplistic solutions is to recognize that a fishery is a complex socio-ecological system that exists across broad domains. A more useful conceptualization of a fishery considers these several components: (i) the resource from an ecosystem perspective, (ii) people and the livelihoods of those using the resource, (iii) institutions and governance systems, and (iv) external threats and opportunities. Figure 1 illustrates these domains and provides examples of drivers and potential sources of vulnerability within each.

Based on this broader notion of a fishery, a more considered sweep of vulnerabilities reveals that inland fisherfolk are often most exposed to factors outside their control, such as natural disasters, disease and economic issues, as well as competition from other water users who often have more political voice. Upstream development and water extraction, water quality issues, and uncertainties associated with climate change contribute to high vulnerability.

Clearly, then, there is a strong imperative to present issues affecting the livelihoods of fisherfolk in policy fora at the level — local, national or regional — where decisions are made that have impacts on these broader domains. This would raise the political profile of fisherfolk and their livelihood issues. The danger in this conclusion is that those who genuinely wish to improve conditions for rural fishing communities may conclude, perhaps with good reason, that the job is too big and diverse and crosses swords with too many powerful stakeholders to be effectively tackled. Inertia in response to the difficulty of shifting current thinking in policy institutions is a strong disincentive to tackling issues at this level.

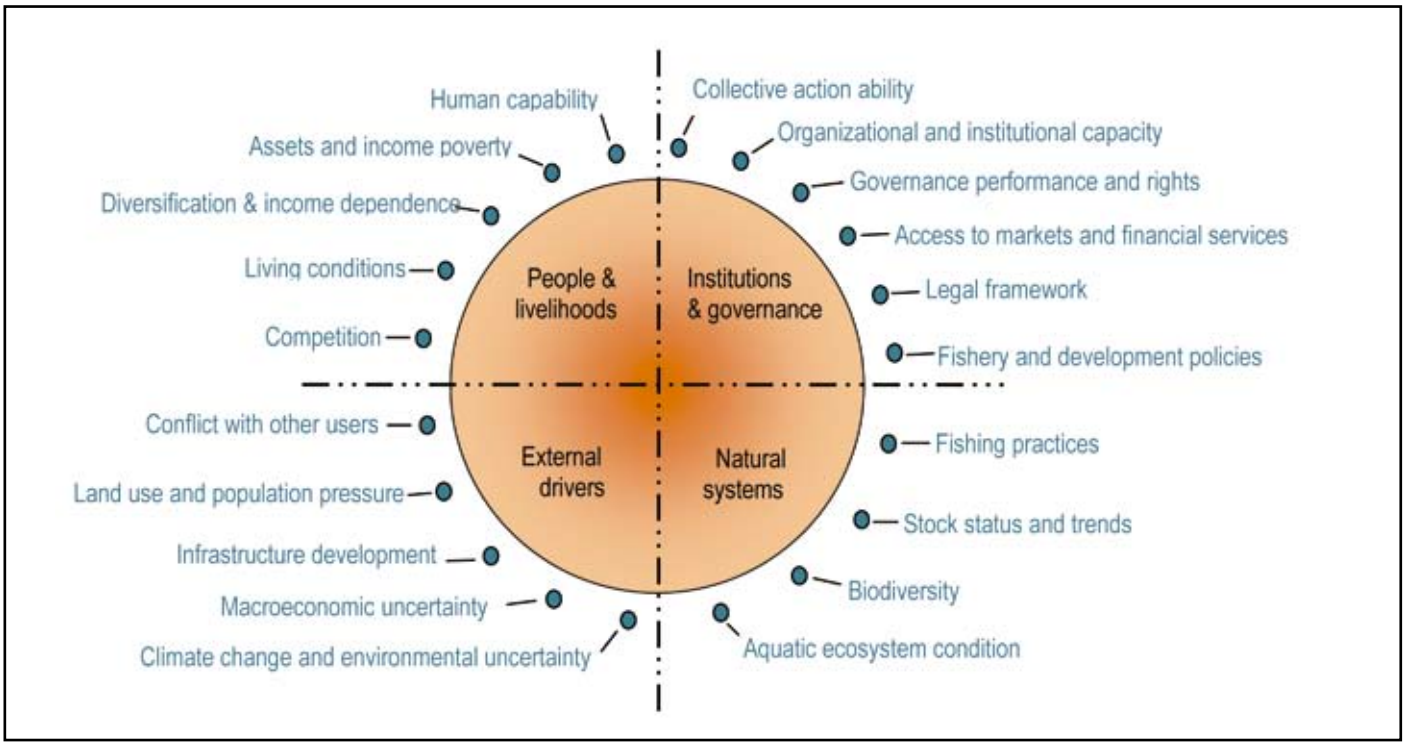

Figure 1. Four domains describe the broader view of a fishery, showing selected examples of drivers in each domain (Source: Mills et al. 2009).

In a similar vein, when focusing on the resource domain alone, it may be politically convenient for governments to claim that implementing and enforcing effective resource management is impractical. In either case, in the face of increasing uncertainty the only possible outcome is further decline for both the fishery resource and the living standards of those directly or indirectly dependent on it.

Concerns about the nature of vulnerability and possible ways to strengthen the resilience of inland fishing communities were the drivers behind a recently completed 2-year project funded by the Challenge Program on Water and Food and undertaken by the WorldFish Center with the Institut de Recherche pour le Développement in France and Mali, the Nigerian Institute for Freshwater Fisheries Research, and the Institut d'Economie Rurale in Mali. The two sites selected for the research were communities in the Inner Niger Delta in Mali and on the shores of Lake Kainji in Nigeria. The following were the central research questions for the project: Is it possible for direct interventions in fish-dependent communities to mitigate their vulnerability to uncertainties beyond their control? If so, what form would these interventions take?

A critical step in this process was conducting a participatory and gender-sensitive analysis of community perceptions of vulnerability.

2. PARTICIPATORY VULNERABILITY ANALYSIS

Study sites were selected according to a range of criteria, including reliance on fishing as the principal livelihood, the strength of traditional institutions in the village, the involvement of women in cooperative structures and decision making, and the absence of significant conflict. A survey of perceived vulnerabilities and socioeconomic status included 40 randomly selected households in the Nigerian community and 90 in the Malian one. The two heads of each household, man and woman, were interviewed separately. The vulnerability survey was structured around the expanded notion of fishery domains presented in Figure 1. Each respondent was asked to identify what they perceived as the top five causes of vulnerability across the four domains. The ranking scores were aggregated across the community and organized to allow comparisons of various groups. Vulnerability ladders provide a visual analysis of the survey results (Figure 2).

The socioeconomic component of the survey included quantitative semi-open and closed (multiple choice) questions on household income, general socioeconomic background (number of people in the household, ethnic group, age and education), productive assets, and livelihood strategies, both on farm and off.

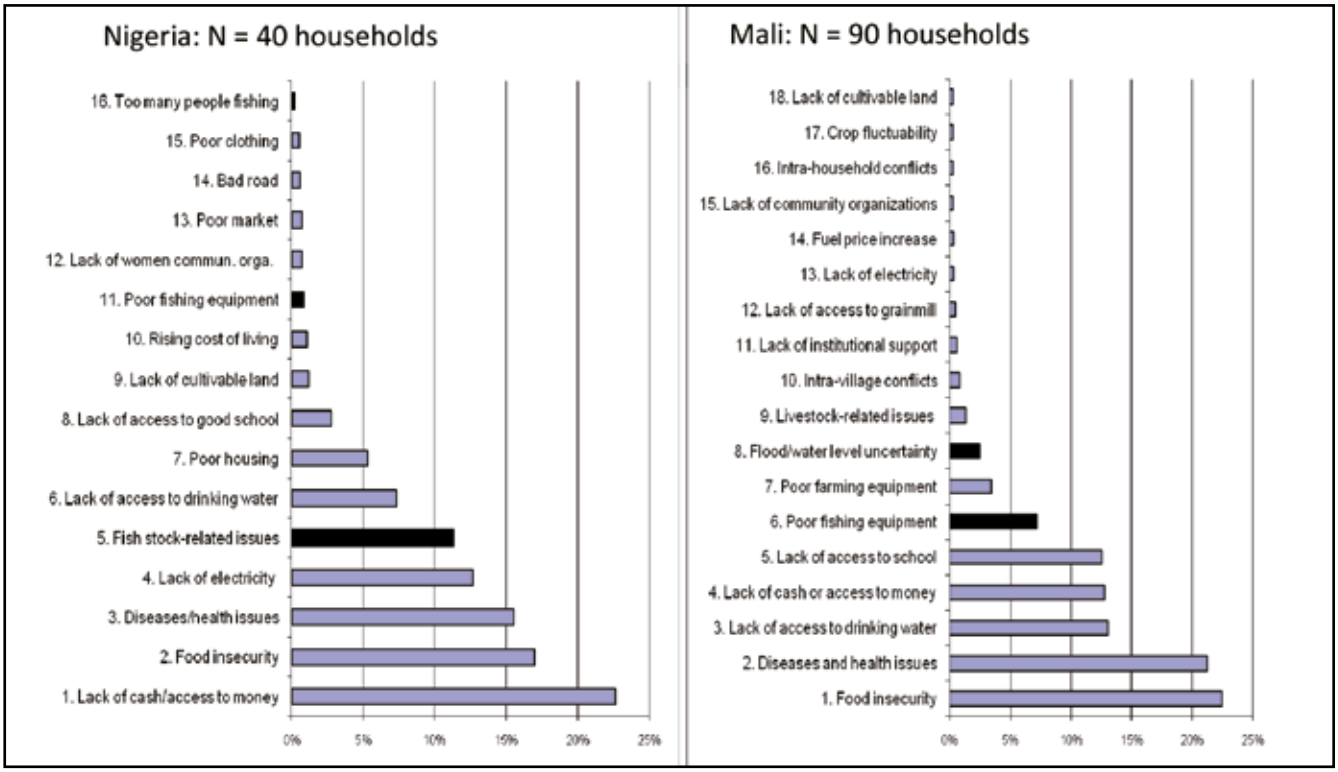

Figure 2. Vulnerability ladders of the two fishing communities, with causes of vulnerability related to fishing and fish stock status in red.

Fishers on the Lake Kainji

Households' perceived vulnerabilities

Comparing the vulnerability ladders developed from the Mali and Nigeria data reveals some important similarities between the two communities. In both, food insecurity and health issues rank among the three most important causes of vulnerability. Lack of cash and poor access to capital were also identified as major issues. This in itself is not surprising, as poor access to microcredit has been long recognized as a major constraint on poverty alleviation. Perhaps more surprising in fishing communities is that issues pertaining to fishing and fishery resources (black bars in Figure 2) received relatively low ranking.

Clearly it cannot be assumed that the causes of vulnerability identified in the survey are independent of one another. Indeed, it could be argued that the ladders indirectly reflect the importance of fishing as a major source of cash income and food through the presence of "food insecurity" and "lack of cash or access to money" at the top of the ranking. A more detailed analysis of vulnerabilities in the Malian community disaggregated by main livelihood activity (fishers and others) suggests, however, that this may be only partly correct (Figure 3). The vulnerability ladder indicates that the causes of household vulnerability remain essentially the same, irrespective of the households' main livelihood. In other words, food insecurity and lack of cash or access to money are not primarily related to the households being fishers but are instead vulnerabilities that affect the community as a whole.

The comparison of perceived vulnerabilities among fishing and non-fishing households reveals other policy-relevant results (see Figure 3 annotations). First, the scarcity of cultivable land is identified as a source of vulnerability by fishers, not by the non-fishing farmers, which suggests that fishers would consider farming to diversify their livelihoods if they could have more land. This interest in farming is confirmed by fishers' perceiving "poor farming equipment" as a severe constraint more than non-fishers do. Less surprisingly, "poor fishing equipment" affects fishers, but

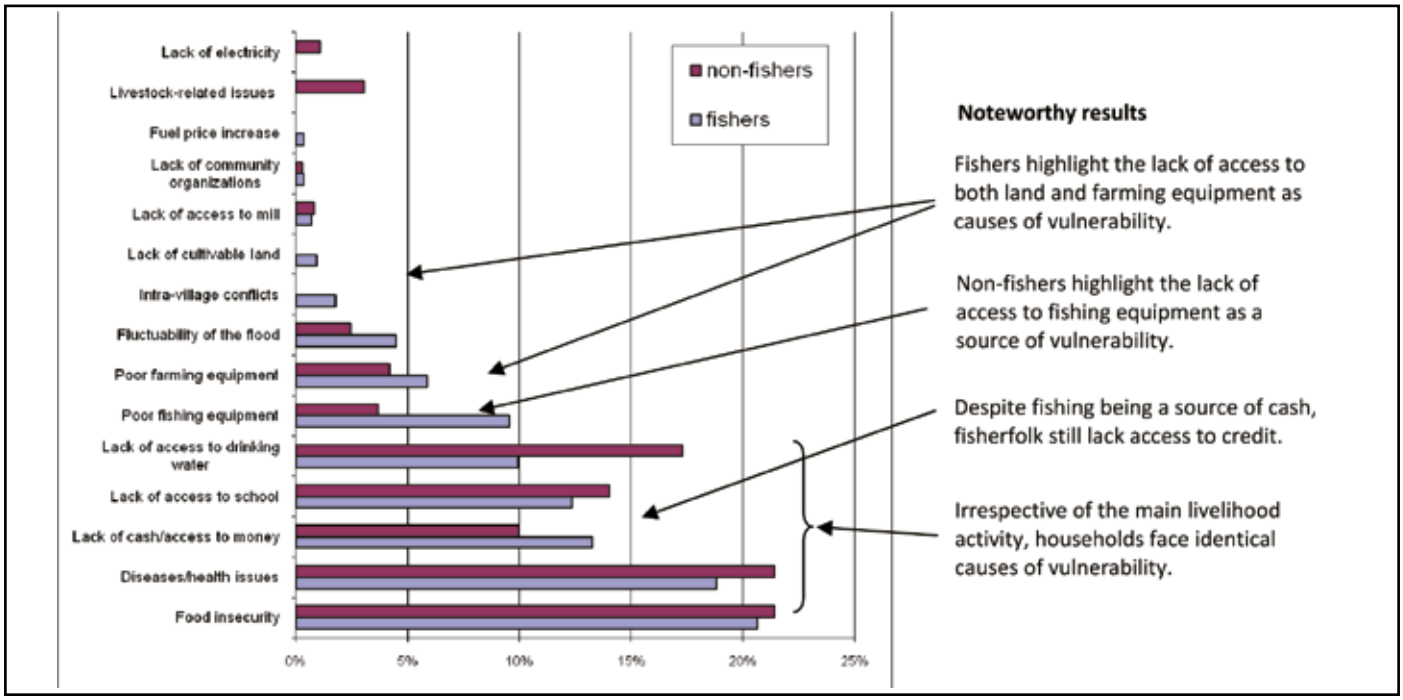

Figure 3. Comparative analysis of vulnerability between fishers and non-fishers in the Inner Niger Delta in Mali.

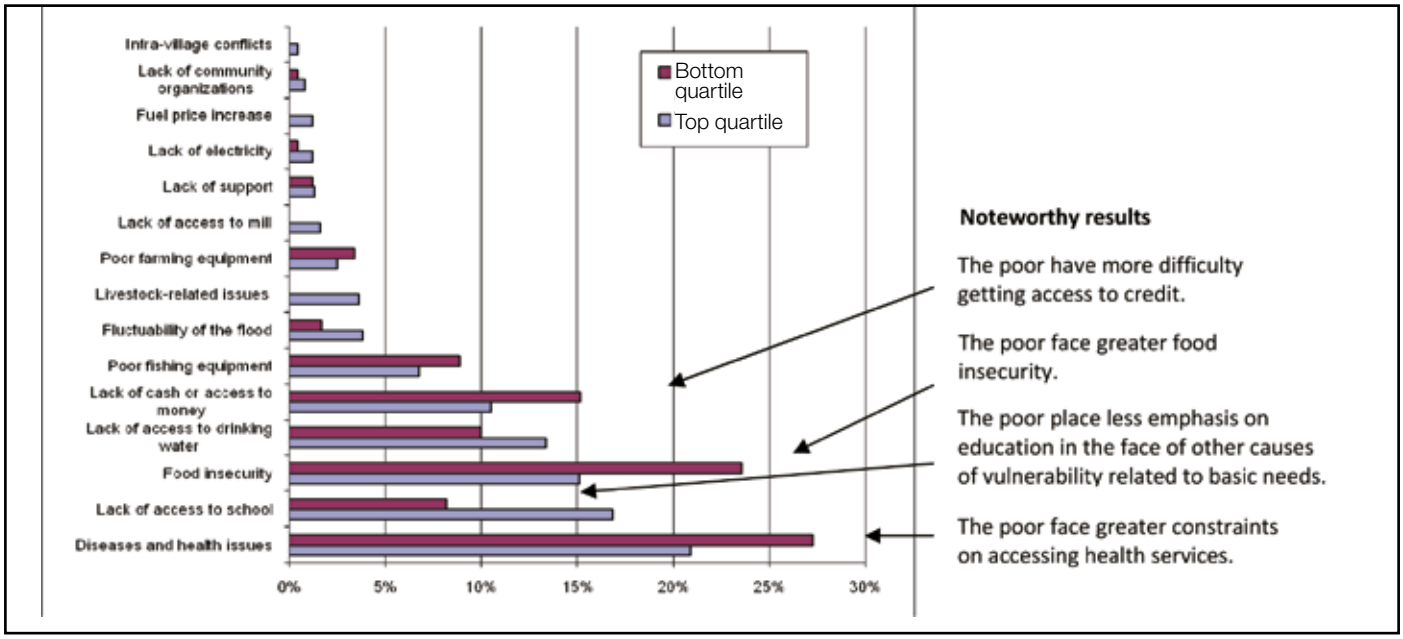

Figure 4. Comparative analysis of household vulnerability between the richest and poorest quartiles in the Inner Niger Delta community in Mali.

that non-fishers also identify it as a source of vulnerability suggests that they would invest in fishing if they could access good equipment. Finally, the higher severity of the "lack of cash or access to money" among fishers despite the well-recognized ability of fishing to generate cash (e.g., Béné et al. 2009), illustrates the unwillingness of local money lenders to provide credit to migratory fishers, who are more difficult to track for repayment than sedentary farmers.

Comparing the vulnerability rankings of the poorest and richest income quartiles unsurprisingly shows that the poorest households are more severely affected by the lack of cash, food insecurity and health issues than are wealthier households (Figure 4). Also interesting (but not surprising) is that education is superseded by more critical "life support" categories for the poorest income quartile. Aside from the ranking of education, the analysis reveals that households face the same causes of vulnerability, regardless of wealth.

3. CONCLUSION

While providing a valuable self-assessment of the priorities for reducing vulnerability in target communities, these results also contain important insights into how poverty and vulnerability interventions in fishing communities should be conceived. They certainly challenge the conventional view, based on classical fishery definitions and management paradigms, that effort to improve the well-being and livelihoods of inland fishing communities should primarily focus on the fishery resource. Although fishery resource depletion and fluctuations are acknowledged and certainly affect livelihoods, the communities identified more fundamental sources of vulnerability regarding their basic needs, such as food insecurity, exposure to water-borne diseases, and the lack of access to cash and microcredit.

The vulnerability rankings also convey important lessons for resource managers charged with implementing sustainable use systems under the constraints of minimal resourcing, which is common in small fisheries in developing countries. Under such constraints, classical ideas of fishery management requiring top-down enforcement, catch monitoring and various forms of fishing restrictions have repeatedly failed. The only pathway to improving sustainability and equity is to strengthen incentives for individuals to fish sustainably. Such incentives will strengthen as the vulnerabilities that the community ranked higher are addressed and the risk of fishery decline comes to the fore. It follows that the most productive interventions to promote sustainable resource use may lie outside the natural system domain. In this case, they appear to be in the domains of "people and livelihoods" for water-borne diseases and "institutions and governance" for access to microcredit.

The outcomes of this vulnerability analysis emphasize the value of participatory, multi-sectoral diagnosis. Importantly, these methods have provided a way to identify productive local interventions that strengthen communities' resilience against shocks and drivers that are largely beyond their control. Action research components of the project have gone on to support local institutions in implementing community interventions that include establishing male and female cooperatives to administer microcredit systems, providing community health services, improving access to clean drinking water, upgrading fish pond systems, and improving education facilities. Local institutions will continue to monitor these interventions and assess their sustainability and impacts on the community and the fishery resource.

4. FURTHER READING

Other published briefs from this project:

WorldFish Center. 2010. *Implementing Resilience Management: Lessons from fishing communities in the Niger River basin.* Policy Brief 2103. Penang, Malaysia: WorldFish Center.

WorldFish Center. 2010. *Adaptation of floodplain fishing communities to hydro-climatic changes in the Niger River basin.* Lessons Learned Brief 2104. Penang, Malaysia: WorldFish Center.

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Béné C, Steel E, Kambala Luadia B., and Gordon A., 2009. Fish as the "bank in the water" - Evidence from chronic-poor communities in Congo. *Food Policy* 34:104-118.

Mills D, Béné C, Ovie S, Tafida A, Sinaba F, Kodio A, Russell A, Andrew N, Morand P, and Lemoalle J. 2009. Vulnerability in African small-scale fishing communities. *Journal of International Development* 26 (DOI: 10.1002/jid.1638).

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