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C E N T E R

# Implementing Resilience Management: Lessons from fishing communities in the Niger Basin

## KEY MESSAGES

- Small inland fisheries are important to the livelihoods of the poor in Africa, contributing both food security and income to millions of households living near freshwater lakes, reservoirs, rivers and floodplains.
- These inland fisheries have complex exploitation systems with large numbers of fishers operating in the informal sector. These systems are highly vulnerable to external disturbance, making them extremely difficult to assess and manage.
- As resilience management is a way to strengthen systems' ability to absorb perturbations and shocks while coping with uncertainty and risks, it has potential use in managing small fisheries.
- Recent research conducted on the shores of the Lake Kainji in Nigeria and in the Inner Niger Delta in Mali confirms that, when considered pragmatically, the concept of resilience provides a useful framework to identify and implement appropriate interventions to reduce fishing communities' vulnerability to shocks and threats.
- The resilience of a fishery is not exclusively related to the status of the resource. Where fishing communities are especially destitute, interventions need to prioritize communities' basic needs, thereby allowing them to turn their attention to fishery sustainability.

## 1. BACKGROUND

Small inland fisheries are important to the livelihoods of the poor in Africa, contributing both income and food security to millions of households living near freshwater lakes, reservoirs, rivers and floodplains. These fisheries have complex exploitation systems in which fishers, often operating in the informal sector, use many kinds of gear to catch many different species. This makes them extremely difficult to assess and manage.

Small inland fisheries are significantly affected by processes outside fishers' control. Dams and irrigation schemes

in particular affect many inland fishery dynamics. The uncertainty induced by climate change will heighten the unpredictability of these systems and the competition for water, severely endangering the well-being and security of local fish-dependent populations that rely on fishery resources for their livelihoods.

Faced with such constraints and multiple causes of uncertainty, conventional management has failed, by and large, to provide a basis for sustainably developing aquatic resources. The project described in this brief was designed

to develop and field-test an innovative framework for implementing resilience management. The ultimate goal of this initiative is to initiate and guide major changes in the way small fisheries in sub-Saharan Africa are assessed and managed.

## 2. THE CONCEPT OF RESILIENCE

Broadly, resilience analysis studies the capacity of systems to adapt to shocks, recognizing that disturbance and change are integral to complex systems. More formally, resilience analysis proposes to focus on mechanisms and processes that help systems absorb perturbations and shocks while coping with uncertainty and risks. This concept of resilience appears particularly useful for managing small fisheries. However, while resilience is appealing, particularly in the face of the failure of current management approaches, the danger is that it remains largely academic and theoretical and therefore not a great help in effectively improving the way natural resources are managed on the ground. The challenge is to operationalize the concept of resilience and make it practical and pragmatic when implemented in the field.

## 3. IMPLEMENTING RESILIENCE MANAGEMENT

Two fishing communities were selected in the Niger Basin to test this approach: Batamani, in the Inner Niger Delta in Mali and Tungan Mairuwa on the shores of the Lake Kaniji in Nigeria. In these two pilot communities, participatory assessments were first implemented to identify sources of vulnerability. The structure and content of these assessments drew on well-established methodologies of participatory assessment and reflect recent progress in action research. Figure 1 illustrates the result of these participatory assessments of the pilot community in the Inner Niger Delta.

While providing a valuable self-assessment of fishers' priorities for reducing vulnerability, these vulnerability-ranking exercises also offer important insights into how poverty and vulnerability interventions in fishing communities should be conceived. In particular, it challenges the conventional view that development interventions should primarily focus on the resource. Although fish stock depletion and fluctuation were acknowledged and certainly affect livelihoods, the communities identified some more fundamental sources of vulnerability related to their basic needs, such as food

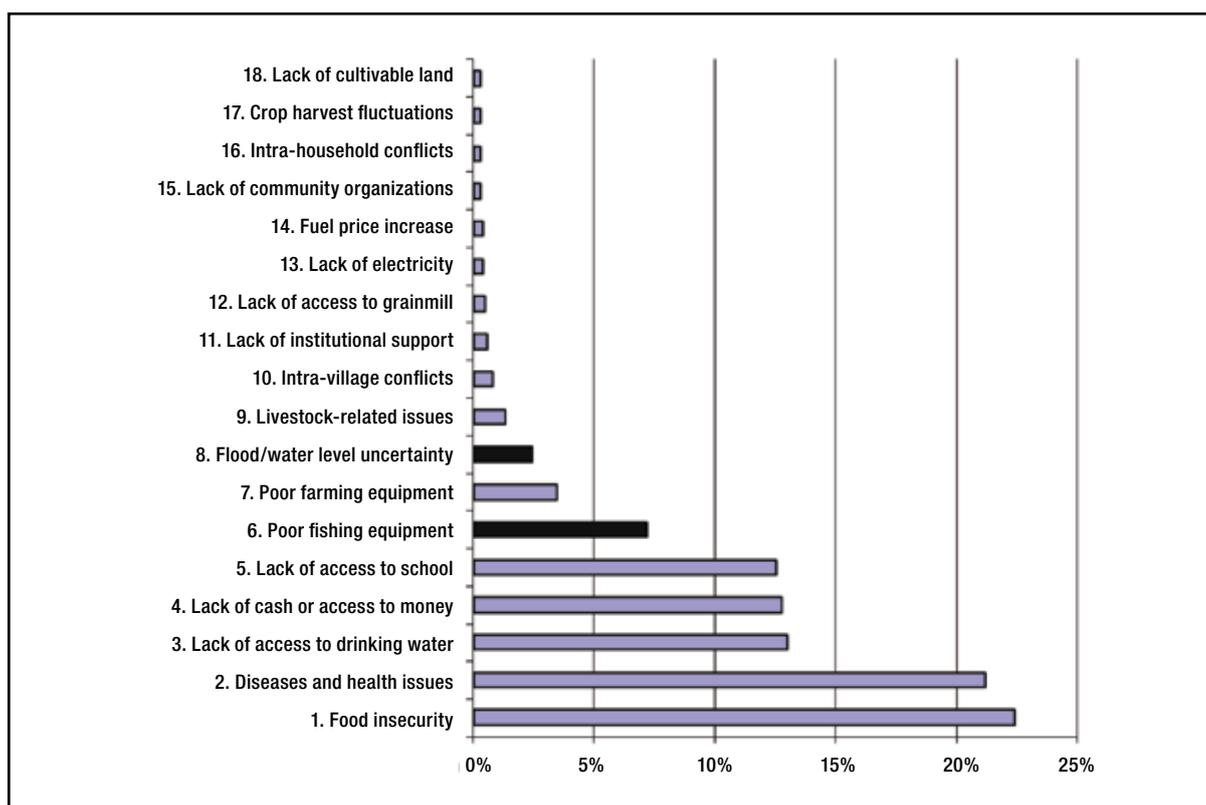


Figure 1. Participatory assessment of the community in the Inner Niger Delta, with sources of vulnerability related to fish stocks and/or fishing activities shown in black.

insecurity, exposure to water-borne disease, and the lack of cash and microcredit.

Based on these assessments, the communities identified a series of interventions, or management actions, to directly address those causes of vulnerability. This process was facilitated by the creation of representative committees in each community. To ensure that the interests of women were appropriately considered in the identification of management actions, two committees were created conjointly in each community, one for men and the other for women. Special attention was paid to the composition of the committees' executive bureaus to reduce the risk of bias toward the interests of the most powerful individuals and households in the communities (Box 1).

#### **Box 1. Committee formation and election of its executive at Tungan Mairuwa**

In accordance with the project work plan, a team from the National Institute for Freshwater Fisheries Research paid a 2-day visit to Tungan Mairuwa on 18 and 19 January 2009. During the visit, two important issues were addressed. First, the community was educated about the roles of community-based organizations and the need for them to unite and work as a team. They were asked to form two committees, male and female, for the project and to elect executives. Before the election, two forms of elections were explained to the communities — democratic or appointment by consensus — and they agreed to use the latter. The following positions and their responsibilities were explained to the communities: chair, vice chair, secretary general, treasurer and financial secretary, and public relation officer. Most participants appeared to understand.

Some members of the community nominated the village head as chair, which the team immediately advised against, explaining the risk of a dominant personality possibly manipulating other members of the community — this despite there being no problem with local leadership, which both the village head and community members agreed. The exercise continued for both the men's and women's committees. After nomination, the chair of each committee thanked the community for their confidence and assured members of their commitment to ensuring that the goal of the committee would be achieved. Generally, community members promised to respect and cooperate with the leadership of the committees and to give them all necessary support at all times.

## **4. IDENTIFICATION OF RESILIENCE MANAGEMENT ACTIONS**

With the support of national research and extension services, the committees and other members identified potential management actions. Tables 1 and 2 show the lists of resilience interventions as they were identified in Batamani and Tungan Mairuwa respectively. Some of the proposed activities were supported by the project through a US\$20,000 seed fund, while others were funded by the two microcredit cooperatives that were created in the two communities, one for men and the other for women.

It is notable that, in both pilot communities, most of the proposed interventions were not specific to the fishery. In other words, none of the interventions targeted the resource itself or instigated collective action or institutions



**Two nurses, one male and the other female, visited Batamani with project support, addressing the communities' second-ranked cause of vulnerability.**



**Children fetch drinking water from one of three boreholes rehabilitated by the Tunga Mairuwa community with support from the project.**

**Table 1. Management actions proposed by the Batamani community in the Inner Niger Delta in Mali**

Vulnerability factor	Interventions	Objective	Comments
Lack of access to health services	Bimonthly visits by a nurse to diagnose illness and provide medication. In parallel, a series of meetings to be organized by the nurse to sensitize and educate the community about health issues, including the control of water-borne disease	Improve access to health services and information	The Batamani community identified issues related to health as the second most important source of vulnerability, after food insecurity. The regional health directorate in Mopti will support the initiative.
Education	Meetings between the community and the local institution in charge of education to be organized to explore and evaluate the willingness of the community to establish <i>écoles communautaires</i> (community-run schools)	Initiate the creation of an <i>école communautaire</i> in Batamani	The local institution in charge of education in Mopti to support the initiative.
Natural resources	The costs of materials to rehabilitate the sluice gate controlling water flow in the community-owned pond to be covered by the project, with the community to provide labor	The objective is to lengthen the period in which water is retained in the pond to enhance rice and fishery productivity	The rehabilitation should improve the capacity of the community to produce rice and fish, strengthening food security and providing cash income.
Lack of access to cash or microcredit	The creation of two microcredit cooperatives, one for men and the other for women, to finance such individual initiatives as <ul style="list-style-type: none"> <li>• poultry farming,</li> <li>• petty trade in fish and rice, and</li> <li>• gardening (for women)</li> </ul>	Improve access to microcredit to enable community members to engage in new economic activities	Memorandum of understanding to be signed with a local bank

**Table 2. Management action proposed by the Tungan Mairuwa community at Lake Kainji in Nigeria**

Vulnerability factor	Intervention	Objectives	Comments
Lack of money	Community microcredit cooperatives established to finance such individual initiatives as <ul style="list-style-type: none"> <li>• purchasing water pumps for irrigation,</li> <li>• establishing homestead fish farming and backyard poultry farming, and</li> <li>• procuring medium-size ruminants or, for women, sewing machines</li> </ul>	Reduced fishing intensity and effort, and enhanced food security and alternative income	Memorandum of understanding to be signed with a local bank
Disease and health	<ul style="list-style-type: none"> <li>• Monthly visit of a medical practitioner to the community</li> <li>• One traditional birth attendant trained by the district primary healthcare unit</li> </ul>	Reduced child and maternal mortality, and community members encouraged to patronize orthodox medicine and control water-borne disease	The Tungan Mairuwa community identified issues related to health as the third largest source of vulnerability, after the lack of cash and microcredit and food insecurity.
Access to drinking water	Rehabilitation of the village's boreholes	Control water-borne disease	The lack of good drinking water is identified as a major cause of health problems. Households used to drink water from the lake.
School	<ul style="list-style-type: none"> <li>• Chairs and desks procured</li> <li>• One block of classrooms roofed</li> </ul>	Establish a conducive learning environment and encourage pupils to enroll in school	

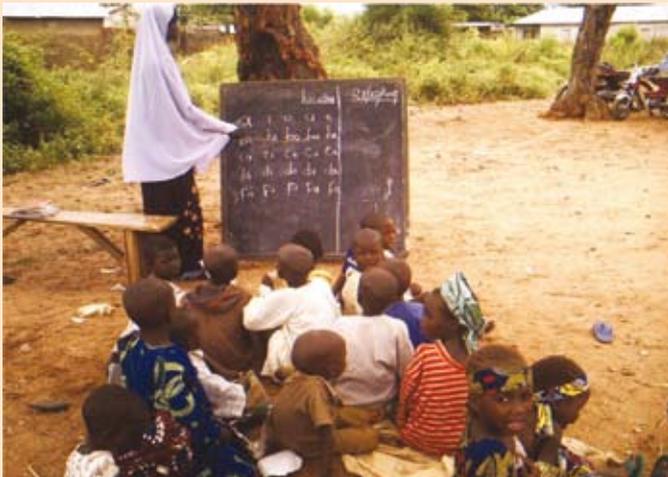
directly relevant to resource management. The only partial exception to this is the rehabilitation of the sluice gate controlling water flow in Débaré pond at Batamani, the objective of which is to lengthen the period when water is retained in the pond to enhance rice and fish productivity.

## 5. IMPLEMENTING MANAGEMENT ACTIONS

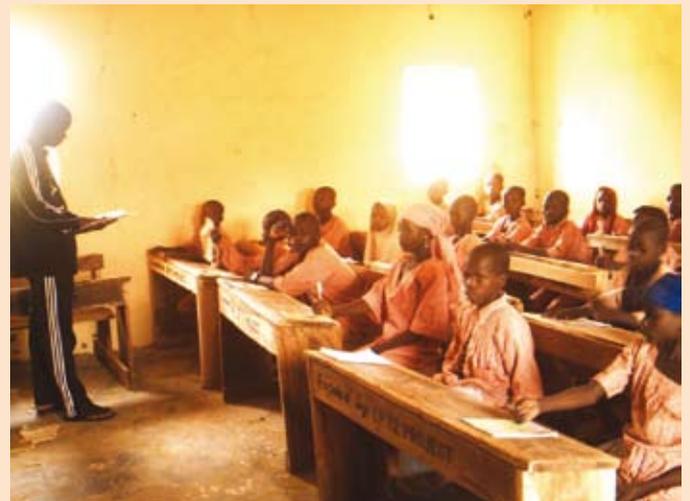
In Tungan Mairuwa, rehabilitating the school and providing benches and desks for the pupils had a huge effect

on the daily life of children and teachers, as shown by photographs before and after the renovation. The rehabilitation of the school has triggered some additional unexpected results. Enrollment increased by 66%, from 120 children prior to the project to 200 after the school was rehabilitated. The other interventions were successfully completed in the two communities under the supervision of the community committees.

It is far too early to formally assess the relative impact of the various interventions. Nevertheless, the project partners were able to document the reactions of the population a few weeks after them. The following are some of the comments recorded during these discussions in the pilot community Tungan Mairuwa in Nigeria.



Before the project, pupils sat on the floor or even outside with no desks or other furniture.



Desks and benches, as shown in October 2009, improved the learning environment, spared pupils the need to wash their uniforms daily and encouraged enrollment.



The sluice gate for controlling the flow of water in and out of the Débaré pond (Batamnai village) was badly broken down before the project.

**Hakimi Hamisu (village head):** “I’m more than happy about what you have done for me and my people. If it were possible to open my heart for you to see the joy in it, I would do so. I thank you for the things you have brought to the community. May Allah bless you all.”

**Dahiru Usman (secretary of the men’s cooperative):** “I’m very glad especially for the revolving loan. I will invest it well to yield profit. I am happy about the school benches and desks, as our children will no longer sit on the floor to learn. The oxen will relieve the drudgery of land preparation by hand.”

**Hajia Hure (president of the women’s cooperative):** “I’m happy about the way the project recognized us as women and gave us our own cooperative. The loan will help us a lot, and we promise to invest well to reap profit from it to improve our living.”

**Zeyanu Ibrahim (head teacher):** “I’ve never seen anything like this before in this or surrounding communities. The classroom seats will encourage more parents to send their children to the school. It will entice children to the school. I am very happy about all the assistance.”

**Jumai Saidu (teacher):** “This [having benches] is very good for our children. They will not need to wash their uniforms every day. It will help learning.”

**Hassan Sani (Arabic teacher):** “We’re very happy about the classroom seats. We had contacted the education secretary, but there has been no positive response. We thank this project for this kind gesture.”



The project supported the Batamani community's rehabilitation of the sluice gate of Débaré pond.



## 6. CONCLUSION

Recognizing that small-scale inland fisheries are central to the livelihoods of a large number of households in river basins in developing countries but are particularly exposed to disturbance and external shocks, the objective of this research was to test whether the concept of resilience, revisited from a socio-ecological and adaptive management perspective, could provide a useful framework for identifying and implementing appropriate interventions to mitigate the vulnerability of these fishing communities.

Although it is too early to formally assess the impact of the project as a whole, evidence collected since the

interventions were initiated suggests that the project has been successful. The resilience framework has been developed and implemented according to the initial project plan. Preliminary results demonstrated the relevance of the framework to engage with the local communities about their sources of vulnerability and to lead them, in a participatory and gender-sensitive manner, to identify potential solutions to vulnerability.

All the interventions identified by the communities were implemented, and the two communities already show some encouraging signs of change for later confirmation.



The first group of women at Tunga Mairuwa received loans from the microcredit scheme in October 2009, addressing their first-ranked cause of vulnerability.

A large majority of the interventions chosen by the communities were not specific to the fishery. One of the key policy messages is therefore that the resilience of a fishery is not exclusively related to the status of the resource. Where fishing communities are especially destitute, as is the case on the shores of Lake Kainji and in the Inner Niger Delta, priority interventions should focus first on the basic needs of the population. In sum, one cannot expect to strengthen the resilience of a fishery if the fishing communities that depend upon it cannot send their children to school or are exposed to unacceptable prevalence of water-borne disease.

#### Photo credits

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