

A Fisheries Co-management Case Study from The Gambia

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Abstract

User involvement in fisheries management has been around for some time, but few analytical papers have been published on the subject in Africa. Most of these initiatives fall under the rubric of co-management. But what is the concept of co-management in theory and how does it work in practice? In reviewing a comprehensive artisanal fisheries development project, we will attempt to answer this question in the context of The Gambia.

Overview of Fisheries in The Gambia

With a continental shelf of approximately 3,855 km² and 70 km of coastline, the Gambian marine fishery resources are estimated to be between 65 and 75,000 Mt of pelagic species; between 15,000 and 17,500 Mt of demersal species and 1,000 Mt of cephalopods and crustaceans. Less than 40,000 Mt in total are currently being exploited. The potential of river fisheries resources is not only not well understood but also underexploited.

The Fisheries sector is classified into artisanal (or small-scale) and industrial sub-sectors. Industrial fisheries involve comparatively high investments, and target mainly demersal species that are processed in factories and exported. Artisanal fisheries engage in relatively extensive, low-input practices that employ simple fishing and processing techniques.

Some 1,969 artisanal fishers (1,238 Gambians and 731 foreigners)

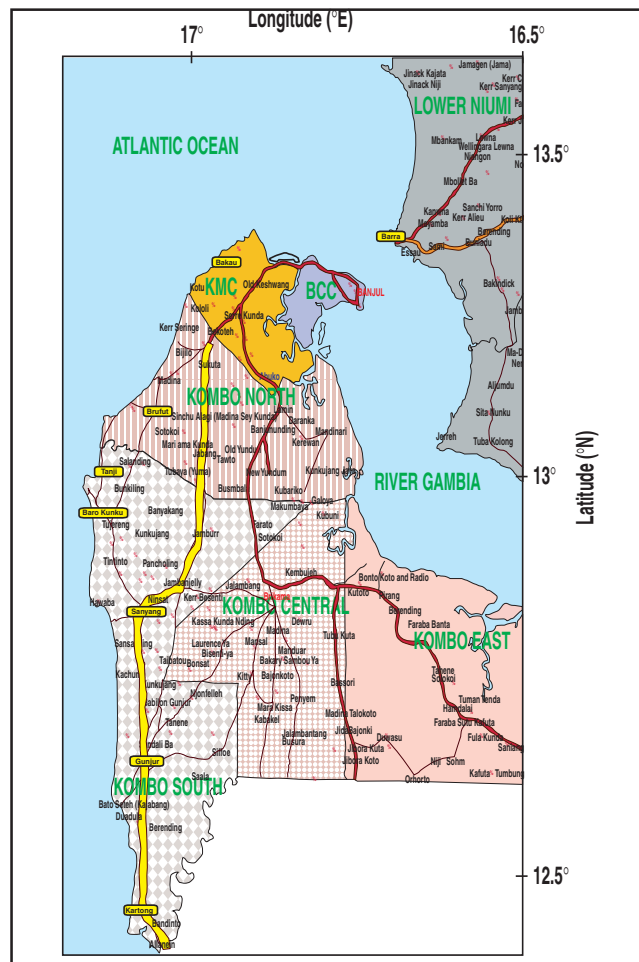


Fig. 1. Map of The Gambia.

and 4,067 fishing assistants (1,985 Gambians and 2,082 foreigners) target mainly pelagic species and presently land about 30,000 Mt annually, meeting 90% of domestic supply, now about 25 kg per capita per year. Overall, the fisheries sector provides direct and indirect employment to over 36,000 people, the vast majority of whom are employed in artisanal fisheries. Although men are involved in large-scale fish smoking for domestic and export marketing, most smoking, drying and local marketing are done by women. Fisheries related activities include canoe construction, repair and maintenance of outboard engines, fuel wood sale, vegetable gardening, and petty trading.

The predominant fishing method is gill net encirclement of Bonga (*Ethmalosa fimbriata*, *Clupeidae*). Bonga makes up, on average, 73% of total artisanal marine landings (Table 1) and is the cheapest and most affordable fish for the average Gambian. A variety of other fish species are also landed including croakers, jacks, mackerels, catfish, and barracudas.

Historical Development of the Artisanal Fishery

Farming is the main traditional occupation of the coastal peoples in The Gambia, however fishing and related activities have been gradually growing in importance to now form the second most important occupation. Due to their strategic locations and abundant fish resources, skilled fishers from around the sub-region have migrated to Gambian coastal villages where some have settled. In the past, Gambian fishers were mainly part-time and subsistence, limited in their operations by comparatively underdeveloped skills. With



Net mending and mounting a new net at the Tanji CFC.

Table 1. Fish landings of artisanal marine fisheries in metric tons.

Year	1994	1995	1996	1997	1998	1999
Total Industrial	7,752	6,976	8,372	4,000	7,012	10,249
Total Artisanal	19,917	20,799	30,510	29,754	26,533	29,743
Total National	27,669	27,775	38,882	33,754	33,545	39,993
Bonga Landings	16,896	13,897	22,648	21,523	21,952	16,115
Bonga (%Artisanal)	85%	67%	74%	72%	83%	54%

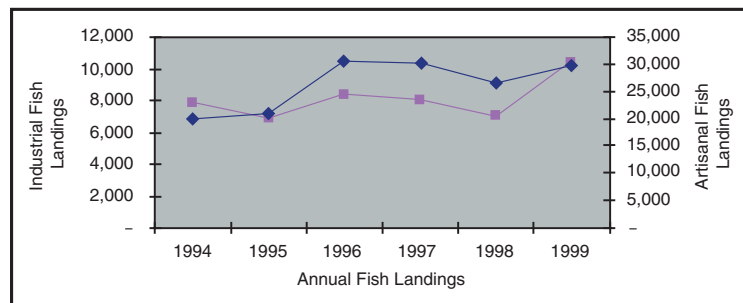


Fig. 2. Fish Landings 1994-1999.

acquisition of skills from immigrants and with government efforts to increase Gambian involvement in the sector, more local people have become commercial, full-time fishers.

Fish smoking and marketing consequently have also intensified and become established trades in some coastal villages. Fish smoke houses with poorly designed ovens constructed by men fish smokers (that privately put up their own structures) have been consuming

large quantities of fuel wood thereby contributing to deforestation. The use of poor construction materials and prevailing weather conditions led to fire outbreaks that caused large-scale destruction and loss of investment. Women smoked fish for urban markets using low capacity, poorly constructed smokers and inadequate sanitary practices. This has led to high post-harvest fish losses of up to 30-40%.

Prior to 1979, fishers were widely scattered and highly



The extension of sharkfish sun drying at Gunjur. In the background finished products stacked on storage platforms.

Table 2: General inventory of facilities and services at coastal CFCs.

Facilities	Remarks
Fishing gear store	For storage of fishing materials & personal effects
Fish products store	For sheltered storage & protection of fishery products
Improved sun drying racks	With increased capacity and protection
Improved fish smokers	Increased capacity, efficiency & product quality
Fish boxes	For proper handling
Insulated fish containers	For ice storage & distribution of fresh fish
Canteens/Restaurants	Rented to private individuals
Water tank and accessories	To supply potable water to the community
Water well and windmill	Clean water for domestic & commercial activities
Fish market area	For the landing & marketing of fresh fish
Fish landing Jetty (300m ²)	Only at Tanji CFC but now damaged by storm
Mechanical workshop	Repair & maintain outboard engines, 2 are now private
General market	Used for marketing of various commodities
Offices	Shared by FD staff & Management Committees
Main Center Store (30 m ²)	For storage of CFC & fisheries items
Vegetable Garden	For women as part of their cultural activities
Praying area/ Mosque	By the FCMC and in use by the Muslim community
Fuel selling station	Rented and used by private persons
Petty cash savings boxes	For fishers to effect personal short-term savings
VHF Radios	For general communications by the fishing communities
Revolving Loan Fund	To provide credit to support fisheries-related activities
Fishermen training program	Operational for training of young Gambians

migratory. This and the poor state of the roads made fishers inaccessible to the underdeveloped fisheries extension service. Fishers were highly unreceptive to new techniques and often believed that fish resources were unlimited. Apart from a few temporary huts, fish drying racks and smokers of various designs, fish landing sites were

devoid of any significant infrastructure. Fish handling, processing, preservation, marketing and distribution facilities were completely lacking.

Fishers lacked technical knowledge and the managerial skills to develop and run their fishing activities in a business-like manner. Existing traditional organizational

structures were based on family or interest groups and were often temporal, informal and weak (Njie 1997). Opportunities for formal training were nonexistent, as were credit facilities.

Early Development Efforts

In the 1960s, government introduced an artisanal fisheries development strategy aimed at increasing catches and employment by increasing the availability of capital and introducing improved fishing technology. A credit scheme was introduced and training programs initiated to train youth in fishing technology and outboard engine mechanics.

However, benefits were slow to be realized. This was linked to the top-down approach adopted by government and the individualistic and migratory nature of artisanal fishermen. In addition, the diverse, widely dispersed and part-time nature of artisanal fisheries activities, the inaccessibility of landing sites and limited material and human resources hindered organization of fishers and the development of marketing infrastructure.

Community Fisheries Centers

In 1979, with funding from the European Union under the Lomé Convention, an initiative to increase the productivity and positive social outcomes of the artisanal fishery was introduced. The objectives of the Artisanal Fisheries Development Project (AFDP) were to:

- raise the income of fish workers through increased catches;
- increase consumption of fish by improving processing, marketing and distribution;
- increase rural job opportunities (by increasing Gambian

- participation in the sector);
- develop industrial and artisanal fisheries in an integrated manner;
- diversify the economy and intensify economic activities in the fisheries sector;
- improve national socioeconomic standards.

The main vehicle for achieving these objectives was the establishment of Community Fisheries Centers (CFCs). AFDP provided the CFCs with infrastructure and a number of facilities and support services (Table 2), including fish handling and processing facilities, outboard engine mechanical workshops (with trained mechanics), fishing gear and fish products stores, fish marketing infrastructure and individual savings facilities. A network of VHF radios linked the CFCs nationwide and with Fisheries Department Headquarters in Banjul. Project sites were provided with windmill powered water wells for piped water supply to the fishing centers/communities. In collaboration with the Forestry Department, a 200 ha fuel wood plantation was established at the Selagi Forest Park to supply the increasing fish smoking activities. Except at one village where women opted instead for a day-care center and playground for their children, vegetable gardens were incorporated for women to supplement diets and incomes.

The first CFC was established at Gunjur between 1979 and 1982. In addition to the CFC and its facilities, the AFDP constructed a 10-ton/day ice making plant in the inland town of Brikama, (about 10 km from Gunjur). It rehabilitated a bridge at Tanji and constructed about 27 km of feeder roads to improve access to coastal fish landing sites. Fishing canoes were provided and a fishers training program initiated.



Cat fish smoking on the modified chorkor (bonga oven) in an improved conventional smoke house by the Fish Driers Association in Gunjur CFC.



The improved traditional (right) and conventional (left) fish smoke houses.

At the time of ground breaking for this first CFC, temporary structures were cleared from the site without consulting the community. This lack of involvement of beneficiaries in planning and implementation resulted in initial community refusal to accept and use the CFC facilities in Gunjur. Fishers lacked trust and were reluctant to accept relocating themselves to occupy the CFC, which they considered as government property. However, with information and intensive dialogue, some beneficiaries were eventually convinced to use the facilities. Those

who absolutely refused to relocate had their huts demolished. This forced them to occupy the CFC and join the user associations.

In 1987, AFDP Phase II was launched and established five more CFCs at Brufut, Tanji, Sanyang, Kartong and Batokunku/Tujereng (Fig. 1). A seventh CFC was financed and constructed at Bakau by the Japanese International Cooperation Agency (JICA). Eight other CFCs were constructed in inland fishing villages along both banks of the Gambia River through support provided by the Italian Government (Njie 1998). With three

smaller CFCs initiated by the Fisheries Department, there are now 18 CFCs nation-wide: 7 along the coast and 11 on the river.

This time, emphasis was placed on an integrated and participatory approach. The early and continued participation of beneficiaries in all project processes was ensured. Local fishers' organizations (user group associations) were set up in each CFC village. A fisheries center management committee (FCMC) was formed from representatives of user groups and such resource persons as village heads, elders and members of village development committees. Project and fisheries extension staff formed a Fisheries Development Unit (FDU) that facilitated and supervised project implementation. Management was initially a joint responsibility of the FDU and the FCMCs to whom this responsibility was completely devolved over time. Although not yet legally binding, CFC infrastructure and facilities are, for all intents and purposes, owned and managed by their users and the community.

Co-Management

In order to sustain development initiatives and mobilize local resources for operation, development and management of the CFCs, the fishing communities went through a gradual process of organization and institutionalization. Fisheries Department extension staffers were posted at fish landing sites and charged with various responsibilities: fisheries data collection, supervision, research and extension activities. They act as liaison between the fishing community and the Fisheries Department and functioned as counterparts to AFDP project staff. Their number includes village based



Women doing domestic work around the smoke house while fish is smoking inside.

Table 3. User Group Associations (the example of Tanji CFC).

Fishers Association	Participants
Fishermen Association	Gambian fishers at the landing site
Men Smokers Association	Gambians engaged in fish smoking
Women Smokers Association	Women fish smokers at the landing site
Natangeh Credit Union Association	Recently formed by various women
Fish Dryers Association	Only women fish dryers
Fish Traders Association	Men and women fish dealers
Vegetable Gardeners	Women economic operators

female fisheries assistants who were trained and later employed. These department and project staff together constituted the Fisheries Development Unit (FDU). The FDU assisted and supervised fishers in their technical, organizational, management and training activities.

User Group Associations

The organization of fishers into user group associations followed the "kafos" model, traditional groups of people with the same trade (Njie 1993). During project implementation, fishers and their families were sensitized and encouraged to organize into such user-group associations. Examples of the main types of association that evolved at the landing sites are shown in Table 3.

Training programs were

organized for association members in various disciplines including business and financial management, literacy and numeracy, simple bookkeeping, credit and savings, fish handling, preservation and processing. Technical training in fishing skills was initiated for young fishers.

The associations hold regular monthly meetings to discuss issues. From a revolving loan fund (RLF), credit facilities for fishing materials, processing equipment and operating capital are made available to operator associations and individuals. In addition, many informal credit and savings schemes now operate involving specific weekly or monthly cash subscriptions by members. From the accumulated funds, credit is given to members on a rotational basis. Some of these schemes have

been very successful, especially the women's schemes and the male fish smokers schemes.

Fisheries Center Management Committees

Fisheries Center Management committees (FCMCs) were instituted to take over management responsibility of the CFCs. Formation of the FCMCs was a gradual process from 1987 to 1988. It involved intensive sensitization of user groups by the FDU and regular meetings of the groups at which representatives were elected. The composition of a typical FCMC is shown in Table 4. The FCMCs worked closely with the FDU during project implementation and through interactive training in organization and management related disciplines: business and financial management, bookkeeping, credit and savings, eventually grew to become the basic management entity of the CFC with the FDU playing only an advisory role. The committee is voluntary and members receive no remuneration.

The Management Committees operate under a set of rules and regulations (Satia and Hansen, 1994). Well functioning user group associations ensure representation of different opinions in the community and permit free flow of information between management and users. Before FCMC meetings, user groups discuss their own agenda, which they submit to the FCMC through their representatives. Representatives report back to the groups the major decisions and actions taken concerning maintenance, operation and finance of the centers. In fact, user groups submit to the FCMC, their own proposals involving expenditures on repair and maintenance. In general, the main associations: fish traders, men and women fish smokers' and fish



Discussing the potential use of fish offals as feed and fertiliser during Participatory Environmental Waste and Hazard Impact Assessment Exercise.

Table 4. Representation of user groups on the Fisheries Center Management Committee in Tanji CFC.

Profession / Association	Population			Remarks
	Male	Female	Total	
Fisheries	2	-	2	
Men Fish Smokers	4	-	4	
Fish Traders	3	-	3	
Fish Dryers	-	1	1	Also represents gardeners
Women Fish Smokers	-	1	1	
Secretary/Treasurer	1	0	1	Employed by committee
Others	4	-	4	Village head and elders
Total	14	2	16	

dryers' associations are relatively well organized and cohesive in many of the CFCs.

Activities of the FCMCs and CFCs

The FCMCs manage the affairs of the CFCs. They employ people from the community on casual or permanent bases including a secretary, a watchman, a cleaner and a pump mechanic. Many CFC services are provided free of charge, but some facilities are rented to users and charges are levied against certain other services (Table 5). These fees and service charges are collected and managed on behalf of the community. Periodic (usually

monthly) meetings are held where matters concerning revenue from rental collections, expenditures, budgets and future development of the CFC are discussed. For the proper up-keep and care of the facilities, committees assign responsibilities to various committee members to inspect, report damages and ensure payment of fees to the CFC secretary/treasurer. The FCMC operates a bank account into which excess monies are deposited and withdrawn only by elected trustees (usually three members of the committee).

Expenditures on maintenance and expansion of the facilities are prioritized, as it is well understood that these will, in the long-term,



Inspecting fish by-products used as animal feed by chicken breeders and as fertilizer for vegetable gardens in Gunjur.

Table 5. Actual and potential revenue generating activities and services at the Tanji CFC.

Activity/Service	Number of Units	Current Charge per Unit(Dalasis)
Fishing gear store	34	30
Fish product stores	8	40
Improved fish drying racks	32	15
Fish drying racks	30	0
CFC fish smoke houses	13	100
Private fish smoke houses	13	0
Insulated fish containers	4	30
Canteens/Restaurants	12	50
Water supply	-	0
Fish market	-	0
Fish Landing site use	-	0
Car park	-	0
Mechanic workshops	-	0
Donkey carts	-	0
Fuel vending stations	-	0
Hawkers	-	0
General market	-	0
Vegetable garden	-	0
Fisher training program	-	0

Table 6. Income and expenditure statement of the Tanji CFC.

Year	Income (Dalasis)	Expenditure	Balance
1992	29180.00	34505.00	-5325.00
1993	28716.00	31530.00	-2814.00
1994	24650.00	19439.75	+4210.25
1995	25800.00	22704.00	+3096.00
1996	27734.00	20860.00	+6874.00
1997	23460.00	24279.00	-819.00

Note: US\$1 = 11.40 dalasis; 1999 average.

contribute to expanding the revenue base of the CFCs. The FCMCs are aware of the need to augment revenues to continue to meet these important needs. Accordingly, with approval of the community, increased fees were introduced in some of the CFCs (the bigger ones) such as Tanji, Brufut and Gunjur. In addition, some FCMCs introduced new fees on water, petty trading and private facilities built on CFC land. Increased and newly introduced rental fees have enlarged the budgets of some of the centers by approximately 30-35 percent (Satia and Hansen, 1994). Expansion has taken place at most landing sites, and most CFCs are operated profitably (Table 6). Over time, the management responsibilities of the committees have grown to cover wider circles of the fish landing site and the fishing community.

Some problems

It has been observed in many of the CFCs that committee members are not volunteering now as they initially did. Monthly meetings may not be held regularly due to apparent lack of motivation from an incentive system for committee members who have volunteered for far too long (10 years now) without any form of remuneration. Reorganization, monitoring, training and motivation of management committee members are vital for consolidation and improvement of the participatory management system. Regular replacement of committee members and/or an incentive system is needed.

Formation of some user group associations suffered setbacks resulting in their disbanding when promised and expected credit and loans to associations did not materialize immediately. This created discontent, particularly



The fish landing and marketing facilities at the Gunjur CFC.

Impact of the Community Fishing Centers

The AFDP phased out in 1991, having recorded considerable impact on the lives of fishers, their families and the socio-economics of coastal fishing communities. Although there is room for improvement, most of the CFCs have recorded significant successes in terms of managing and sustaining AFDP initiatives.

Interventions responded to development needs of the communities in terms of technology, infrastructure, training, organization, credit and communication. Fish landings have increased and now are an important source of relatively cheap animal protein and foreign exchange earnings. Fish preservation and marketing are much improved. For example, the Chorkor Fish Smoker invented in Ghana was modified and introduced by the CFCs. The Gambian Bonga Oven, as it has now been renamed, has resulted in 40% fuel wood savings and reduced fish and capital lost to fires (Jallow 1992).

Fish landing sites underwent profound physical, social and economic changes during AFDP. People from all over the country and the sub-region use the CFCs as business points and for various socioeconomic engagements. Fish and fishery products from the coastal CFCs are marketed countrywide and exported. The CFCs are also points of convergence of various government and non-government organizations and institutions active in development. These landing sites have become bustling centers of activity for a number of economic spin-offs. Apart from fishing and directly related industries, there has been growing private sector

among fish traders. With clarifications and later availability of credit, some of the associations reformed, but others continue to be non-members of any association.

Fishers and fish traders complain of various problems ranging from inadequate representation and empowerment to operational problems. Most often mentioned are: inadequate credit facilities, high costs of fishing inputs, lowered fish sizes and declining catches, unreliable fish supplies at times, unreliable transport services, lack of ice and cold storage facilities and inadequate markets. Conflicts with trawlers and each other, accidents resulting in loss of investments and fatalities and scarce and expensive fuel wood supply are other concerns of the fishing community.

Increased population growth and economic activity demand that greater attention and serious planning be focused on participation in integrated development and management of both the fisheries and other community resources and the environment. Planning and drawing up of work plans was introduced and adopted by the FCMCs, but seem to have degenerated in the absence of adequate monitoring and evaluation.

Action planning must be reintroduced as a strategy and mechanism for setting and reaching targets. Some management committees and user group associations also require reorganization and strengthening through further training and equipment.

In a bid to address common problems, the Association of Coastal FCMCs was formed in 1994. Each FCMC has representatives on this association, which meets in rotation at each of the seven coastal CFCs. At various points in time, the association attempted to address their common problems. Unfortunately, there has been a lapse in activities and meetings of the association due partly to logistical constraints, but mainly to organizational and related matters that require further study and improvement. The association is a potentially progressive mechanism for working closely with the fisheries administration to solve conflicts and address other problems of the sector including matters relating to development and co-management of infrastructure and resources.

involvement in restaurants, canteens, mechanical workshops, petty trading, selling of basic household supplies, transportation and fuel stations (Table 7). All of these activities have created employment and sustained economic growth that has been socio-culturally compatible, politically acceptable and environmentally sound (Satia and Hansen 1994).

Conclusions and Recommendations

Critical to the success of a co-management system is the motivation of fishermen to voluntarily adhere to regulations and to co-operate in their collective interest, even at the expense of short-term personal gains (Hara 1999). Berkes (1997) proposed that four key conditions are prerequisites for successful co-management:

- appropriate institutions, both local and governmental
- trust between the actors

- legal protection of local rights
- economic incentives for local communities to conserve resources

Hara (1999) added that co-management works better when the resource base is solid and does not require reduction in fishing effort.

Open access may be the main cause of resource degradation in the short term, but rapid population growth, technological change, graft, corruption and other patterns of human behavior also take their toll (McCay and Jentoft 1996). Care must be taken that co-management is not touted as the only solution to problems of resource degradation and overexploitation (Hara 1999), but at least the trust between fishing communities and the fisheries administration generated during execution of the development interventions is a step in the right direction.

Active participation in the planning, implementation and eventual management of the CFCs

gave beneficiaries a sense of ownership and commitment to the project. This was a main factor in the sustained good management of the CFCs and the development of new initiatives for the community. Government policies, the creative and positive role played by the Fisheries Department (Kuyateh 1994) and the later organizational dynamism and foresight of the FDU and FCMCs also contributed to the success of the centers.

However, initial monitoring activities have declined and given way to lowered effectiveness. From some quarters, it is believed that the devolution of management responsibility to the communities was too quick. Time is required to organize and set up local institutions for participatory fisheries management. Once established, follow-up, monitoring and evaluation are necessary to ensure the quality of project outputs. Continuous training of fishers, organizations and institutions in management and related practices are vital elements for these institutions to remain effective. Once training is received, knowledge and skills must be put into regular and continuous use.

Democratic representation and greater participation from all groups (not just fishers) would facilitate integration and support endeavors in community resources management and other environmental issues such as the use and scarcity of fuel wood for fish smoking. As a fundamental basis for long term sustainability of activities, knowledge of the fisheries resources and their level of exploitation are vital. Continuous biological resources and socio-economic monitoring regimes should be devised in which the communities, especially professional groups, must also participate so that the logic of

Table 7. Fishing and related activities taking place in CFC communities.

Fishing and related activities /operation	People engaged in activity /operation
Fishing	Primarily male fishers
Fish smoking	Men and women processors and traders
Fish drying	Women fish dryers
Fish marketing	Men/women processors/traders
Smoked bonga peeling	Women casual workers
Vegetable gardening	Women gardeners
Fish off-loading	Women and children
Boat building, repair and maintenance	Male carpenters
Net construction, repair and maintenance	Older men, boat owners & fishing crews
OBE repair and maintenance	Trained male mechanics
Boat mooring	Young men and fishing crew
Shop-keeping	Male shop keepers
Petty trading	Male and female of age 12 upwards
Market vending	All age groups and genders
Fruit and vegetable selling	Women
Fuelwood supply and marketing	Male wood cutters and wood sellers
Selling of prepared foods	Women
Restaurant keeping	Men and women operators
Land & sea transportation and distribution	Cargo canoe operators (Guineans)
Petrol vending	Male vendors

management plans will be transparent to all stakeholders.

There may be a need to legalize management committees and the ownership of CFCs to enable greater autonomy. With further management training and empowerment, the CFCs could provide new facilities and services. The use of technically trained and audited managers should be considered. To support these actions, a properly managed revenue system should be introduced so that all local fisheries and other related activities at the landing site contribute to the revenue base of the CFC.

In conclusion, much has been achieved by way of user group participation in management of the CFCs and sustaining the development initiatives. However, there is room for objective review and the development of specific strategies and mechanisms to improve the institutional and organizational management of the CFCs and local resources. Such strategies and mechanisms must be integrated with other community needs, broadly participatory and based on present and future needs for sustainability.

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