

ANNEX 2.2-1

	Quantity	Unit price	Cost (Tsh)	Cost (US\$)
[Kivukoni Front Fishing Boat Mooring Area Improvement Component]				
Tools for workshop			12,264,000	14,000
Equipment for garbage collection			3,500,000	3,995
Sub-total			15,764,000	17,995

ANNEX 2.2-2

Kivukoni Front Fishing Mooring Area Improvement Component

Estimate on Operation Cost and Income

ESTIMATE ON REVENUE

ESTIMATE ON REVENUE			
Fee for fishing boats (Registration fee for the mooring area)			
(Boat)	40boats	10,000Tsh/boats/year	400,000
(Ngwanda)	19	5,000	95,000
(Mashuwa)	10	5,000	50,000
(Ngalawa)	36	2,000	72,000
(Mtumbwi)	20	1,000	20,000
Sub-total	125boats		637,000Tsh/year
Fishers (Cooperative fee)	1,000persons	2,000Tsh/ psn / year	2,000,000
Other workers (Cooperative fee)	100persons	2,000Tsh/ psn / year	200,000
Other workers (Tenant charge)	100persons	10,000Tsh/ psn / year	1,000,000
Sub-total	1,100		3,837,000Tsh/year
Charge on non-registered boats	40times/month	2,000Tsh/ time	960,000Tsh/year
Charges for lavatory	500psn/time/day	5Tsh/time	912,500
Charges for shower	80psn/time/day	30Tsh/time	876,000
		Total of revenue	6,585,500Tsh/year

ESTIMATE ON OPERATION COST

ESTIMATE ON OPERATION COST					Unit price	Tsh/day	Tsh/year
Water charges				Ton/			
Quantity water used	5l/psn/day	5,500l/day		5.5 day	300Tsh/ton	1,650day	602,250
Electricity							
				kwh/da			
Room lightning	60w	10pcs	3h/day	1.8 y			
				kwh/da			
Street light	200w	20pcs	12h/day	48.0 y			
				kwh/da			
				49.8 y	40Tsh/kwh	1,992day	727,080
					Sub-total for	Tsh/	Tsh/
					water/electricity	3,642day	1,329,330year
Wages for labours							
Cleaning/collecting							Tsh/
charges toilet	3persons	40,000Tsh/month					1,440,000year
Cleaning the area/							Tsh/
garbage collection	3persons	40,000Tsh/month					1,440,000/year
Expense for							
maintenance of							
buildings		100,000Tsh/month					1,200,000
						Total cost	Tsh/
							5,409,330year

ANNEX 2.2-3

1 Fish Market in Dar es Salaam

There are several small-scale fishing villages and landing sites along the coast of Dar es Salaam. Yet, the Banda Beach fish market is the centre for the major fishing activities in marine fisheries.

1.1 Outline

The Banda Beach Fish Market is located in Dar es Salaam, the capital city of Tanzania, near the centre of the city. The market falls under the jurisdiction of Ilala Municipal. Fish landed at the Market was 23,713 ton in 1997, which is the biggest of marine fisheries in Tanzania. There are fishing boats from Dar es Salaam and surrounding area, and buyer boats from production sites including Mafia, Kilwa and Zanzibar landing fish at the market every morning. There are also trucks unloading fish from Bagamoyo, Kisiju, and Kilwa. Many retailers and processors gather in the market and perchance those fish either through auction or direct bargaining. There are sheds providing food or daily materials for those people who gather creating lively atmosphere.

As for the market facility, there is an auction hall surrounded by an area used by retailers. Across the road, there are areas for selling fish, vegetables, food, frying fish, and drying Dagaa. Many kiosks are also present. Yet, these areas are established temporary, and the new fish market is being built by the Japanese grad aid aiming to improve the conditions of the fish market. The market, to be completed in March 2002, will be 14,776m² for the site area and 3,349m² for the construction area.

1.2 Fish Landing and Unloading

Fish landing from the boats is practiced at the beach in front of the fish market. The busiest hour is from 6 to 9 a.m. when many boats come back from their fishing ground. Fish landed is carried to the beach where many buyers are waiting, and auctioned by auctioneers. Some fish, mainly big fish and bottom fish, is carried to the auction hall and auctioned. The commission for auctioneers is paid from fishing boats depends on their sales.

Fish unloaded from trucks are auctioned at the auction hall. Yet, there are cases that fish is sold on the face-to-face base depending on the situation.

1.3 Market Users in the Fish Market

Market Users who are involved in business activities at the market is listed below.

Fisher: Fishers unload fish from their boats at Banda Beach when they come back from the fishing ground. After unloading and selling fish, they return to the mooring sites.

Fresh fish retailer in the Market: They retail fresh fish in the market. The amount of fish they handle and the fish variety depend on their capital for purchasing. Retailers who handle reef fish and big fish have ice boxes for keeping its quality.

Fresh fish retailer: They are retailers from other markets and peddlers. They carry fish by bicycle or bus and do not use ice.

Processed fish retailer: After purchasing and cleaning (scaling and washing) small fish at the market, they ask fish fryers to fry fish. Some take unfried fish back home and fry by themselves. Many ladies are involved in this business.

Dagaa drier: They perchance small sardines and dry them under the sun.

Fish fryer: They fry fish in the market. There are some who buy fish and fry by themselves, and some who specialised in frying.

Fish processor (scale remover): They are specialised in scaling and removing guts.

Fish processor (fish washer, fish carrier): Fish washers are specialised in washing fish in the sea and fish carrier are specialised in carrying fish from the beach to the frying area.

Food vendor: They cook and sell.

Vegetable/ Fruit seller: Many buy vegetables/ fruits from the Kariakoo Wholesale Market and sell at the Banda Beach Fish Market. Often one shed is shared by some since many are small-scale retailers.

Kiosk owner: They sell sundries like soaps, rubber sandals, toothbrushes, and drinks like soda. They buy sundries from the Kariakoo Market and drinks from delivery traders who come to the fish market at Banda beach.

There are many other market users including second-hand clothes sellers, shoe polishers, seashell sellers, cooking oil sellers, firewood/ charcoal sellers, ice sellers, etc. who are engaged in business activities at Banda Beach and they are also essential for the development of the fish market.

There are 1,468 market users apart from fishers being registered in July, 2001 (yet, there may be seasonal workers and others who may have left out from the registration).

Numbers of Market Users at Banda Beach Fish Market

Market Users	B/D, 1999	July, 2001
Fisheries related		
Auctioneers	20	23
Fresh fish retailer	130	259
Fish processor (scale remover)	50-300	234
Fish processor (fish washer)		95
Fish fryer	50	106
Dagaa drier	20	49
Other users		
Vegetable/ Fruit seller	125	244
Kiosk owner, Seashell seller	50	184
Cooking Oil Sellers	20	15
Firewood/ charcoal seller	10	20
Ice sellers	10	10
Food vendor	100	229
Total		1,468
Market Management		
Fisheries Officers from Ilala Municipal	11	
Police	30	

1.4 Tax Collection, Business Licence and Market Usage Fee

The Banda Beach Fish Market together with retailing shops falls under the jurisdiction of Ilala Municipal. Ilala Municipal collects registration fees and the fish levies and obliges market users to be registered.

The registration fee for the usage of Banda Beach fish landing site to the owners of fishing boats is 910 Tsh. where as the registration fee for the fishing boat is 1,300 Tsh. Fishers are obliged to pay 3,000 Tsh. annually for the fishing licence. 5% of the sales from fish landing is to be paid by fishers. This 5% is also applied to buyers' boats and trucks.

The market users who are engaged in the business activities in the market are obliged to own the business licences which cost 26,400 Tsh. annually. Yet, since the present market is established temporary while the new market is being constructed, the users are asked to pay 100 Tsh. on daily

bases. They are also obliged to pay 100 Tsh. daily for the cleaning service. Yet, in the reality, only small number of users (approximately 50) are paying these 200 Tsh.

1.5 Market Users' Organisation

There are five officially registered groups and many voluntary groups at the Banda Beach Fish Market (refer to the table below). The result of the users' registration in July 2001 shows that approximately 50% of market users belong to some sort of groups. Interestingly enough, 60% of those groups have been established after the construction of the new market started. The expectations behind joining or forming a group are for securing the business places and micro-financing. Yet, 60% says he/she has not gained any benefit of being a member of a group so far.

Registered Groups at the Banda Beach Fish Market

	VUSHA*	WASWI	MUUNGANO	DDSS	UWAWADA
Place registered	Ministry of Cooperative and Marketing		Ministry of Home Affairs		
Year starting activities	1980	1986	1979	1996	1993
Registration date	1985	1997	1999	1999	1995
No. of members	240	127 (male:123 female:4)	approx. 700	35	265-270
Members	Fisher (60), Fresh fish retailer (85), Food vendor (50), Mechanics (45)	Fresh fish retailer, wholesaler, retailer, cooking oil seller (11)	Food vendors (male and female), vegetable/ fruit seller, kiosk owner, Dagaa drier	Seashell seller	Fisher and boat owner
Objective	In order to resist the pressure from outside and protect themselves.		Coordination among existing groups.	Recognition from the Government, promoting the self- employment, helping each other	Improvement of fishers' benefit
Admission fee and annual contribution	Admission fee: Tsh. 2,000, Annual contribution: Tsh. 600	Admission fee: Tsh. 9,000, Annual contribution: Tsh. 500	Admission fee: Tsh. 5,000, Annual contribution: Tsh. 5,000	No fees is collected from the members (operation cost is collected from rental fee of a hut owned by the group)	Admission fee: Tsh.2,700, Annual contribution: Tsh.1,200
Activities	Providing equipment for shifting places for the construction of the new market	Same as left	Same as left	Providing a space for luggage	Refer to '2 Fishing Boat Mooring Area in Dar es Salaam'

List of Present Groups at Banda Beach Market

Name of Groups	Legal status	Occupation of members	No. in registration in July 2001	No. reported by each group
VUSHA	Cooperative Society		15	125
WASWI	Cooperative Society		114	174
DDSS	Society	Sea shell sellers	33	34
MUUNGANO	Society			
Babalish		Food vendors	19	62
Mamalishe		Food vendors	42	57
MATUNDA A		Vegetable sellers	59	55
MATUNDA B		Vegetable sellers	52	49
KIKUNDI CHA VIOSK		Kiosk	29	55
Wausa Mitumba	Voluntary	2nd Hand Clothes seller	26	26
Cooking Oil Sellers Group	Voluntary	Oil seller	25	39
UWADUSWA ¹	Voluntary	Fish drier	42	49
UWASAKU ²	Voluntary	Fish fryer	27	29
KICHAWADA ³	Voluntary	Fish seller	23	
UWAMAMBO (Vegetable)	Voluntary	Fruit/ Veg. Seller	27	42
Ushirika wa Wauza Matunda na Mboga ²	Voluntary	Fruit/ Veg. Seller	15	
Matunda	Voluntary	Fruit/ Veg. Seller	2	
Wafanyabiashara Wadogowadogo ⁴	Voluntary	Fisherman		
USHIRIKA (Cooperative)	Voluntary	Kiosk and Fish Fryers	51	54
UWAKI ⁵	Voluntary	Fish seller		
UWAWADA ⁶	Society	Fishers, Fish seller		
Fish Scale remover	Voluntary		40	191
HONA GROUP	Voluntary	F. Vendor + other	22	
Bakwaza	Voluntary	fresh fish retailer	2	
BWABWAJA	Voluntary	fresh fish retailer	1	
UASU	Voluntary	fresh fish retailer	1	
YOSO	Voluntary	fresh fish retailer	1	
FIRE WOOD	Voluntary	Fire wood	4	
giftcome group	Voluntary	Fish washer	3	
MONGO	Voluntary	Dagaa driers	3	
samaki pweza	Voluntary		1	
FETE	Voluntary		11	
wadogoda group	Voluntary		7	6
Njinjo Fishing Co.			5	44
Tafari Enterprises			8	
BWABWAJA	Voluntary	Fishers		
KIKUNDI CHA WAUMINI (Islamic Group)	Voluntary	Fish seller etc.		
KIKUNDI CHA WAVUVI (Fishers' Group)	Voluntary	Fishers		
MATESO group	Voluntary	Fishers		

1 Umoja wa wanika Dagaa na Utumbo wa Samaki: Association for Dagaa and Fish intestines driers

2 Umoja wa Wauza Samaki wa Kukaanga: Association for Fish Fryers

3 Kikundi cha Wauza Dagaa: Association for Dagaa sellers

4 Wafanyabiashara Wadogowadogo : Union of Petty Traders

5 Umoja wa Wafanyabiashara Kivukoni: Ferry Traders association

6 Umoja wa Wavuvi Wadogowadogo wa Dagaa: Small Fishers's Group for Dagaa

1.6 Management of Fish Market Facilities

Officers from the Ilala Municipal collect fish levies, issue licences and collect data. They will continue their activities in the new market, yet the new body for the market management and administration will be established.

The body consists of the Market Management Board that decides the basic policies on market operation and management. The Board is responsible for supervision and monitoring on activities within the market. It consists of; Mayor, Municipal director, Director of Fisheries Division, Ward Counsellor from Kivukoni, Fish Market Master, Representative from Market Users' Committee and Representative from Contracted Management Firm. Under the Board, there comes the Ilala Market Administrative Office which acts as a market administrator of market operation and management. The Fish Market Master is a coordinator assigned by Ilala Municipal Council. His/her role is to implement decisions made in the Market Management Board. 3 officers from Ilala Municipal Council are assigned as (i) a veterinarian, (ii) a security officer, and (iii) a sanitation officer based in the Fish Market. 2 officers from Ilala Municipal Council are assigned as (i) a trade officer and (ii) a quality control officer for the market but based in Ilala Municipal Council. They are to maintain fair transaction and healthy business environment within the market. For effective operation and maintenance of the market, the management may contract services with a private management firm. The Contracted Management Firm is responsible for actual running of the market. A private company (or private companies) is tendered for and selected by Ilala Municipal Council in consultation with the Market Users' Committee. Their operation will be supervised by the Fish Market Master and respective Ilala officers. The Contracted Management Firm is engaged in (i) collection of fees, (ii) maintaining sanitation and hygiene, security, water and electricity in the market and (iii) administrative procedure including updating market users registration.

The one of issues the new market is facing is that it cannot accommodate all present market users. This situation should immediately be dealt with, otherwise it may effect its operation and management.

2 Fishing Boat Mooring Area in Dar es Salaam

This section will describe the fishing boat mooring area in Dar es Salaam centre, where the majority of fish-landing and marketing are carries out, though there are some fish-landing palaces and fishing villages along the coasts of Kinondoni and Temeke.

2.1 Outline of the Mooring Area

In the centre of Dar es Salaam, the following three natural shores are utilized as mooring areas of fishing boats.

(1) Kivukoni Front

Kivukoni Front is on the north coast of Dar es Salaam bay and adjacent to Banda Beach. The shore area about 500m long between the ferry terminal and the water polis station is utilized for mooring area of many fishing boats including dugout canoes and large boats provided with inboard engines (purse seining boats) as well. It is the main mooring area in Dar es Salaam,

(2) Ras Mkwavi

Ras Mkwavi is on the south coast (Kigamboni side) of Dar es Salaam bay, opposite of the Banda Beach, across the entrance channel to the Dar es Salaam port. The shore area about 100m adjacent to the ferry terminal of Kigamboni side is used as mooring area mainly for large boats provided with inboard engines.

(3) Miniazi Mikinda

Miniazi Mikinda is on the south coast (Kigamboni side) and outside of Dar es Salaam bay, opposite of the Banda Beach, across the entrance channel to the Dar es Salaam port. The condition of this area as a fishing boat mooring area is worse than the abovementioned two areas, mainly because of its shallow water as mentioned below. The majority of the fishing boats using this area are ones seasonally moved from Zanzibar.

2.2 Conditions of the Mooring Areas

The followings are the conditions of the mooring areas. Because Kivukoni Front area has the most suitable conditions, it has been the main mooring area for many fishing boats including small canoes and big boats.

- Depth of water: In Tanzania, tidal range is rather big and it is over 3.5m in the spring tides. This is an essential factor for mooring area of natural seashore. Kigamboni side, in particular Miniazi Mikinda is so shallow that the water line goes down to the edge of the channel in low tide. This hinders fishing boats' entering in and going out from the mooring area. Kivukoni Front area is deep enough to moor the fishing boats, with less affect of the tide ebb and flow than the other two areas in Kigamboni side.
- Shelter for boats: The Kivukoni Front provides a calm mooring area sheltered from winds and waves. It is the best area to shelter the fishing boats from the predominant NE wind and waves, which affect the areas in Kigamboni side.
- Accessibility to the fish market (in relation to the entrance channel): The water area in the Kivukoni Front is adjacent to the fish market. The fishing boats can easily move between the fish market and their mooring area in Kivukoni Front without crossing the channel. In case that fishing boats moor in the Kigamboni side, they have to always cross the channel between the fish market and their mooring area.
- Supply for fishing operation: It is easier to get supplies for the fishing boats in the Kivukoni Front than other areas. Some big boats of Ras Mkwavi also come to Kivukoni Front to get supply of ice.

Conditions of Mooring Areas

	North	South	
	Kivukoni Front	Ras Mkwavi	Miniazi Mikinda
Depth of water	O	△	X
Sheltering from winds /waves	O	△	X
Accessibility to the new fish market	O	△	△
Supply of water, ice, fuel etc	O	△	X

2.3 Situation of Kivukoni Front Fishing Boat Mooring Area

The mooring area is a sand shore about 500m long, about 5 to 10m below the terrace of the Kivukoni Front street along the north coast of the Dar es Salaam bay. The sand shore is as narrow as 15 to 20m at high tide.

The fishers beach their boats or anchor the boats when they return to Kivukoni Front mooring area after landing and selling their catches at Banda Beach fish market. They take a rest and maintain nets, boats and engines in the mooring area for next fishing. Different from rural areas, there are no fishers villages near the mooring area.

Besides the fishers, many other people are working for providing various services for the fishers in the mooring area. They are as listed below.

People Working in the Mooring Area, Except the Fishers

Working people	No. of people	Descriptions
Mamalishe	About 50	Serving meals for fishers/others. 1 to 3 persons put up a shed (4m x 5m). About 30 sheds and 5 open stalls.
Sundries sellers	10	Bending sundries, beverages. 5 kiosks including 2 open stalls.
Engine mechanics	4	Repairing outboard engines. They work with few and worn out tools in the open air.
Carpenters	15	Building and repairing fishing boats on the beach. Repairing is their main job.
Ice box makers	5	Making ice boxes for fishing boats.
Lamp globe makers	4	Making lamp globe of fish attraction lamp.
Fish processors	7	Frying fish to sell to fishers.
Charcoal sellers	2	Selling charcoal to Mamalishe. 2 charcoal storages.
Water tap keepers	2	Collecting water charges.

Although Kivukoni Front fishing boat mooring area is the largest one in all the coasts of Tanzania and many fishers are working based on this mooring area, there are no facilities supporting fishers' activities and their fishing. They require considerable labour and time to obtain supplies for their fishing boats because there are no facilities for supply of ice, water and fuel.

The mooring area is not good in sanitary condition either as drain from the city is discharged in the mooring area and the shore is littered with rubbish. There are only two water taps in the area, which are not enough for all the people working in this area. These sanitary and environment conditions should be improved for the people working in this area as well as to support their fishing activities.

It is therefore necessary to develop a fishery base with good sanitary and environment condition suitable for the city centre, connecting with Banda Beach fish market.

The fishery cooperative named UWAWADA is the only registered organization among the people working in the mooring area. Besides this cooperative, there are some small groups such as Mamalishe group, but there are no group or organization, which manage whole activities in the mooring area.

2.4 Fishery Cooperative, UWAWADA

UWAWADA (Umoja wa Wavuvi Wadogowadogo Dar es Salaam) is a duly registered fishery cooperative with the largest number of members in Dar es Salaam. The cooperative started its activities in 1993 and was registered as a cooperative by Ministry of Internal Affairs. The cooperative aims to increase fishers' benefit and pursue interests for the boat owner and their crewmembers.

Number of the members is presently 315 including boat owners and employed fishers. The cooperative has a temporary office in Banda Beach fish market area.

The entrance fee is Tsh.2,700 and the membership fee is Tsh.1,200 a year. These fees are the only source of income for the cooperative, which is too small amount to do any activities for the members and has been allocated for stationery and expenses for the members annual meeting so far. These fees are deposited in CRDB and the deposit amount was Tsh.664,329 at the end of November 2001.

For management of the cooperative, it has the management members including a chairman, vice-chairman, treasurer, secretary and vice-secretary and six committee members. The five management members including the chairman meet every day and have a meeting together with the committee members once a month. The general meeting with all the members is to be held once a year in principle, but in actual, they do not have the meeting every year to save the expense and the 4th general meeting was held on July 4, 2001.

The cooperative started SACCOS (saving and credit system) in August 2001 and has been recruiting the members. Number of the SACCOS member is 35 on December 2001 and expected to increase. The cooperative manage the members' entrance fee and their savings, depositing the money in CRDB and keeping books including individual account books. The deposit amount is not enough for a fund to provide credits for the members.

2.5 Number of Fishers and Fishing Boat

According to data of the frame survey 1998, the number of fishers and fishing boat in Banda Beach is as shown below.

Fish landing center in Ilala, DSM	Number of fishing boats					Number of fishers	
	Boat	Mashuwa	Dau	Ngalawa	Mtwunbi	Boat owner	Crew
Banda Beach	246	0	14	49	101	371	1,851

There is however a big difference from the following data, in particular number of Boat and Mtwunbi.

The following numbers are the data reported by the fishery cooperative, UWAWADA to Tanzania Harbor Authority in April, 2001.

	Boat	Ngwanda	Dau	Ngalawa	Mtumbwi	Total
Fishing boat	98	24	19	15	34	187
Fishers	1,709	140	132	52	65	2,098

The following numbers are based on the inquiries made by UWAWADA to boat-owners in October 2001. According to the persons in charge of the inquiries, the data seems to grasp 70 percent to 80 percent of the whole situation.

Mooring area	Boat/ Mashuwa	Ngwanda	Dau	Ngalawa	Mtumbwi	Total
Kivukoni Front	36	7		18	16	77
Ras Mkwavi	46	2		0	0	48
Miniazi Mikinda	0	0		1	0	1
Total	82	9		19	16	126
Number of crew	1,244	51		58	21	1,374

The following numbers are obtained by counting at site by the study team member in November 2001. These numbers are closer to the ones shown in above 2 tables and these data seem to be closer to the number of the boats actually operated in Banda Beach.

Number of Fishing Boats Counted at Site (November 26, 2001)

	Boat	Ngwanda	Mashuwa	Dau	Ngalawa	Mtumbwi	FRP boat	Total
Kivukoni Front in total	39	19	10	1	36	32	7	144
(Anchored)	20	15		1			7	
(Beached)	1		9		29	32		
(Under repairing)	7	2						
(Old boats, unused)	6	2	1		2			
(* out for fishing)	(5)				(5)			
Ras Mkwavi in total	41	3	28	0	0	0	0	72
(Anchored)	22	3						
(Beached)]	1		28					
(Under repairing)	17							
(Old boats, unused)	1							
(* out for fishing)								
Miniazi Mikinda ***								
Total	80	22	38	1	36	32	7	216

Remarks: (* out for fishing)=fishing boats being out of mooring area for fishing. The numbers are estimates from hearings from fishers.

*** The boats in Miniazi Mikinda were not counted, because Miniazi Mikinda mooring area is used mainly by fishing boats seasonally moved from Zanzibar and other areas. About 20 to 30 boats (mainly small Boat type) are usually beached in Miniazi Mikinda.

There are 20 to 30 fishing boats which are moored at Miniazi Mikanda since seasonal fishing boats are mainly from Zanzibar.

2.6 Fishers and Fishing Boats Belonging to UWAWADA

According to the inquiry data made by UWAWADA on October 2001, the number of Boat/Mashuwa type boats, belonging to UWAWADA, accounts for about 80 percent of the total number and the number of the crew working on the same boats also accounts for about 80 percent. (The term, "boats belonging to UWAWADA", means the boats which owners are members of UWAWADA.)

Number of the fishers working on the boats belonging to UWAWADA is 1,076, which accounts for 76 percent of the total number of the fishers of all the boats answered the inquiry. The percentage must be larger than the actual situation because answering rate from UWAWADA member owners is higher than the one from non-member owners. The percentage comes to 51 percent when it is calculated with the number of fishers, 2,098, which is indicated in Table 2.1-6. From these figures, it can be estimated that at least a half of the fishers in Banda Beach area have connection to UWAWADA.

Percentage of Fishers and Fishing Boats Belonging to UWAWADA

	Boat/Mashuwa		Ngwanda		Ngalawa		Mtumbwi	
Kivukoni Front								
Number of fishing boats	36		7		18		16	
Number of crew	597		41		54		21	
(Boats belonging to UWAWADA)	(26)	72%	(5)	71%	(7)	39%	(1)	6%
(Number of crew of the boats above)	(385)	64%	(32)	78%	(21)	39%	(1)	5%
Ras Mkwavi								
Number of fishing boats	46		2		0		0	
Number of crew	642		10					
(Boats belonging to UWAWADA)	(41)	89%	(2)	100%				
(Number of crew of the boats above)	(623)	97%	(10)	100%				
Miniazi Mikinda								
Number of fishing boats					1			
Number of crew					4			
(Boats belonging to UWAWADA)					(1)			
(Number of crew of the boats above)					(4)			
Total								
Number of fishing boats	82		9		19		16	
Number of crew	1,239		51		58		21	
(Boats belonging to UWAWADA)	(67)	82%	(7)	78%	(8)	42%	(1)	6%
(Number of crew of the boats above)	(1,008)	81%	(42)	82%	(25)	43%	(1)	5%
Total number of crew				1,369				
(Number of crew of the boats belonging to UWAWADA)				(1,076) 76%				

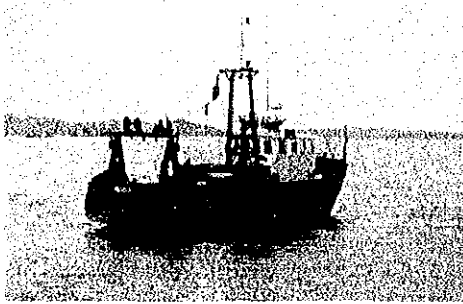
Source: Based on the inquiry data collected by UWAWADA in October 2001.

Programme-3

2.3 Lake Victoria Fisheries Sub-sector Capacity Building Programme



Planning area : Lake Victoria, Mwanza



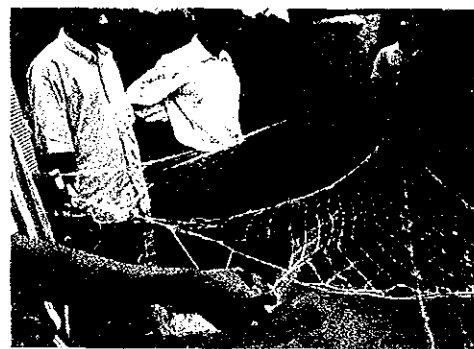
Nyegezi Freshwater Fisheries Training Institute's fishing boat.



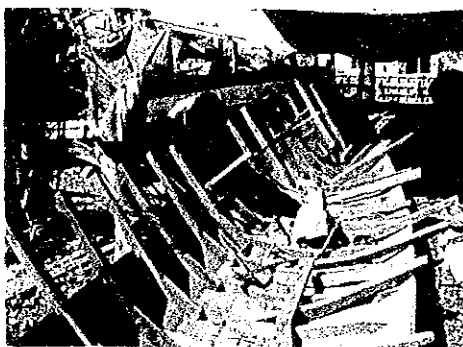
Preparation to go fishing for Nile perch at Nyamkazibuka.



Pressurized kerosene lamp on float used for night Dagaa fishing.



5 inch mesh gill size net for Nile perch fishing.



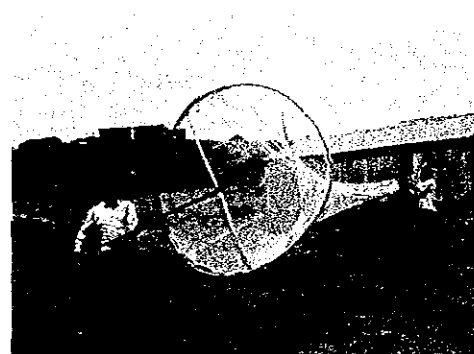
Boat building workshop.



Outboard engine repair stall.



Haplochromis from Lake Victoria.



Dagaa scoop net.

2.3 Lake Victoria Fisheries Sub-sector Capacity Building Programme

(1) Programme Description

A Description

This programme aims at upgrading the standard of living for fishers by means of improvement of fishing technique and fishing household management technique. For fishing technique, it is considered to introduce small echo-sounder and other fishing technique that is not applied in the Lake, and modify Dagaa hurry-up net to purse-seine net. Prior to the introduction, Nyegezi Freshwater Fisheries Training Institute verifies the cost performance of said technique (phase 1). And after the verification, together with the basic know-how such as assembly and repair of fishing gears, handling of fish, concept of fishery cooperative, money management and resource management, training and education service would be extended to the fishers at village (Phase 2).

Moreover, the technical and financial possibility of FRP boat for artisanal fishing will also be examined in Phase 1. With the assistance of foreign expert, Nyegezi Freshwater Fisheries Training Institute, with their technical personnel and know-how will develop the locally fitted proto-type boat and monitor its working condition in collaboration with some fishers.

B Location

[Phase 1]: Nyegezi Freshwater Fisheries Training Institute
[Phase 2]: All over the Lake Victoria

C Duration

[Phase 1]: Twelve (12) months
[Phase 2]: Twenty-four (24) months

(2) Objectives and Justification

Routinely practiced fishing methods in the Lake are, gill net and long line for Nile perch, lift net and hurry-up net for Dagaa and gill net and pole and line fishing for Tilapia. Some of those methods are well established and some are not. And there are some potential methods that are not practiced in the Lake in spite of its high efficiency and cost performance. An example is purse-seine net for Dagaa. Currently both hurry-up net originated from Lake Victoria and lift net introduced from Lake Tanganyika share the majority. Fisheries Div. recommend Dagaa fishers to use lift net, which is more efficient than others. But lift net has a disadvantage that a large capital investment such as two fishing boats and an out-board engine is required. On the other hand, purse-seine net use the same net web of hurry-up net and its operation resembles to some extent. Therefore, Nyegezi Freshwater Fisheries Training Institute has paid attention to purse-seine net as a cost-effective and easily accepted fishing method of Dagaa.

Oligopoly of certain fishing methods and target species of today brings excess concentration of fishing effort and rather reduce the fishing income per household. The dissemination of artisanal fishing methods like fish trap, small scale lift net, cast net etc., which are not popular in the Lake may help diversifying the fishing method.

It is important to increase the catch for upgrading the fishers' life and in order to do that, development of cost effective fishing method and its extension to the fishers is the first step to do. Besides training of existing basic fishing technique and handling of fish is also important for the same goal.

Now most of the artisanal fishing boats are made of wood. But high quality wood is getting less and less. In terms of forest resource and environmental protection, there are more and more public voice

saying that cutting trees in large quantity is not preferable. And wooden boats need periodical replacement of iron nails and filling of water tightness material at joints of wooden plank. FRP boat has advantages that life span is long and total weight is less whereas it has disadvantages that it is easily damaged by pin-point stress and that its ultimate way of disposal is not established. The introduction of FRP boat construction technique and its experimentation programme has meanings to clarify the orientation of artisanal fishing boat development in a long-term vision.

Nyegezi Freshwater Fisheries Training Institute is responsible for technology development. This institute has a Nautical Science Department in charge of fishing technique training which has 4 instructors, training facilities and equipment, and steel-made fishery training boat called "Mdiria". This institute is therefore judged as a proper implementing agency that has sufficient man-power and equipment for this programme.

(3) Components and Activities

A [Phase 1]: Introduction of New Technique

As a result of analysis on current fishing of Lake Victoria, it is judged that following techniques have potentials of introduction. This component examines the relevance, profitability and efficiency of techniques and extends them to artisanal fishers.

- Modification of Dagaa hurry-up net to purse-seine net
- Small echo-sounder
- Fish trap and small lift net

Procedure of their introduction is as follows.

- a) Fabrication of trial version or purchase of equipment
- b) Verification of said techniques at Nyegezi Freshwater Fisheries Training Institute (NFTI) and modify the trial version if necessary.
- c) Trial at selected fishers for monitoring
- d) Based on the monitoring result, further modification on the trial version if necessary and accomplish the popular version.
- e) Fabrication of popular version and preparation of manual
- f) Extension of popular version to fishers

B [Phase 1]:

Introduction of FRP Boat Construction Technique and Its Industrialization Test

As a measure of improvement and modernization of fishing boat, this component verifies the introduction of FRP boat construction technique and its industrialization. The component fabricates, first of all proto-type FRP boats and transfer technique under the technical assistance of short-term expert, and studies construction cost, examines the cost reduction method, monitor the use of proto-type with fishers etc.

C [Phase 2]: OJT on Fishing Household Management

According to the training needs survey conducted by NFTI, it is found that fishers have a demand on following training subjects.

- Assembly and repair of fishing gear
- Resource management
- Hygienic handling of catch
- Money management
- Fishery cooperative

This component includes the on-site training of above-mentioned training needs together with extension of established new techniques. Work is implemented in the following manner.

- 1) Organizing the OJT promotion team from Nyegezi quality control office of Fisheries Division, NFTI, Ministry of cooperation headed by District fisheries officer. A technical staff who involves the technology development should be included in a team to cover the extension work.
- 2) Explanation of OJT programme to fishers at site and nominate a well-experienced and reliable fisherman as a OJT promoter.
- 3) Preparation of common text book to standardize the content of training programme
- 4) Implementation of training to OJT promoter in conformity with text book.
- 5) On site training of OJT promoter to fishers

Content of the training programme is as follows.

Contents	No. of trainee	Period
Assemble and repair of fishing gear (gill net, long-line, hurry-up net, lift net, fish trap, small scale lift net, cast net etc.)	30 from each village	6 months
Resource management Catch data collection and its custody Observance of mesh size regulation and closing period Protection of breeding zone Eradication of illegal fishing	30 from each village	3 months
Hygienic handling of fish Introduction of insulated fish box Icing method Temperature control of fish Washing water control	30 from each village	3 months
Money management Book keeping Expenditure management	30 from each village	3 months
Fishery cooperative Theory of cooperative and organization management Business management	10 executives of cooperative	4 months

This programme aims at 20 fishing villages in Mwanza, Mara and Kagera region.

(4) Facility and Equipment Plan

- 1) Summary of Facility and Equipment

Equipment	Number	Specification/Reference
Introduction of new technique		
Dagaa hurry-up net	2 set	10mm mesh, 100m(L)x10m(H)
Material for modifying to purse seine	1 set	Purse ring 150mm brass
Fish attraction light	4 pcs.	Kerosene pressure type
Small echo-sounder	16 set	Paper type with voltage regulator, power cable, battery (12V)
Material for trap and small lift net	1 set	Chicken cage, iron bar (round), net
Small wooden boat	1 boat	8m-long, stern-type
OBE	1 unit	Gasoline 15 Hp
Introduction of FRP boat construction technique and its industrialization test		
Model boat	1 boat	7m-long
OBE for trial operation	1 unit	Gasoline 25Hp
Polyester resin	92 can	20kg

Equipment	Number	Specification/Reference
Hardner	50 can	200cc
Gel coat	50 can	Designated color, 5kg
Glass mat	24 roll	#450, 30kg/roll, 1m x 60m
Roving cross	20 roll	#580, 50m/roll, 30kg/m
Foamed Urethane resin	50 set	10kg
Poly pate	20 can	5kg
Releasing wax	50 can	2kg
Acetone	10 can	16 litre
Roller	5 each	Wooden made, 3" and 6" wide
Roller for removing air bubble	5 each	Aluminum made, 3" and 6" wide
Electric disk sander and cutter	3 unit	
Spare disk for above	200 disk	
OJT on fishing household management		
Extension vehicle	1 unit	Pick-up truck, double cabin
Computer set for text book preparation	1 set	IBM/PC with scanner, printer and UPS
Photocopy machine	1 set	Black and white, A4 size

(5) Operation and Management Plan

A Organization and Management

This programme is managed by the principal of NFTI. And chief of nautical science of NFTI is nominated as a responsible stuff of the new technique introduction component. OJT promotion team is responsible for the second component while team organizing and its coordination is managed by the principal.

The success of this programme depends on the selection of OJT promoter. In a close communication with fishers, OJT promotion team should chose reliable, experienced and relatively high educated fisherman. OJT promoter works in a voluntary basis but a certain consideration should be arranged to give even a small contribution to him from fisher community. OJT promotion team checks the progress of OJT at fishing villages every quarter of year.

FRP boat construction expert (short-term) trains instructors of Engineering Department of said Institute to fabricate small FRP boat and transfers technique of FRP boat construction to them through actual fabrication. The Institute organizes the counter-part team (a leader and two others) headed by the department chief under the Engineering Department who are the target of technology transfer. The expert, working together with counter-part team, fabricates 10 proto-type boats whose base is locally used out-board engine boat. The expert + his/her counter part team choose 10 fishing households who are cooperative to this programme and let them use the boat for 3 months. During the monitoring period, the fishing households collect data on fishing hours, fishing ground, catch, fuel consumption and evaluate manoeuvrability, security and durability of the proto-type. At the end of the monitoring period, the expert + counter-part team collect data and evaluate the boat comprehensively including cost performance.

B Personnel Plan

The personnel plan of this programme is as follows.

Designation	Number	Human resource	Period
Project manager	1	Principal of NFTI	24 months
(Introduction of new techniques)			
Component manager	1	Chief of Nautical Science Dept.	24 months
Stuff	3	Nautical Science Dept.	12 months
(FRP boat construction technique and its industrialization test			

Designation	Number	Human resource	Period
FRP boat construction expert	1	Foreign technical expert	7 months
Counter part	3	Engineering Dept.	7 months
(OJT on fishing household management)			
Component manager	1	Service concurrently as PM	
OJT promotion team leader	1	District fisheries officer	24 months
OJT promotion team member	1	NFTI	24 months
Ditto	1	Quality control, Fisheries Div.	24 months
Ditto	1	Ministry of cooperative	24 months
Ditto	1	NGO for money management	24 months

C Role of NGO

Money management skill would be provided from NGO's.

D Staff Training

The team calls OJT promoter from each fishing village and guide the component approach, implementation method and various important techniques to be transferred to fishers.

(6) Work Plan

Technology development will be conducted for one year at NFTI. And OJT on fishing household management will be for 2 years, in which dissemination of developed techniques will also be conducted. Total period is 3 years.

Major activities	Responsibilities	Schedule	Output
(Introduction of new techniques)			
Fabrication of trial version	Nautical science, NFTI	—	Trial version of fishing gears
Experimentation and modification of trial version	Nautical science, NFTI	—	Result of experimentation Modified of trial version
Monitoring of trial version	Nautical science, NFTI	—	Result of monitoring
Evaluation and modification of trial version	Nautical science, NFTI	—	Modified of trial version (second edition)
Establishment of popular version, preparation of manuals	Nautical science, NFTI	—	Manual of fabrication and operation for popular version
(Introduction of FRP boat construction technique and its industrialization test)			
Fabrication of proto-type	FRP boat construction expert	—	Proto-type boat
Data collection of existing boat	Counter-part	—	Operation data of existing boats
Monitoring	Counter-part	—	Result of monitoring
Comprehensive evaluation	FRP boat construction expert	—	Comprehensive evaluation report — FRP boat construction manual

(OJT of fishing household management)			
Organizing the OJT promotion team	Principal of NFTI	—	TOR of OJT promotion team
Nomination of OJT promoter	OJT promotion team	—	List of OJT promoter
Preparation of common textbook	OJT promotion team	—	Common textbook
Training of OJT promoter	OJT promotion team	—	At least one promoter trained from a village
Implementation of OJT	OJT promotion team	—	OJT report

Note: Fabrication of proto-type (3 months), Monitoring (3 months), comprehensive evaluation and manual writing (1 month)

(7) Cost Estimate

Component	Cost (Tsh)	Cost (US\$)	Number	Unit cost (Tsh)
(Introduction of new techniques)				
Component Sub-total	8,710,000	9,942		
(Introduction of FRP boat construction technique and its industrialization test)				
Equipment cost Sub-total	36,065,705	41,171		
Personnel cost Sub-total	123,840,000	141,370		
FRP boat construction expert	122,640,000	140,000	1 expert	17,520,000
Per diem of counter-part	1,200,000	1,370	60 man-days	20,000
Component Sub-total	159,905,705	182,541		
(OJT on fishing household management)				
Equipment cost Sub-total	25,100,000	28,653		
Project management cost Sub-total	27,700,000	31,621		
Travel allowance	16,000,000	18,265	800 man-days	20,000
Fuel for vehicle	11,700,000	13,356	18,000 Litres	650
Component Sub-total	52,800,000	60,274		
Grand-total	221,415,705	252,757		

Note 1: Materials for FRP boat component is imported from South Africa. Equipment cost includes freight from S.A.

2: Breakdown of equipment cost is referred to ANNEX 2.3-1.

(8) Monitoring

Research, Training and Statistics section of Fisheries Division is responsible for management and supervision of this programme, should follow the progress every quarter of the year and give proper instructions time to time. And this programme intends to use fishing capital investment efficiently through capacity building of fishers and improve fishers' life. However, the programme should pay attention to the negative impact on the fishery resource in case of increase of catch provided by the improvement of fishing technique. There is a mesh size regulation for Nile perch and Dagaa fishing and a concern of their resources. So the programme monitors the change of fish size to avoid over production. Since fishers are trained catch data collection in the OJT programme, those data will be fed back to OJT promoter and OJT promotion team for timely modification of training programme if any.

FRP boat construction expert, counter-part team leader and principal of NFTI organize the monitoring committee and confirm the progress once a month for the FRP boat component.

At the same time, a consideration should be made to assessment and monitoring of the fisheries resources and aquatic environment on the project activities. This will provide research to generate scientific information which will be the basis for management decision. For that purpose, fisheries groups are utilised for the data collection under the supervision of TAFIRI and district fisheries officers. The fishery officers follow up the fishing activities of each groups and give them necessary guidance and instructions. Fishing log books are prepared and the groups are ordered to keep the log

books recording every fishing operation including the following items. These data will be summed up periodically to observe their transition in long term.

- Fishing ground
- Fishing method, size of fishing gears
- Times of fishing operations
- Quantity of catch
- Main species

(9) Environmental Impact

Development of fishing technique has a great impact on the fishery resource. Together with the dissemination of sustainable and efficient use of resource, co-management of fishery resource among all the stakeholders is indispensable. It is important that trainees of NFTI learn sufficiently the resource management as well.

With the improved research programme and equipment, NFTI will be able to provide better educational facilities and services to the fisheries sector which will impact positively on the fishers awareness and education. The dissemination of research results and implementation of improved fishing technology should have widespread participation of targeted groups to ensure equitable and fair access/benefits to all stakeholders.

It is possible to say that FRP boat is a technique that is gentle to the forest resource. However, this technique was industrialized without establishment of environmentally gentle disposal method. There is therefore a concern of negative impact to the environment when life-span of the boat ends.

(10) Linkage

A Inter-sectorial Linkage

No particular linkage would be expected.

B Project Linkage

There is a possibility of linkage with LVEMP or LVFRP.

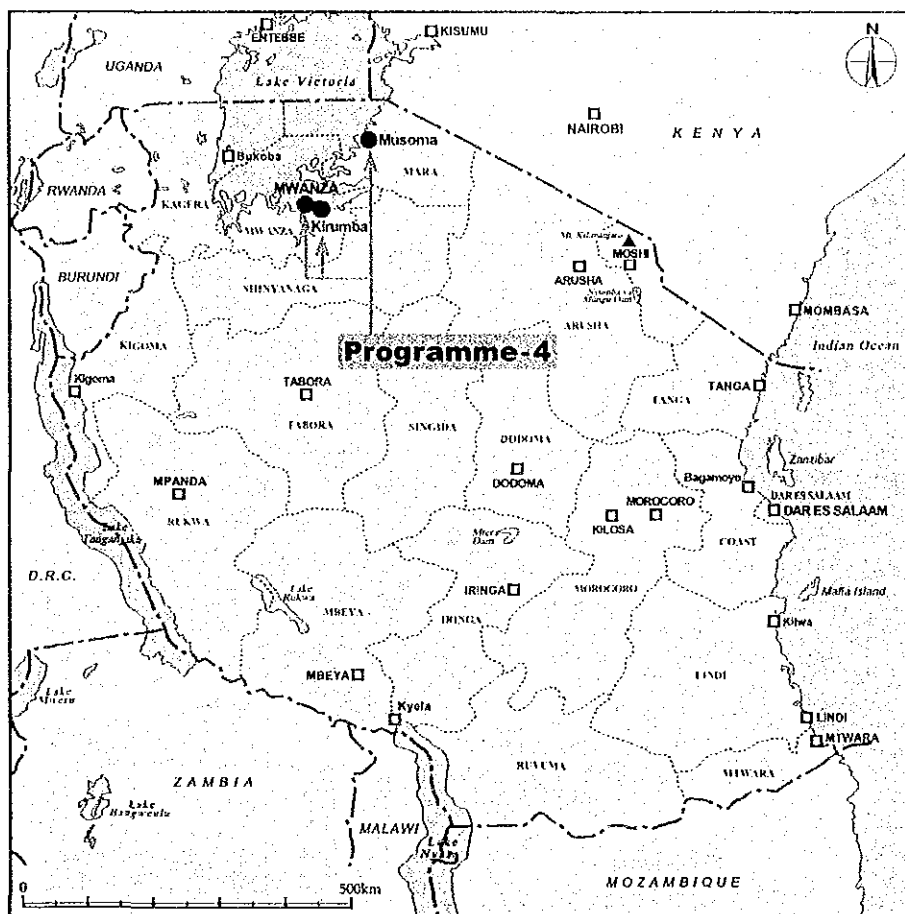
ANNEX 2.3-1

Contents	Number	Unit price (Tsh)	Price (Tsh)	Price (US\$)
(Introduction of new fishing technique)				
Dagaa hurry-up net	2 sets	400,000	800,000	913
Material for modifying to purse seine	1 set	150,000	150,000	171
Fish attraction light	4 pcs.	15,000	60,000	68
Small echo-sounder	16 sets	350,000	5,600,000	6,393
Material for fish trap and small lift net	1 set	100,000	100,000	114
Small wooden boat	1 boat	700,000	700,000	799
Out-board engine	1 unit	1,300,000	1,300,000	1,484
Component Sub-total			8,710,000	9,942
(Introduction of FRP boat construction technique and its industrialization test)				
Equipment Sub-total			36,065,705	41,171
Model boat (for fabrication of mould)	1 boat	600,000	600,000	685
Out-board engine (25 Hp)	1 unit	1,800,000	1,800,000	2,055
FRP materials	For 10 boats	2,938,954	29,389,542	33,550
FRP boat fabrication tools	5 sets	855,233	4,276,163	4,881
Personnel cost Sub-total			123,840,000	141,370
FRP boat construction expert	1 expert	17,520,000	122,640,000	140,000
Per-diem for counter-part	60 man-days	20,000	1,200,000	1,370
Component Sub-total			159,905,705	182,541
(OJT on fishing household management)				
Equipment cost Sub-total			25,100,000	28,653
Extension vehicle	1 unit	22,500,000	22,500,000	25,685
Computer set for text book preparation	1 set	1,400,000	1,400,000	1,598
Photocopy machine	1 unit	1,200,000	1,200,000	1,370
Project management cost Sub-total			27,700,000	31,621
Travel allowance (OJT promotion team)	800 man-days	20,000	16,000,000	18,265
Fuel for vehicle	18,000 Litres	650	11,700,000	13,356
Component Sub-total			52,800,000	60,274
Grand total			221,415,705	252,757

Note: Materials for FRP boat component is imported from South Africa. Equipment cost includes freight from S.A.

Programme-4

2.4 Lake Victoria Fish Marketing Improvement Programme



Planning site : Mwanza, Kirumba, Musoma



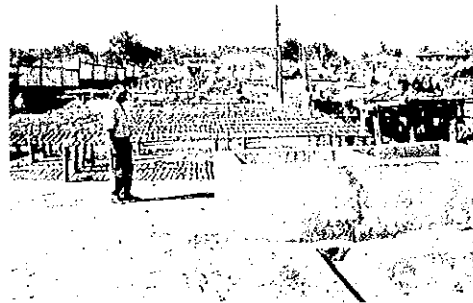
Stacks of Dagaa in Kirumba Mwaloni Market.



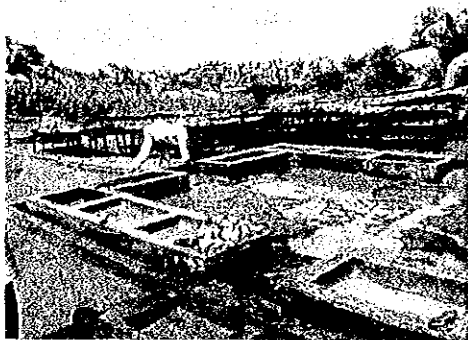
Stacks of Dagaa in Kirumba Mwaloni Market.



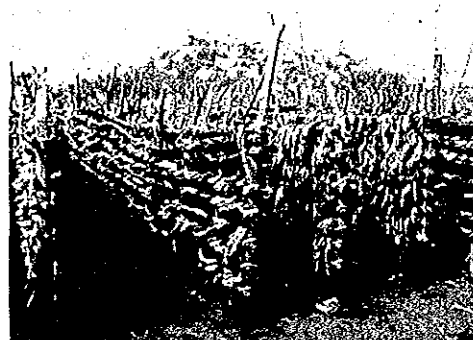
Repacking Dagaa into bigger sacks before loading into trucks, Kirumba Mwaloni Market.



Nile perch processing area in Kirumba Mwaloni Market.



Washing area at Mkolani Nile perch processing area near Mwanza.



Nile perch drying racks at Mkolani Nile perch processing area.



Kanyama Nile perch processing area.



Nile perch fillet drying in the sun.

2.4 Lake Victoria Fish Marketing Improvement Programme

(1) Programme Description

A Description

This programme is consisted of two components in different form of marketing and processing. One is the improvement of Kirumba market in Mwanza and the other is the improvement of existing processing area for Nile perch filleting factory remains in Mwanza and creation of same type of processing area in Musoma. Both components aim at contributing the food security, job opportunity creation, and poverty alleviation through efficient use of economic resource. To put it concretely, the programme constructs the wholesale facility in the existing Kirumba market, which is the biggest in handling amount but unsanitary and inefficient. The new wholesale facility makes it possible to handle commodities rapidly in response to the demand of the market without interruption of weather and to reduce the market loss while commodities are stocked in unprotected area. While the factory remain processing area upgrades the function of safety food production and forwarding through construction of products stores and sanitary facilities for workers, improvement of minimum working environment for the food processing area.

B Location

[Component 1]: Kirumba market (Kirumba ward of Mwanza city). Site area is 17,228m². This site is owned by Mwanza city.

[Component 2]: Kanyama and Mkolani, located at the outskirts of Mwanza city, and Bweri in Musoma town, 3 sites in total.

There are three (3) sites of Nile perch factory remains processing area around the lake. They are Kanyama and Mkolani located at the outskirts of Mwanza and Bweri in Musoma. The first two places are currently functioning as a processing place but there is nothing but just a field at Bweri. Kanyama and Mkolani are located along the main road from Mwanza where the road access is relatively good but no infrastructure is provided. Bweri is also located along the main road from Musoma where at least power line reaches.

C Duration

[Component 1]: 24 months

[Component 2]: 24 months

The component of Kirumba market will need two (2) years for its design and construction including stuff training. With regard to the factory remain processing area, top priority will be given to Bweri (Musoma), it will take one (1) year for preparation of management body and another one (1) year for design and construction of facility including stuff training. Since management body exists for two (2) processing area of Mwanza, it will take one (1) year for only design and construction of the facilities. The component of factory remain processing area will be able to proceed simultaneously in three (3) places and construction of Kirumba market. Therefore the total programme duration is two (2) years.

(2) Objectives and Justification

Lake Victoria, according to the fishery statistics of Fisheries Division in 1996, produces 159,219 ton, which corresponds to 52 percent of national production. 75 percent of the lake production is Nile perch (*Lates niloticus*). This species is processed at filleting factories along the lake shore and exported to overseas market. The remaining 25 percent is composed of Dagaa (*Restrineobola argentea*) and Tilapia (*Oreochromis niloticus*) and marketed to both domestic and regional market. Marketing of Nile perch is dominated by the agent who has a contract with certain factory. Agents

visit landing beach with insulated truck or carrier boat filled with ice. No particular problem is found by and large in the handling and marketing of Nile perch on the beach or marketing route. On the other hand, no systematic marketing system is established for Tilapia. Small-scale fish buyers bring the fish from the production places with insufficient amount of ice. Marketing of Dagaa doesn't need delicate handling because it is marketed in the form of dried fish. It is collected by cargo boat in large quantity. About 90 percent of Dagaa produced in the Lake come to Kirumba market and depart to domestic and regional market. However, Kirumba market has been developed as a sole and biggest collection centre of lake products and therefore there are some other products such as banana, maize, fire wood, carbon etc., being handled in a nasty condition. It is required to construct a new marketing facility as a product collection centre and distribute products efficiently with less market loss.

Now Kirumba market is totally open air and thus its operation is interrupted by rain or its commodities get wet and lose their quality. According to Mwanza weather station, 37 days of precipitation over 10mm was recorded in average in the past 4 years. Kirumba market, in principal open everyday. Interruption by rain is the biggest element of market inhibition. This component gains at least 30 working day by providing working shelter on wholesale area, storage area and loading area, and expects 9 percent increase of annual marketing amount.

As mentioned above, Nile perch is brought into the factory through well-established route. In the process of filleting, the factory remain corresponding to approx. 60 percent of total body weight is discharged. This remain is processed into two to three different types of commodities for both domestic and regional market. Two (2) processing area of Mwanza produce 7,425 ton of edible products and 2,475 ton of animal food (2000, own estimation). However, these processing area are located in the outskirts of the city where working condition is not favourable. In Musoma, a filleting factory has started operation since last year and another one will come soon, nevertheless certain processing area doesn't exist so far and most of the remain is dumped unused. This circumstance wastes the economic resource as well as affect negative impact on ecological system and environment as a whole. Prompt measure of the administration is therefore required.

In the case that factory remains processing area is constructed in Musoma, it is expected that the commodity having the value of Tsh.1,950,000 is produced per day with the supposition of that 30 ton of factory remain is ejected everyday and processed in the same manner as 2 areas of Mwanza. If it works 300 days a year, it will generate the value of Tsh.585,000,000 per year. Actually some of the factory remain is used for artisanal processing at home. Processing at designated place can achieve more efficient use of economic resource. It is also expected that 2 processing places of Mwanza city can increase the processing amount within the availability of factory remain, through increase of working days by upgrading the working environment.

In this manner, this programme, in response to the quick growing food demand of nation, aims at improving the processing and marketing facility and system, fully utilizing the limited biological resource, reducing market loss and realizing the sanitary and efficient market.

(3) Components and Activities

A Kirumba Market Construction Component

Kirumba market is not only the collection centre of 10,393 ton of fishery products, banana, maize, fire wood, carbon etc., but also the processing place for dry-salted Nile perch, which is practiced in and out of the site. Being totally exposed, custody and handling of products are sometimes hindered by rain, quality of products is deteriorated, the existing market place has a serious disadvantage in market function. And because of the garbage discharged in the course of whole sale, many fries and smell are generated. This component, with the construction of properly designed facility adds the function of weather protection and custody of products. This component also includes the construction of properly designed loading and unloading facility to facilitate said works to realize the safe and efficient working condition. Main activities are as follows.

- a) Creation of management committee for new Kirumba market with Mwanza city, Fisheries office (both city and region), association of processors and traders, TRA (Tanzania Revenue Authority), MWADESO (NGO contracted by the city council for the management of the market) and participation in the market design
- b) Check and agreement among users on the drawings and specifications
- c) Preparation of temporary market while construction of new market, its disclosure and management
- d) Construction of new market
- e) Preparation of rule for new market
- f) Implementation of training and education programmes such as business management, book keeping, hygienic handling to the members of association.

B Nile perch Factory Remain Processing Facility Component

Processing of Nile perch factory remain is neglected in spite of the economic positive impact such as food supply, job opportunity creation and effective use of resource. Two (2) processing areas of Mwanza are open air and without source of drinking water. Processors are forced to produce human food in an unhygienic working environment. Because of the absence of certain place in Musoma, factory remain which still has an economic value is damped and affect negatively to the environment. This component improves the existing processing area in Mwanza and creates new processing area in Musoma. Main activities are as follows.

- a) Preparation of business plan in consultation with Musoma town fisheries office, town council and women's processors association (only in Musoma case)
- b) Design the appropriate facility and equipment in consultation with the association and fisheries office.
- c) Supervision of tender and construction work
- d) Construction of facilities and procurement of equipment
- e) Preparation of operation rule after the work
- f) Implementation of training and education programmes such as business management, book keeping, hygienic handling to the members of association.

(4) Facility and Equipment Plan

A Component 1: Construction of Kirumba Market

- 1) Basic design policy

In spite of the fact that Kirumba market is the biggest market along the Lake Victoria in terms of handling amount, it is still open-air market and thus it causes the low working efficiency and deterioration of the commodities in rainy season. And it cannot provide enough parking and loading space for bigger trucks coming from different places in the country as well as neighbouring countries. Regarding this market as a transportation centre and distribution centre of goods in the marketing channel, the modernization of facility is planned. And taking consideration of expansion of city area, population growth (11 percent annually), it is foreseen that market becomes more and more important. So integrated improvement is recommended including landing facility, power supply, drinking water and sewer, and marketing system.

2) Site condition

Site is located 4km away from city centre along the Lake shore and a trapezoid land with 50-100m long by 200m wide. There is a 4m-height difference between lake shore and access road. Although no data on water level is available, according to the interview survey to those who work there, there is a change of water level of approx. 60cm and a shoreline movement of approx. 1.5m horizontally between dry season and rainy season. No natural hazard relating to the movement of water level has been recorded until today. 7 water taps and 3 public pay toilets were constructed in the market by the financial assistance of EU. At the same time, outer wall of the market was also constructed. But Mamalishe zone remains extremely unsanitary having one water tap in spite of 48 small restaurants. Commodities are piled on the wooden pallet of 4m by 4m large and placed on the natural sandy beach. Power supply is brought into the site but not used frequently. 3 to 4 thousand of market users, 50 to 100 small boats come every day. Dagaa and processed products of Nile perch occupy approx. 60 percent of the whole area.

3) Contents of facility

Description of the component

- Kirumba market is the biggest marketing centre of Dagaa, to which Dagaa is brought by road or by boat, and from which collected Dagaa goes to different consumer destination of both domestic and regional by road. The main scope of this component is to modernize the market facility including management and to construct a large roofing structure for avoiding direct sunshine and rain.
- It is also planned here to integrate the Kayabo processing area and chips processing area, and to add product storage and working space. Public toilet and sewage treatment unit is also improved to mitigate the environmental load to the Lake.

Design component

- Market zone
 - Construct 2 market buildings having large roof of 38m by 48m but less expensive, and management buildings inside the existing boundary wall.
 - Use floating barge that is used for landing site along the Lake, instead of landing jetty.
 - Improve existing Mamalishe zone to 9 restaurant blocks and 4 public water taps.
 - Hold the reservoir tank at the underground part of elevated water tank and thus use the site surface effectively. And assure stability of tower for elevated water tank by united structure of basement and underground reservoir tank.
 - Use the shoulder of road for parking of large size trucks over 20m-long and other trucks, which are not accommodated in the site.

Facility		Structure and specification	Surface	Remarks
A1	Market	Steel made flat building with metal roof	1,200	
A2	Market	Steel made flat building with metal roof	1,200	
B	Office	Concrete block made flat building with metal roof	69	
C	Water tank	Reinforced concrete made	18	
D	Energy centre	Reinforced concrete made	36	
E1	Guard post	Concrete block made	10	
E2	Guard post	Concrete block made	10	
F1	Garbage depot	Concrete block made	75	
F2	Garbage depot	Concrete block made	50	
G1	Public toilet	Concrete block made	75	
G2	Public toilet	Concrete block made	50	
H	Mamalishe	Steel made flat building with metal roof	540 (90 x 6)	6 buildings
I	Septic tank	Reinforced concrete made	7mx30mx2m	

- Processing zone

It is planned to integrate 2 different processing places which are 2-block apart each other into one place in the site and furnish at the same time, septic tank and sewage water treatment for environmental consideration.

	Facility	Structure and specification	Surface	Remarks
J1	Storage	Reinforced concrete floor slab	75	
J2	Storage		75	
G3	Public toilet		50	
K	Working area		256	
L	Working area	Reinforced concrete floor slab	5mx10m(H)	
M	Septic tank		3mx8mx2m	

B Component 2: Improvement of Nile perch Factory Remains Processing Facility

1) Basic design policy

Compared with modern Nile perch filleting factories for export, the factory remain processing places for both domestic and regional consumption remain terrible in terms of sanitary condition and working environment. And there is a potential environmental problem that sewer and drain from said places might pollute the soil and water source around the sites. So the following policy is presented to improve the working condition in which biological resource is reused.

- Assure better working condition and improve the productivity by facility construction
- Improve the basic infrastructure such as deep well and access road, in response to the environmental issues like sewer, disposed oil, smell etc.

2) Site condition

- Mkolani

It is located on the hill, which is 30 minutes drive from city centre. The access road of approx. 400m from main road is in a bad condition. Although this area is designated as an industry zone in the Mwanza City Plan, its surrounding is rocky and dreary. No power is supplied. People bring water by bicycle from the well, which is around 100m away. There is a open-air concrete platform of 16m by 30m large at the site entrance to receive factory remains. The drain from there goes through concrete channel and into the soak-away. Any measures for bad smell, safety, working environment would be necessary.

- Kanyama

There is also a representative processing place of Mwanza as Mkolani. Located on the field, 30minutes drive from city centre, relatively flat site has a surface of approx. 250m by 150m. There is a residential area for around 50 households and 300 people behind processing place. Although the access road from the main is relatively good, it is recommended to repair and upgrade it to facilitate the passage of bigger vehicles that carry factory remain and processed products. Power line runs along the main road but not in the site. Three (3) shallow wells are dug out in and around the site but its quality is not drinkable.

- Bweri

It is located on the field next to quarry in the outskirts of Musoma town. The whole plot is 4.7ha but not used at all for the moment. The site is around 300m away from tarmac main road and close to the high-tension power line. Road condition is good at both main road and access road. No problem is supposed for passage of workers and products. Besides, this site is away from residential area so that

the conflict with residents on smell and drain will be less. In Musoma, there are two (2) filleting factories that are working and two (2) other factories that are under construction. But reuse of factory remain is not systematically established. Some of them are processed domestically in an artisanal level. Looking at the reuse of factory remains, effective use of resource and creation of job opportunity, the urgent implementation of this plan is recommended.

3) Contents of facilities

Description of the component

Both of Mkolani and Kanyama, located in the outskirts of Mwanza city have a long history and a social structure for workers as a processing place. So upgrading of working environment and improvement of productivity is the main target. On the other hand, Bweri starts from the beginning.

Design component

- Cover the cutting place, fish frying place and fish smoking place with a roof to prevent working efficiency and products quality from lowering by the strong direct sun shine and rain.
- Construct a storage to keep the products until shipment, a toilet with water tap for sanitary reason and management office with meeting room.
- Change the current sewer treatment system that discharge directly to the ground to the new system having septic tank that treat sufficiently the sewer then soak away.
- Dig the deep well to assure the safe water source and thus improve working environment in the site.

• Mkolani

	Facility	Structure and specification	Surface	Remarks
1	Work shed	Steel made, metal roof	600	Cutting area
2	Work shed	Steel made, metal roof	36	Fry, 2 houses
3	Work shed	Steel made, metal roof	36	Smoke, 2 house
4	Work shed	Steel made flat house with metal roof	36	
5	Office	Concrete block made flat house with metal roof	80	Meeting room
6	Storage	Concrete block made flat house with metal roof	65	
7	Toilet	Concrete block made flat house with metal roof	35	
8	Septic tank	Reinforced concrete	2mx3mx2m	
9	Deep well			25m deep x 2

• Kanyama

	Facility	Structure and specification	Surface	Remarks
1	Work shed	Steel made, metal roof	36	Cutting area
2	Work shed	Steel made, metal roof	180	Fry
3	Work shed	Steel made, metal roof	72	Smoke
4	Work shed	Steel made flat house with metal roof	36	
5	Office	Concrete block made flat house with metal roof	80	Meeting room
6	Storage	Concrete block made flat house with metal roof	180	
7	Toilet	Concrete block made flat house with metal roof	35	
8	Septic tank	Reinforced concrete	2mx3mx2m	
9	Deep well			25m deep x 2

• Bweri

	Facility	Structure and specification	Surface	Remarks
1	Work shed	Steel made, metal roof	36	Cutting area
2	Work shed	Steel made, metal roof	120	Fry
3	Work shed	Steel made, metal roof	72	Smoke
4				
5	Office	Concrete block made flat house with metal roof	80	Meeting room

6	Storage	Concrete block made flat house with metal roof	180	
7	Toilet	Concrete block made flat house with metal roof	30	
8	Septic tank	Reinforced concrete	2mx3mx2m	
9	Deep well			25m deep x 2

(5) Operation and Management Plan

A Organization and Management

A project coordinator is nominated from the fisheries officers to coordinate between beneficiaries and government offices concern and chair the discussion with design office and constructor. Project coordinator also takes an initiative on supporting to the management body of newly constructed or improved facilities under two different components, based on the following guideline.

Management committee of Kirumba market, which is consisted of 7 to 8 members from different stakeholders, is organized and has a function of decision making on market management and supervision. The actual management is, as being currently done, contracted to MWADESO as follows.

- Collection of fees and levies
- Cleaning of the market
- Assurance of security
- Collection of marketing data and its report to the office concern

And technical advice on hygienic handling of the products is given from city fisheries officers as of today.

Two processing area of Nile perch factory remain in Mwanza have their own association to manage should be strengthened in order to be capable enough to maintain the facility. The same processing area is not established yet, however actually processing women's group provides a nucleus for future management body of the facility in collaboration with capacity building programme.

B Personnel Plan

Personnel plan mostly for the coordination and stuff training after the construction stage would be as follows.

- Project coordinator 2 years
- Judicial advisor 6 months
- Expert on support to associations 12 months
- Business skill instructor 6 months
- Technical instructor on Q/C 6 months

C Role of NGO

Training to committee members, processors and traders should be sub-contracted to NGO's.

D Stuff Training

As mentioned in "5.B Personnel plan", support to cooperative and business skill training are highly related field each other. Each of business skill such as book keeping, record keeping, market research, money management etc., are quite helpful for strengthening of cooperative activity. These training and education programme should be sub contracted to NGO's. And quality control (Q/C) and hygienic handling of products would be conducted on site by the quality control section of Fisheries Division. The content of training programme is as follows.

Content	Number of trainee	Period
Business skill (Subjects areas mentioned above)	Kirumba: 40 Factory remain processing: Each 10	Kirumba: 2 months Mwanza: each 1 month Musoma: 1 month
Support to marketing and processing cooperatives	Kirumba: 40 Factory remain processing: Each 10	Kirumba: 3 months Factory remain processing: 3 months
Quality control	Kirumba: 40 Factory remain processing: Each 10	Kirumba: 3 months Factory remain processing: 3 months

(6) Work Plan

Major activities	Responsibilities	Schedule	Output
Kirumba market construction component			
Creation of management committee	Coordinator	—	Prospectus
Participation in designing and its final approval	Management Committee	—	Design documents, Tender documents
Preparation and maintenance of temporary market	Management Committee	—	Temporary market
Construction of new market	Management Committee	—	New market facility
Preparation of operation rules	Management Committee	—	Operation rule
Training to processors and traders	Management Committee	—	5 members from each group, 40 people from 8 groups are trained.
Nile perch factory remain processing facility component			
Preparation of business plan for Musoma factory remain processing	Musoma town — fisheries office Coordinator	—	Business plan
Design of facility and equipment	Processors' association	—	Design documents, Tender documents
Construction of processing facility	Processors' association	—	
Preparation of operation rule	Processors' association	—	Operation rule
Training for processors	Coordinator	—	10 processors from the site, 30 people from 3 sites are trained

Note: Entire project period is two (2) years.

(7) Cost Estimate

A Component 1: Kirumba Market Construction

Market zone

Designation		Cost (Tsh)	Cost (US\$)	Remarks
Construction cost Direct construction cost a. building cost	A1	795,000,000	906,892	Market
	A2	795,000,000	906,892	Market
	B	62,100,000	70,840	Office
	C	14,400,000	16,427	Water tank
	D	14,000,000	15,970	Energy centre
	E	4,000,000	4,563	Guard post

	F1	15,000,000	17,111	Garbage depot
	F2	10,000,000	11,407	Garbage depot
	G1	60,000,000	68,445	Public toilet
	G2	40,000,000	45,630	Public toilet
	H	162,000,000	184,801	Mamalishe
	I	14,000,000	15,970	Septic tank
	Subtotal	1,985,500,000	2,264,949	
b. Equipment cost		458,685,300	523,243	
c. other cost		409,067,000	466,641	
(2) Common temporary facilities expenses		28,766,760	32,816	
(3) Site overhead expenses		306,180,180	349,274	
(4) General overhead		299,573,460	341,737	
2. Civil work cost		155,051,460	176,874	
3. Construction material		102,610,620	117,053	
4. Design and supervision				
5. Local contribution				
Total project cost		3,745,434,220	4,272,586	

Processing zone

Designation		Cost (Tsh)	Cost (US\$)	Remarks	
(1) Direct construction cost a. building cost	Construction Cost	G2	40,000,000	45,630	Public toilet
		J1	45,000,000	51,334	Storage
		J2	45,000,000	51,334	Storage
		K	25,600,000	29,203	Working area
		L	3,000,000	3,422	Working area (earthen)
		M	6,000,000	6,844	Septic tank, drain pit
		Subtotal	164,600,000	187,767	
b. Equipment cost					
c. other cost					
(2) Common temporary facilities expenses		2,408,700	2,748		
(3) Site overhead expenses					
(4) General overhead					
2. Civil work cost					
3. Construction material					
4. Design and supervision					
5. Local contribution					
Total project cost		167,008,700	190,514		

Designation	Cost (Tsh)	Cost (US\$)	Remarks
1. Construction cost			
(1) Direct construction cost			
a. Building cost	2,150,100,000	2,452,716	
b. Equipment cost	458,685,300	523,243	
c. Other cost (external work, furniture etc.)	409,067,000	466,641	
(2) Common temporary facilities expenses	31,175,460	35,563	
(3) Site overhead expenses	306,180,180	349,274	
(4) General overhead	299,573,460	341,737	
2. Civil work cost			
(1) Direct construction cost	155,051,460	176,874	
(2) Common temporary facilities expenses			
(3) Site overhead expenses			
3. Construction material cost	102,610,620	117,053	
4. Design and supervision cost	911,452,800	1,039,735	
5. Local contribution			
Total project cost	4,823,896,000	5,502,836	

B Component 2: Improvement of Nile perch Factory Remains Processing Facility

Processing workers can be mobilized as a non-skilled worker from each processing site at the time of construction, and accordingly cost reduction can be made.

① Mkolani

Designation		Cost (Tsh)	Cost (US\$)	Remarks
Construction cost	1	25,200,000	28,747	Work shed
	2	3,024,000	3,450	Work shed
	3	3,024,000	3,450	Work shed
	4	1,512,000	1,725	Work shed
	5	5,600,000	6,388	Office
	6	4,550,000	5,190	Storage
	7	5,915,000	6,748	Toilet
	8	2,000,000	2,281	Incl. toilet and septic tank
	Subtotal	50,825,000	57,978	
1) Deep well		6,000,000	6,844	
2) Repair of access road		2,000,000	2,281	
Total project cost		58,825,000	67,104	

② Kanyama

Designation		Cost (Tsh)	Cost (US\$)	Remarks
Construction cost	1	12,096,000	13,798	Work shed
	2	7,560,000	8,624	Work shed
	3	3,024,000	3,450	Work shed
	4	1,512,000	1,725	Work shed
	5	5,600,000	6,388	Office
	6	12,600,000	14,373	Storage
	7	3,185,000	3,633	Toilet
	8	2,000,000	2,281	Incl. toilet and septic tank
	Subtotal	47,577,000	54,273	
1) Deep well		6,000,000	6,844	
2) Repair of access road		2,000,000	2,281	
Total project cost		55,577,000	63,399	

③ Bweri

Designation		Cost (Tsh)	Cost (US\$)	Remarks
Construction cost	1	17,280,000	19,712	Work shed
	2	5,760,000	6,571	Work shed
	3	3,456,000	3,942	Work shed
	4			Work shed
	5	7,040,000	8,031	Office
	6	14,400,000	16,427	Storage
	7	3,120,000	3,559	Toilet
	8	2,000,000	2,281	Incl. toilet and septic tank
	Subtotal	53,056,000	60,523	
1) Deep well		6,000,000	6,844	
Total project cost		59,056,000	67,368	

C Total Programme Cost Including Programme Management Cost and Personnel Cost in Addition to the Above-mentioned Construction Cost.

Content	Cost (Tsh)	Cost (US\$)	Quantity	Unit price
Kirumba market construction cost	4,823,896,000	5,502,836		
Factory remain processing facility construction cost	173,458,000	197,871		
Programme management sub-total	27,200,000	31,051		
Travel allowance	3,600,000	4,110	24 M/M	150,000Tsh/month
Vehicle	20,000,000	22,831	1 unit	20,000,000 Tsh
Misc. cost	3,600,000	4,110	1 lot	150,000Tsh/month
Personnel cost	108,122,400	123,400		
Judicial advisor	26,805,600	30,600	6.0 M/M	4,467,600Tsh/month
Cooperative promoter	53,611,200	61,200	12.0 M/M	4,467,600Tsh/month
Business skill instructor	26,805,600	30,600	6.0 M/M	4,467,600Tsh/month
Q/C instructor	900,000	1,000	6.0 M/M	150,000Tsh/month
Grand total	5,132,676,400	5,855,158		

Note: Exchange rate between Tsh and US\$ is US\$1.00=876 Tsh.

(8) Cost Analysis

In Kirumba market, certain tax or levy is currently charged on every commodity like Dagaa and banana and fee for whole sale pallet is also collected from users. On the other hand, minimum public services like cleaning, water, electricity (lighting only) is provided. Income is much larger than expenses. This situation will remain the same in new market. But facility maintenance cost should be deposited monthly in the account.

According to the profit and loss statement of Nile perch factory remain processing business, material cost shares 25 to 40 percent of total sales and the rate of production cost including material cost and personnel cost raises to 60 to 70 percent at most. There is therefore a sufficient benefit for depositing the maintenance cost for facility.

(9) Monitoring

Progress of the programme is monitored by the project coordinator and supervised once every quarter of the year by fisheries development section of Fisheries Division.

(10) Environmental Impact

1) Construction of Kirumba Mwaloni fish market

This programme could be classified as "fish landing station" listed in NEMC's Tanzania Environmental Impact Assessment Procedure, Appendix 2, which may or may not require EIA. The impact of the facilities on the physical environment at the project sites will be positive therefore a full EIA would not be necessary.

Before construction, a registration process must be conducted to identify all existing legitimate users and societies. A consultative process amongst all stakeholders must be conducted to explain the details of the project design and activities that will be allowed or not allowed in the new market in order to obtain consensus for the construction and avoid misunderstanding about the objectives of the project.

Mwanza Municipal must obtain an alternative site to relocate the existing users before construction can proceed. The alternative site should preferably be nearby to the existing Kirumba Mwaloni Market in order to lessen the impact on existing users. Consensus and understanding to relocate to the temporary site must be obtained to avoid possible disruption of construction activities.

After construction, a transparent and fair allocation process should be conducted for the relocation exercise of the users back to the new constructed market facilities to avoid misunderstanding and conflicts.

The project should have a positive impact on the overall environment of the area in terms of efficiency in the market operations, waste disposal and handling, improvements in the visual scenery and hygiene.

2) Improvement of local fish processing facility for Nile perch

As the processing sites are not located in Environmentally Sensitive Areas, and the components are not expected to impact significantly on the natural environment, EIA would not be required. For the existing Nile perch left-over processing areas, i.e. Mkolani and Kanyama, the project will improve the working environment, hygiene and reduce spoilage due to rain. As for the new area to be constructed at Bweri, consensus of the people living in the area should be obtained to avoid future conflicts regarding the use of the land. The positive benefits of employment/ income generation to the area will be significant. Proper waste disposal facilities should be provided to control the solid and liquid waste from the processing.

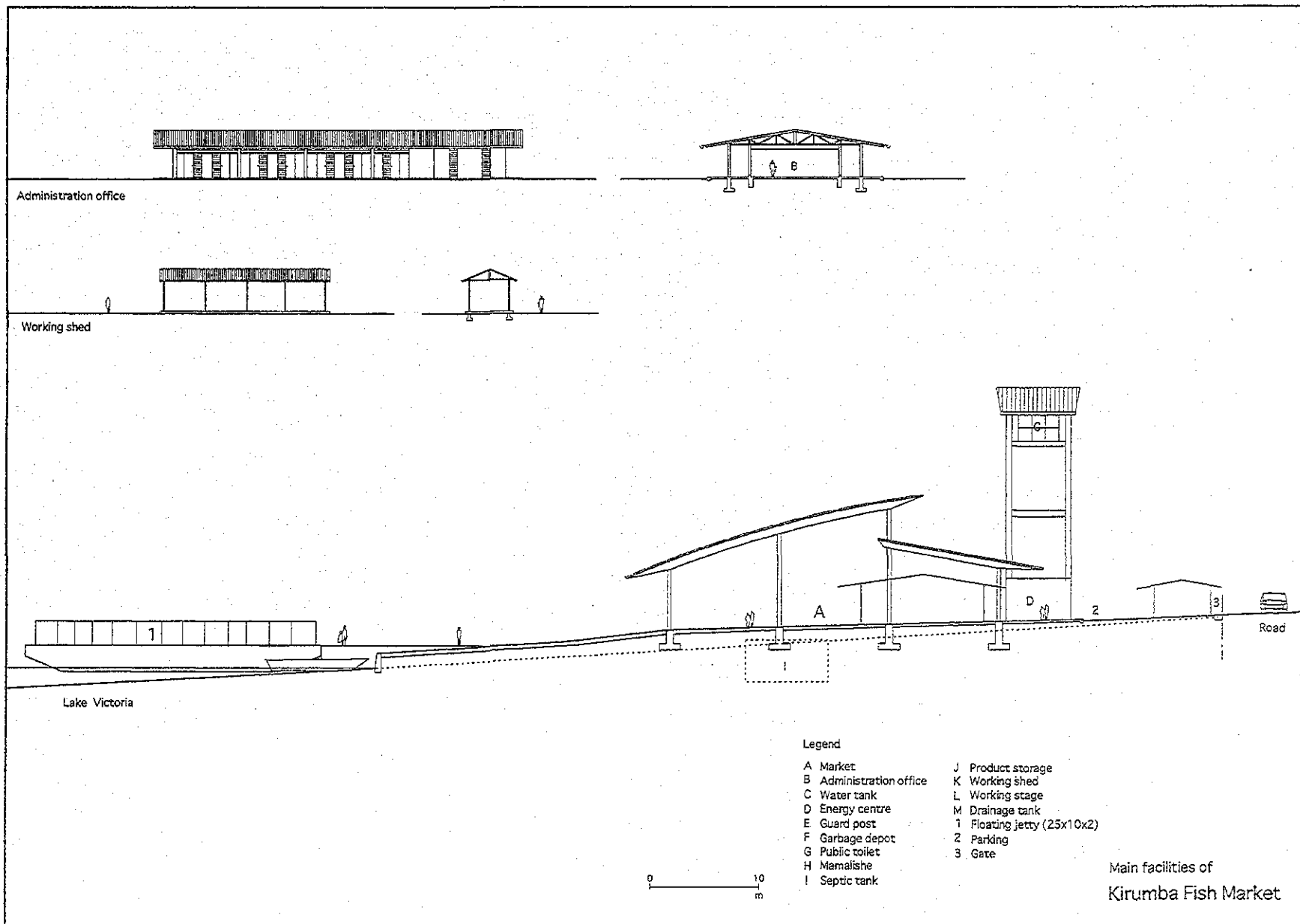
(11) Linkage

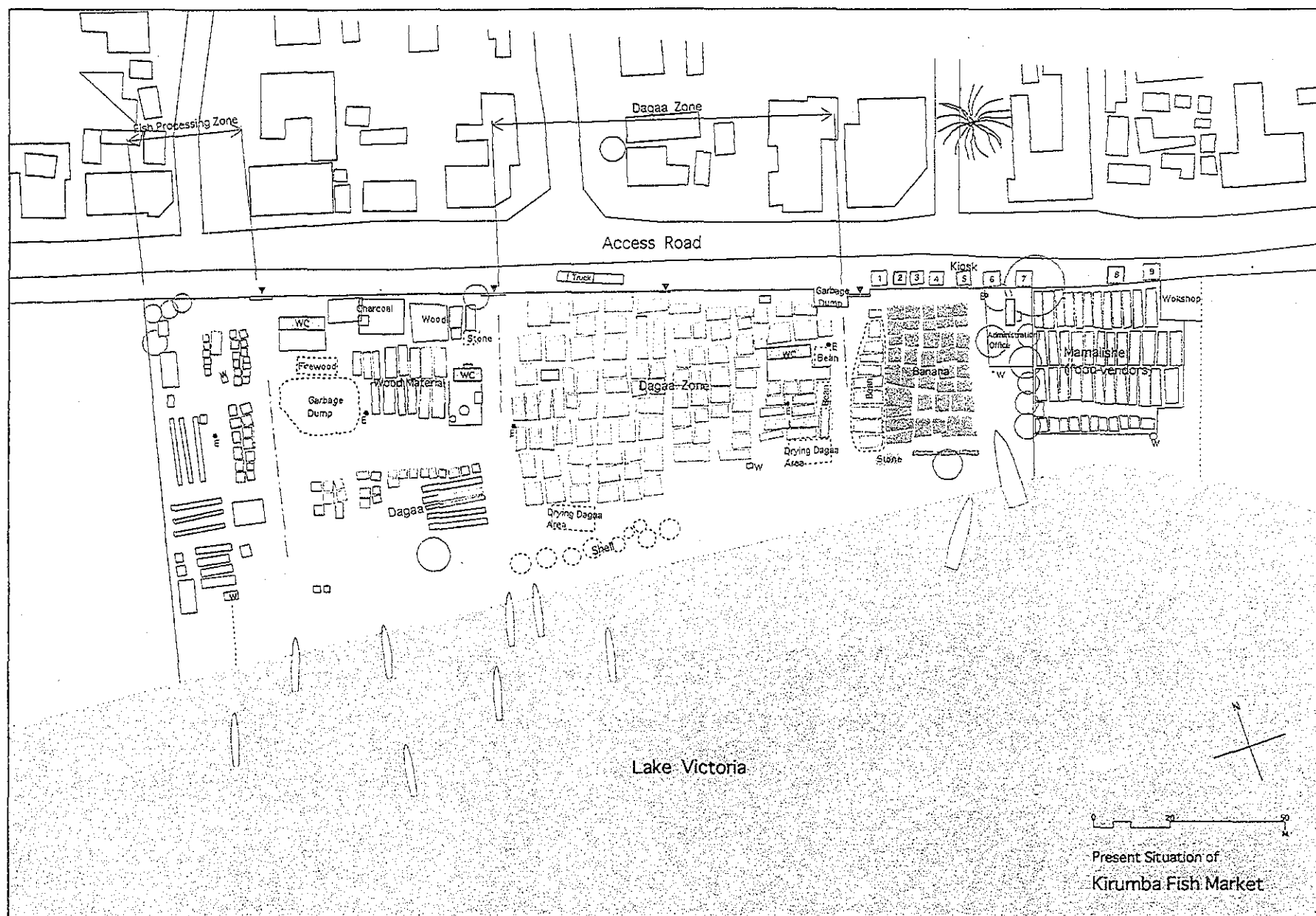
A Inter-sectorial Linkage

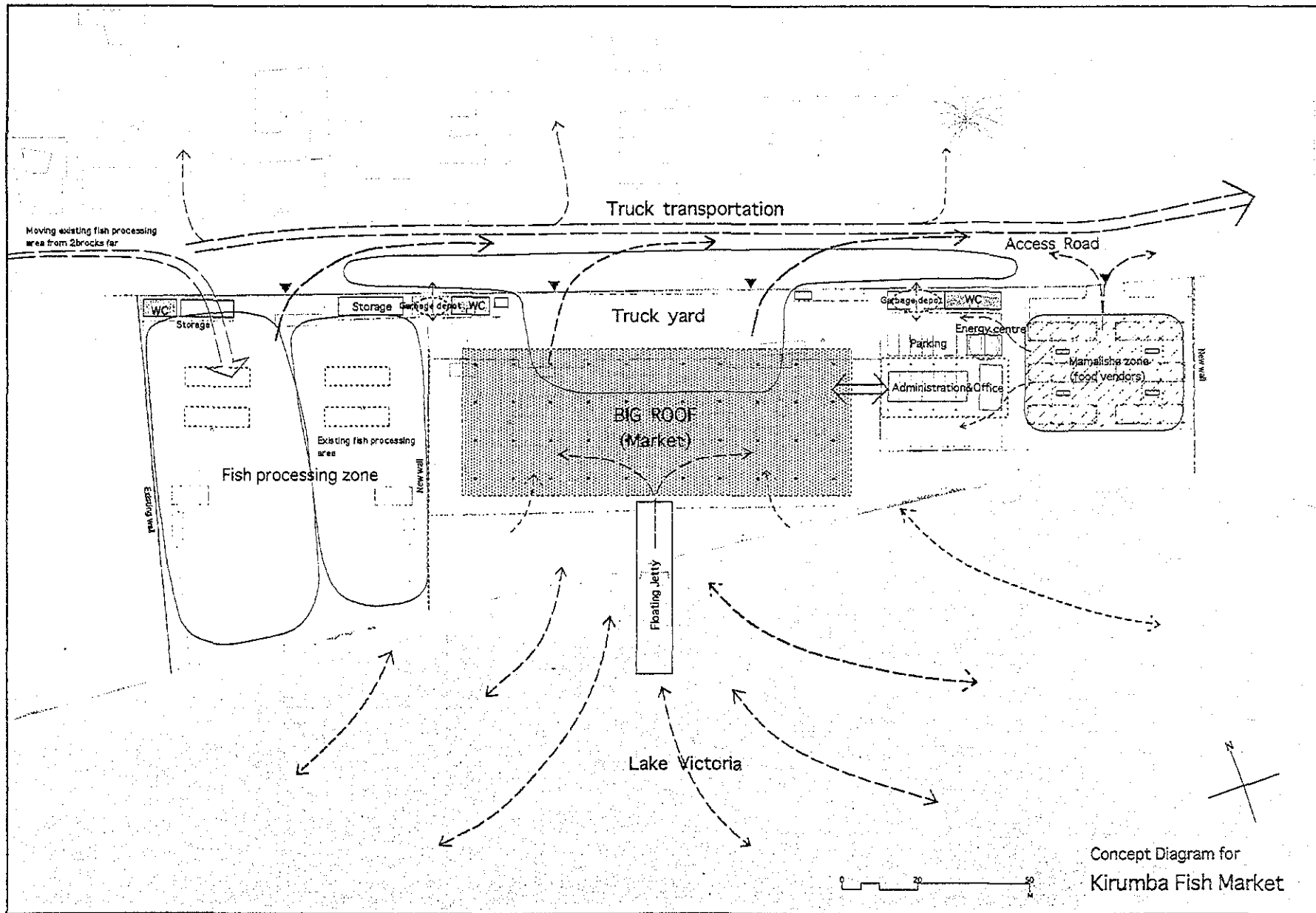
Support to organize the artisanal processors and traders and to strengthen the cooperative needs linkage with expert of Ministry of cooperatives.

B Project Linkage

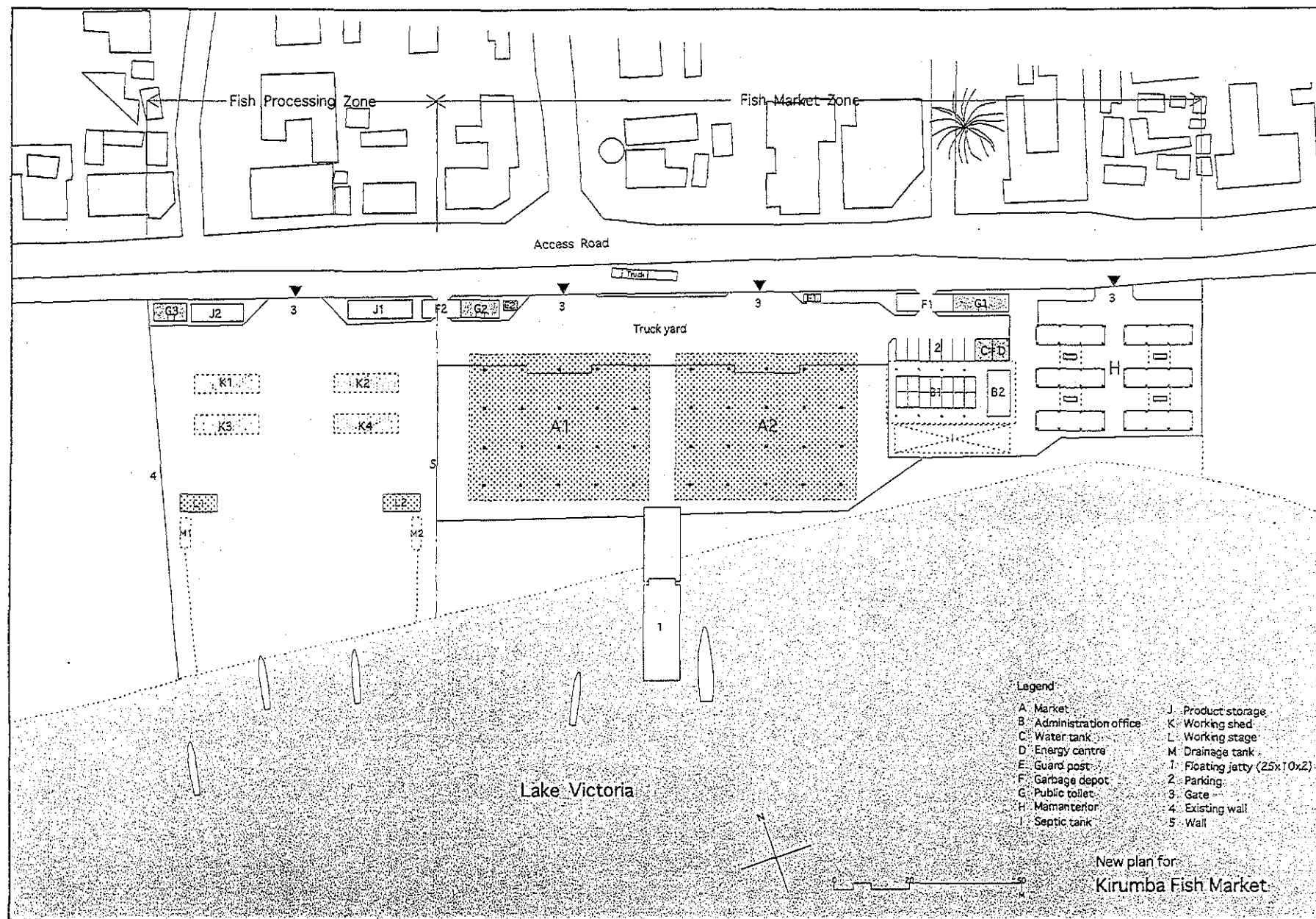
Nile perch factory remain processing facility component may have a possibility to link with Micro-finance project of LVEMP because of the fact that this component needs less project cost and contribute to artisanal processors.

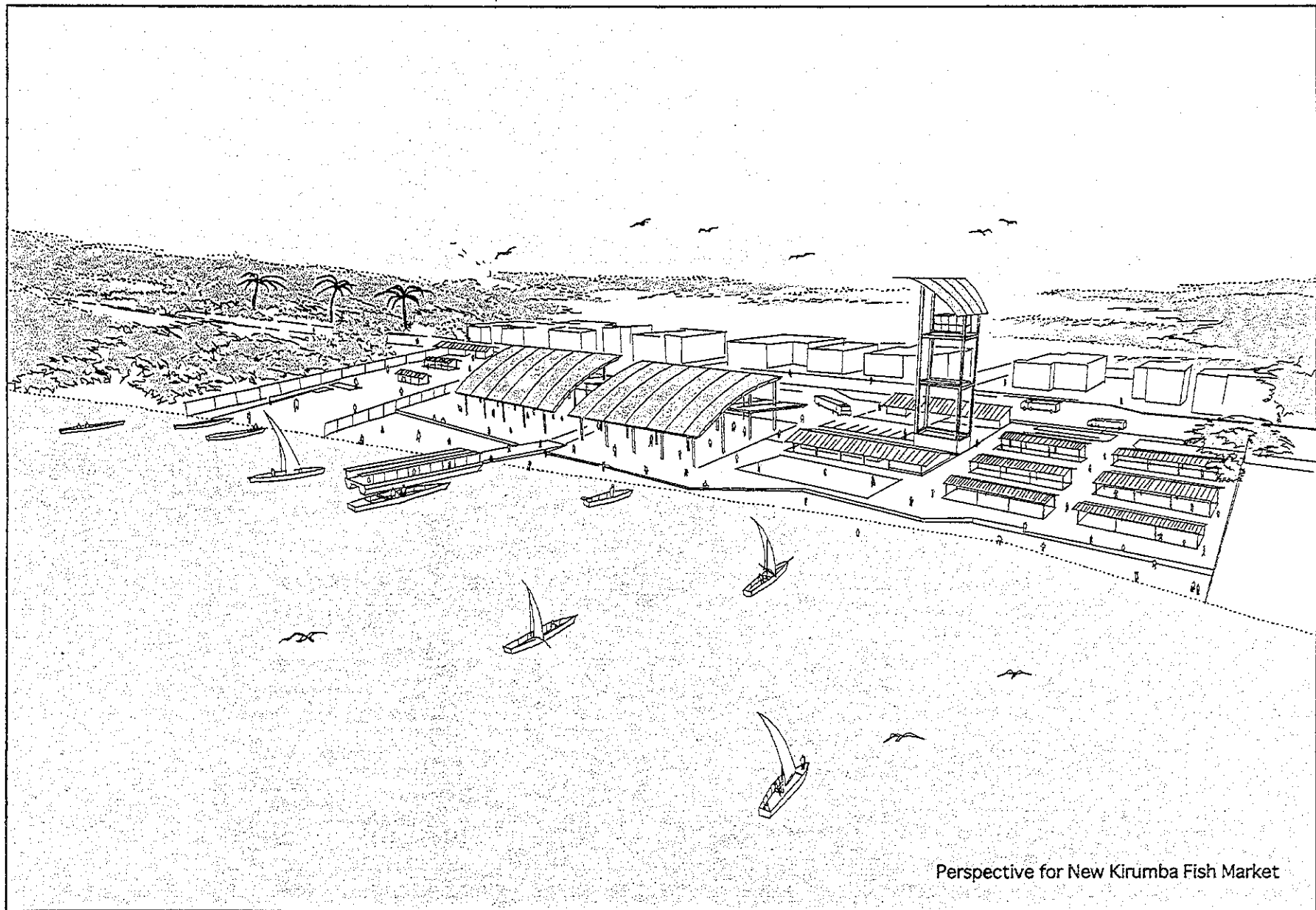






Concept Diagram for
Kirumba Fish Market





Perspective for New Kirumba Fish Market

