



**New Partnership for
Africa's Development (NEPAD)
Comprehensive Africa Agriculture
Development Programme (CAADP)**



**Food and Agriculture Organization
of the United Nations
Investment Centre Division**

GOVERNMENT OF THE REPUBLIC OF SIERRA LEONE

SUPPORT TO NEPAD–CAADP IMPLEMENTATION

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Volume III of IV

BANKABLE INVESTMENT PROJECT PROFILE

Freetown Fisheries Harbour Complex

March 2005

SIERRA LEONE: Support to NEPAD–CAADP Implementation

Volume I: National Medium–Term Investment Programme (NMTIP)

Bankable Investment Project Profiles (BIPPs)

Volume II: Sustainable Land and Water Resources Development

Volume III: Freetown Fisheries Harbour Complex

**Volume IV: Market–oriented Forestry and Tree Crop Agroforestry
Production Systems**

NEPAD–CAADP BANKABLE INVESTMENT PROJECT PROFILE

Country: Sierra Leone

Sector of Activities: Fisheries

Proposed Project Name: **Freetown Fisheries Harbour Complex**

Project Area: Freetown, Sierra Leone

Duration of Project: 3 years

Estimated Cost: **Total US\$64 million**

Suggested Financing:

<i>Source</i>	<i>US\$ million</i>	<i>% of total</i>
<i>Government</i>	6.4	10
<i>Financing institution(s)</i>	6.4	10
<i>Beneficiaries</i>		
<i>Private sector</i>	51.2	80
<i>Total</i>	64.0	100

SIERRA LEONE:
NEPAD–CAADP Bankable Investment Project Profile
“Freetown Fisheries Harbour Complex”

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Abbreviations

AFCOD	Artisanal Fisheries Community Organisation and Development Project
ADB	African Development Bank
ASR	Agriculture Sector Review
BOT	Build–Operate–Transfer
CAADP	Comprehensive Africa Agriculture Development Programme
NMTIP	National Medium–Term Investment Programme
EEZ	Exclusive Economic Zone
EU	European Union
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GOSL	Government of Sierra Leone
GRT	Gross Registered Tonnage
GTZ	<i>Gesellschaft für Technische Zusammenarbeit</i> (German aid agency)
HIPC	Highly Indebted Poor Countries
IMBO	Institute of Marine Biology and Oceanography
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MHWN	Mean High Water Neaps
MLWN	Mean Low Water Neaps
MFMR	Ministry of Fisheries and Marine Resources
MPSSL	Maritime Protection Service of Sierra Leone
NEPAD	New Partnership for Africa’s Development
NGO	Non–Governmental Organisation
PIU	Project Implementation Unit
SAP	Structural Adjustment Programme
SLPA	Sierra Leone Ports Authority
TA	Technical Assistants
UNDP	United Nations Development Programme
USSR	Union of Soviet Socialist Republics
WB	World Bank

I. PROJECT BACKGROUND

A. Project Origin

I.1. The need to construct an industrial fishing harbour for Sierra Leone, located in the capital city, in Freetown was first put forward by the *Ministry of Natural Resources*, Fisheries Division, in the early 1970s. On the request of the Government of Sierra Leone (GOSL), the *Commonwealth Fund for Technical Co-operation* provided the services of a consultant to carry out a survey of potential sites for constructing fish landing facilities at selected fishing villages along the coast of the country, as well as an industrial fisheries harbour complex for Freetown and to make recommendations for such a construction. Mr L. J. Weeraratne, Chief Engineer Ports and Deputy Port Commissioner, Colombo, Sri Lanka was engaged and with regards to the Freetown complex, recommended as follows:¹

- **Stage 1.** A fisheries harbour sited at the end of Cline Bay in Kissy, consisting of 26 acres of water area with 10.5 acres of reclaimed land. The main jetty is serviced by an auction shed, giving a total berthing length of 1,800 ft minimum alongside water depth of 5 m, connected to the shore by an approach jetty. A portion of the bay should be filled up to provide shore and water front installations. There would be 500 ft of quay for small boats, a boulder revetment which provides a small boat mooring area in front, an office block, stores, fish market and ship repair facilities. No provision was made for refrigeration or ice making since the existing capacity was thought to be adequate.
- **Stage 2.** To be undertaken when the 10 year shipping forecast on which Stage 1 was based, had been achieved, and there was full occupancy of the berths. It would consist of an extension of the main jetty to give a further 1,000 ft of berthing length, with another auction shed, an ice plant, a fish-meal plant, and a by-products plant.

I.2. A Feasibility Study on the project was undertaken by Mr J.A. Sciortino, FAO consultant in 1991.² He prepared a proposal for a fisheries harbour complex in Freetown which is centred on the construction of a dedicated fisheries facility, consisting of a wet fish landing pier, a service or victualling pier, a vessel repair and maintenance complex, facilities for potential fish cold storage, processing etc, together with a fully integrated supporting infrastructure to render the complex self-supporting and independent. The designs incorporated the existing facilities of the Sierra Fishing Company

I.3. The proposal was designed to maximise the foreign currency earnings for GOSL and the local fishing industry, provide substantial employment opportunities for the local people and increase the supply of fish protein for the population at large. It proposed that, ideally, the harbour complex should be run on a commercial basis with a private share holding company leasing the completed facility from the Government for a set number of years.

I.4. In 1995 the Government of the Islamic Republic of Iran expressed interest in partially financing the project and a new set of designs were prepared, excluding the facilities of Sierra Fishing Company, since it was evident that the company was developing its own independent facilities to service its requirements.

¹ Weeraratne, L. J. (1979). Fish Landing Infrastructure (site and preliminary engineering designs). Government of Sierra Leone, Ministry of Natural Resources, Fisheries Division; Commonwealth Fund for Technical Co-operation.

² Sciortino, J.A. Freetown Fisheries Complex, Sierra Leone. Consultant Report, FAO, Rome, Italy

I.5. This project proposal is based on the initial work of Mr Weeraratne, incorporates work done by Mr Sciortino and the re–design by the Iranian team and consultants in the Ministry of Fisheries and Marine Resources, as well as field work done by the present consultants to update the proposal.

I.6. The project has been given top priority among infrastructure projects (CAADP Pillar 2) in the *National Medium–Term Investment Programme* (NMTIP).

B. General Information – The Economy

I.7. Sierra Leone is one of the world’s poorest countries. It belongs to the group of the Least Developed Countries, and meets FAO criteria for a Low–income Food Deficit Country (LIFDC). UNDP’s 2003 Human Development Report for 2003 ranks Sierra Leone last out of 175 countries on the basis of the Human Development Index. Sierra Leone has qualified for and has opted to participate in the Highly Indebted Poor Countries (HIPC) initiative. Though poverty affects all regions in the country, with nearly 82 percent of the 5.2 million population living below the poverty line of less than US\$1 per day, it is more severe in rural areas, where 88 percent of the population live below the poverty line. Food insecurity is also pervasive and chronic with about 47 percent of the population in 1998–2000 estimated to be undernourished. Nutrition surveys from that period report a high prevalence of childhood stunting (34%), wasting (10%) and underweight (27%). The stunting indicator, in particular, underlines the prevalence of chronic malnutrition.

I.8. Although worsened by the civil war in the 1990s, economic conditions in Sierra Leone had been deteriorating since the mid–seventies as a result of: (i) devastating poor governance; (ii) massive state intervention; (iii) concentration of state spending on the non–poor; (iv) pursuit of policies that held back overall economic activity; and (v) heavily taxed agriculture. During the decade of the 1980s, the growth of GDP declined to just under 1 percent. Coupled with population increase of over 2 percent per annum, this led to a considerable decline in per capita income from over US\$350 in 1981 to only US\$200 in 1989. In the latter year, the Government of Sierra Leone initiated a *Structural Adjustment Programme* (SAP). Disappointing results led to subsequent adoption of a wider–ranging *Economic Reform Programme* which included tax reforms, trade liberalization, introduction of market determined exchange rates and interest rates and the commencement of government divestiture out of activities better suited to the private sector. Reforms of the civil service and financial sectors were also initiated.

I.9. Overall, during the nineties, the volatile war–ravaged economy contracted at a rate of 4.6 percent per annum. Per capita incomes plummeted by 47 percent, leading to an exacerbation of poverty, especially in the rural areas. The cessation of hostilities and the re–establishment of government control over all areas of the country paved the way for the resumption of economic growth. A stable macroeconomic environment has provided a solid foundation for reconstruction, relief and humanitarian assistance. Inflation decreased from 34.1 percent in 1999, to 3.1 percent in 2002 and real GDP has shown positive rates of increase, growing at 3.8, 5.4 and 6.3 percent respectively in 2000, 2001 and 2002. The recovery of the national economy has been attributed primarily to that of the agricultural sector, following the return of rural communities to normal productive activities. The manufacturing, construction and services sectors also expanded during the period.

C. The Fisheries Sector

I.10. **Fish Resources.** Along its coastline of 570 km and the continental shelf area of 25,600 km², Sierra Leone is rich in marine resources. It is also well endowed with inland waters (rivers, lakes and

flood plains) which support a large number of aquatic organisms. The marine waters are fishing grounds for a wide variety of fish, including high value species such as shrimps, lobsters, cuttlefish, breams and snappers. The rivers, estuaries and tributaries with their extensive mangrove vegetation provide favourable conditions of shelter and nursery for penaeid shrimp and fish such as Bonga (*Ethmalosa fimbriata*), Croakers (*Pseudolithus* sp.) and wild oysters.

I.11. The marine fisheries resources have been intensively exploited by industrial fishing vessels during the period before the war, particularly in the 1980s. Although there is no recent comprehensive quantitative evaluation of the resources, there is however a broad consensus that certain stocks have been over-exploited. The declining trend observed in catches of some five sea bream species (*Dentex angolensis*, *D. congensis*, *D. canarensis*, *Pagellus belloti* and *Sparus caeruleostictus*) shows that these have been over-fished. However, the considerably diminished captures over the last decade are thought to have had a beneficial effect. A recent estimate made by the Institute of *Marine Biology and Oceanography* (IMBO) of the potential sustainable yield of the demersal fish resources is 55 000 metric tonnes per annum. The marine resources include demersal (bottom-dwelling) and pelagic (surface dwelling) fish, shrimps, cephalopods, lobster and crabs. The overall estimated potential of these resources in the Sierra Leonean seas is indicated in Table 1.

Reference Source/Resource	Demersal	Pelagics	Shrimps	Cephalopods	Others	Total
USSR & FAO surveys 1982–1991	18,000–45,000	85,000–135,000	3,000	10,000		116,000–193,000
IMBO 2000	55,000	100,000	3,000	1,000	21,000	180,000
Fisheries Dept. (*)	33,300		4,300			

(*) Using Surplus Production Model, 1991–2001
Source: *Fisheries of Sierra Leone*. MFMR Freetown, Sierra Leone, 2003.

I.12. In the artisanal sub-sector, the most predominant fishes landed are Bonga and Herrings (*Sardinella* sp.). Large quantities of juveniles of these fish species are often landed. Based on artisanal fishermen views on the state of these fish stocks, it is believed that both these species are under threat as a result of the widespread use of harmful fishing methods such as the use of channel net, beach seines and small mesh size nets.

I.13. As much as 70% of the total catches of the shrimp trawl fishery consists of untargeted species, predominantly consisting of an assortment of small size fin fishes. Both shrimp and industrial finfish trawlers discard a great part of the by-catch, which is not only destructive to the fisheries stocks because these discards are composed of small size juvenile fish, but this also represents a waste of potential source of high quality protein food. Discards of fish by demersal (bottom dwelling) and shrimps trawlers operating in Sierra Leonean waters are reported to be as high as 24% for demersal fish trawlers and 30% for shrimp trawlers.

I.14. Very little documented information exists on the fresh water fisheries of Sierra Leone and the fish stocks of these environments have never been quantitatively evaluated. Hence, the potential sustainable yield is not known. The level of aquatic biodiversity is however high: sixteen families of freshwater fishes have been identified with as many as 100 species. Estimates of sustainable yield range between 16,000 and 40,000 mt per annum. Fishing activities, with varying but generally low intensities are conducted in these inland water bodies. The fisheries of these inland water bodies are believed to have great potentials, provided attention and adequate effort are put to their efficient management and sustainable development.

I.15. The legal framework for fisheries management is considered to be consistent with sustainable exploitation of the resource. However, the level of compliance with and enforcement of fisheries legislation have been low and the reasons could be found in the atmosphere of lawlessness that may have prevailed during the war years. For the same reasons, the institutional capacity for the monitoring and evaluation of the resource, the capability of the public sector for the surveillance, and not even to mention its potentiality in determining the required facilitations for infrastructure development and supporting services, are all inexistent.

I.16. Mangroves are found fringing the coastline and estuaries of the rivers of the country serving as nursery grounds and as important source of nutrients for young fish, among other animals. Mangrove trees are cut down and used as construction material and fuel wood for cooking and fish smoking. The different exploitations (including swamp rice and salt production), and to a much smaller extent, the harvesting of wild oysters by cutting mangrove roots are causes of destruction of the mangrove vegetation and its ecosystem. Some of the effects of this include the destruction of nursery grounds of young fish and a general loss of bio-diversity. However, the current level of exploitation of wild oysters is low. Studies by the Fisheries Department on the West African mangrove oyster (*Ostrea tulipa*) have shown the feasibility of culturing oysters.

I.17. **Fish Production.** Marine fish production in Sierra Leone has remained between 60,000 and 70,000 mt per annum during the past decade, around 10% of which is exported. The bulk of the fish produced by the artisanal sector is consumed locally. The trends in artisanal and industrial production are shown in Table 2.

Table 2: Artisanal and Industrial Marine Fish Production in Sierra Leone ('000 mt)

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Artisanal	47	43	44	44	45	46	48	50	44	47
Industrial	79	135	156	157	182	176	185	180	75	54
Total	126	178	200	201	227	222	233	230	123	101
Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Artisanal	47	47	47	47	47	47	46	46	40	55
Industrial	33	18	16	17	11	13	16	14	23	14
Total	80	65	63	64	58	60	62	60	63	69

Source: MFMR 2003.

I.18. The current catch is about 1/3 of the production level reached in the mid-eighties. However, the level of artisanal catch has remained constant over the last two decades while the industrial catch has declined sharply. Whilst only 22% of the fish harvested came from the artisanal sector in 1990, nowadays the sector lands 75% of all the fish harvested.

I.19. There are an estimated 20,000 full-time fishermen operating in the marine artisanal industry with some 6,000 boats of different sizes and designs (Kru canoe, standard 1–3, Standard 3–5, Ghana Plank and others). The level of boat motorisation is about 16%. A variety of fishing gears are in use (Ring nets, Drift nets, Beach seines, Cast nets, Hook and Line). With artisanal fishermen reported to have lost boats and gear during the war period, their production capacity should have declined. However, available catch assessment data for the period does not indicate this, and recently the capacity of the artisanal fishermen seems even to have increased.

I.20. About two thirds of the fish produced in the artisanal sector are pelagic fish species consisting mainly of Bonga and Herrings and represent the cheapest sources of animal protein available to the majority of the Sierra Leonean population.

I.21. Fish exports from Sierra Leone are made up of fish products manufactured by industrial fishing trawlers operating offshore. These foreign-owned vessels fish in Sierra Leonean waters through joint venture arrangements with Sierra Leonean nationals. They comprise demersal, pelagic and shrimp trawlers as well as purse seine vessels fishing for Tuna and Herrings. The absence of home-based industrial fishing vessels and land-based infrastructure and facilities to catch and process fish limits the country's ability to maximise benefits from the resources. A drastic reduction was observed in the numbers of licensed demersal and purse seine vessels during the period between 1991 and 2002, from 120–300 to 30–80. The main reason was the withdrawal of the Soviet fleet of purse seine vessels which targeted the small size pelagic stocks.

I.22. The number of fisher folk operating in inland fisheries is unknown. However, inland fisheries are of great importance to rural households and fishing plays also a socially unifying function being practiced by both men and women. In many provincial villages, women are exclusively responsible for post harvest activities and dominate in the scoop net fishing system, by which up to 60% of all fresh water fish is caught. Scoop net fishing is a subsistence activity undertaken throughout the year in shallow areas of rivers, lakes and streams.

I.23. In the past, sustainable fishing practices were common in inland fisheries waters. In recent times however, fishing practices have been less responsible with the introduction of small mesh size gill nets, mosquito nets, and the use of poisons which are less selective and can cause over fishing. However, the inland fishery appears not to have been fully exploited because of the limited catch capacity and the limited fishing grounds that can be covered by the small typical dug-out un-motorised canoes commonly used.

I.24. **Fish Inputs.** Unlike the situation in most other sectors, the private sector has always dominated the market for provision of supplies for the fish industry. However, there have been a number of GOSL and donor financed fishing projects such as those by FAO, GTZ, EU and NGOs which focussed mainly on improvements in fishing, preservation and marketing techniques, the strengthening of community associations and the provision of community infrastructures, although some attempts were also made to supply inputs such as fishing gear and smoke house for fish processing through soft loan schemes.

I.25. **Processing and Marketing.** Fish is marketed as fresh, frozen (in industrial vessels), soft smoked or a hard smoked product. Due to the limited availability of ice to the small-scale sub-sector, poor or non-existent fish receiving and handling facilities and the difficulties of transport only small quantities of fresh fish are transported to urban markets. The bulk of fish landed is processed by hot smoking.

I.26. **Monitoring, Control and Surveillance.** Responsibility for management of the fisheries resources within the *Exclusive Economic Zone* (EEZ) is vested in the MFMR and governed by existing fisheries legislations. The purpose of monitoring, control and surveillance systems in fisheries is essentially twofold: first, to enforce the existing management system and generate data on the biology, economic and social elements to improve the management and judicial system of the fishing industry; second, monitoring, control and surveillance itself. Government attempts to protect the resources have not been successful and there has been no effective maritime surveillance in the Sierra Leone EEZ since 1993.

I.27. **Donor Intervention in Fisheries.** Government has benefited from a number of community-based technical assistance programs (FAO, GTZ, AFCOD and NGOs) in the artisanal fisheries sub-sector. These programs were mainly to improve fishing techniques, preservation (smoking) and marketing, strengthening of community associations and provision of community infrastructure.

I.28. A number of developmental advances were achieved in the artisanal fisheries sector by the various interventions listed above. Unfortunately, with the incidence of the civil war, most of these achievements were lost.

I.29. **Fisheries Management.** The *Department of Fisheries* was established in the *Ministry of Agriculture* in 1988 as a result of the enactment of the Fisheries Management and Development Act No. 4 of 1988 as a professional department headed by a Director. This law gave the ministry powers to manage the fisheries and to extract economic rent (resource rent) from the resource and also provide the framework for the development of the industry by establishing the Department of Fisheries. The Act made provision for two bodies: a *Fisheries Advisory Board* and a *Scientific and Technical Committee* to advise the Minister on fisheries policies.

I.30. It must be noted that in the Fisheries Management and Development Acts and Regulations of 1988 and 1994, very little was addressed to artisanal marine fisheries and inland fisheries. Besides these Acts and Regulations, there are also local byelaws on fishing administered by many inland communities and coastal communities bordering the fresh water bodies in the hinterland. These byelaws are in most cases strictly adhered to by the fisher folks and if these byelaws are violated, severe penalties are imposed by the relevant chiefdom authorities.

II. THE PROJECT SITE

A. Location

II.1. Freetown (8°30'N 3°14'W), situated on the slopes of a mountainous peninsula with a maximum elevation of around 1,000 m, is on the South bank of the large estuary of the Sierra Leone river, Figure 1. A complex pattern of rivers enters this estuary in its upper reaches to the East and discharges to the West directly into the Atlantic, making the Sierra Leone river a good natural shelter.

II.2. The actual site within the estuary chosen for the location of the harbour complex lies within Cline Bay, between the cliff of Ardon Point and Cline Point.



Figure 1: Location of Freetown

B. Marine Exposure

II.3. **Tides.** At the northern mouth of the estuary, sand bars of considerable magnitude obstruct the flow of water from and into the estuary and consequently the velocity of the tidal stream is very great. In the dry season, during spring tides, the flood stream runs from 1 to 1.5 knots lasting for about 5 hours, and the stream on the ebb tide varies from 2 to 2.5 knots for about 7 hours. In the wet season, however, when the tidal prism is augmented by the flood discharge from the river, the ebb stream attains velocities in the region of 5 knots. The tide brings in fair quantities of silt from the upper reaches of the estuary.

II.4. The Highest Astronomical Tide or maximum tidal range goes up to 3.38 m above the Lowest Astronomical Tide or the Admiralty Chart Datum. Mean High Water Springs (MHWS) are 3.0 m above Chart Datum whereas Mean Low Water Springs (MLWS) are 0.40 m above Chart Datum. Mean High Water Neaps (MHWN) are 2.30 m above Chart Datum whereas Mean Low Water Neaps (MLWN) are 1.0 m above Chart Datum.

II.5. **Winds.** The two principal winds are the northeast trades and the southwest trades. The northeast trades are the prevailing winds during the dry months (December to April) whereas the latter during the rainy season (May to November).

II.6. The northeast trades blowing over the coast are known as the Maritime Trades and are relatively cool and humid. The southwest trades are the Southeast Trades from the southern hemisphere, deflected at right angles as they cross the Equator. Near the coast the prevailing seasonal winds are affected by land breezes. The most frequent wind directions are from northwest and southwest with speeds ranging from 4 to 12 knots.

II.7. **Waves and Swells.** Almost a perennial swell of moderate height, coming in from the Atlantic disturbs ships at their moorings within the estuary. This phenomenon is particularly evident during the wet season when both frequency and amplitude are greatest. The maximum amplitude is in the region of 1.0 m.

II.8. Wind waves, usually not higher than 1.0 m, only occur for brief spells usually just before the change of seasons about May and October. Within Cline Bay waters are relatively calm and the wave height generally less than 0.50 m. However, higher waves occur very briefly during season changes (March–April and September–October).

II.9. Although no actual wave records for Cline Bay exist, personal opinions of those familiar with the area suggest maximum wave heights in the region of 1.20 to 1.80 m. However, an approximate idea of the significant wave heights at Cline Bay is given in Table 3.

Direction	Fetch Length (m)	Average Depth (m)	Maximum Wind Speed (mph)	Wave Length (m)	Significant Wave Height (m)
Northwest	6,700	11	30	11.50	1.2
North	6,100	7	30	10.40	1.1
Northeast	5,800	11	30	9.80	1.1
East	7,600	9	30	11.50	1.2

II.10. Although this location is not free from swells that enter the estuary, the combined effects of refraction and diffraction due to the shallow contours at the approaches to the bay will moderate their energy so that they should be less intense than those observed closer to the entrance of the estuary.

C. Other Key Features

II.11. **Topography and Sea-Bed Contours.** Kissy Bay is a flat cove within the larger Cline Bay which stretches from Cline Point all the way to Ardon Point. The area behind the cove rises from a gently undulating terrain to the West to a gentle cliff towards the East. A small oil refinery and tank farm are situated on the top of the cliff. The area behind the cove is sparsely built-up.

II.12. The area at the root of the cliff shows a marked accumulation of sand. The depth of the water in the cove is very shallow, deepening out along the cliff towards its end. There is a light littoral drift in a predominantly easterly direction. The -10.0 m contour lies approximately 400 m away from the shoreline.

II.13. There are no reports of the area ever having been dredged although some dredging did take place in front of the existing facilities of the Sierra Fishing Company.

II.14. **Geology.** Evidence from the ruins of Perseverance Pier and the more recent construction of the service jetty of the Sierra Fishing Company, show that piles can be successfully driven in the area. Borings taken in connection with the ferry terminal on the -1.0 m contour on the opposite side of Cline Bay show a thin mud layer about 0.5 m thick overlying 8 m of sand and clay, below which lie a further 7 m of pink clay and sand. Borings taken closest to the proposed fishing harbour complex are those taken for the oil terminal at Ardon point. These show sand to a depth of 7 m below bed level.

II.15. **Access.** Access to the proposed new fishing terminal is off the existing dual carriageway leading inland from the main port area in Freetown. Once off the dual carriageway, a secondary narrow two lane road, approximately 600 m long, leads to the entrance of the proposed harbour along Pilgrim’s Way. The dual carriageway is in a good state of repair; but the secondary road, which was once paved, is in need of major repairs. The areas on either side of this road now have buildings and structures, but they are not substantial and could be easily removed for expansion of the access road.

II.16. **Existing Utilities.** Electricity, telephone and water supply are presently being supplied to the Sierra Fishing Company, albeit on a very irregular basis. The proposed harbour complex should be connected to the national grid, but must also be provided with its own back-up electricity generation station and water storage facilities. For this purpose, the close proximity to the oil company’s oil installations will ensure a steady supply of fuel to both the power station and the bunkering facilities at minimal transportation costs.

II.17. **Existing Land Use and Ownership.** The present legislation in Sierra – Leone considers all land 50 m landward of the 0 contour as belonging to the State. The area at Kissy cove therefore legally belongs to the State, currently under the jurisdiction of the *Sierra Leone Ports Authority* (SLPA). The area occupied by the Sierra Fishing Company’s existing facilities is leased on a freehold basis to the company. Figure 2 shows the layout of the Sierra Fishing Company’s existing facilities adjacent to the proposed Fish Harbour Complex.

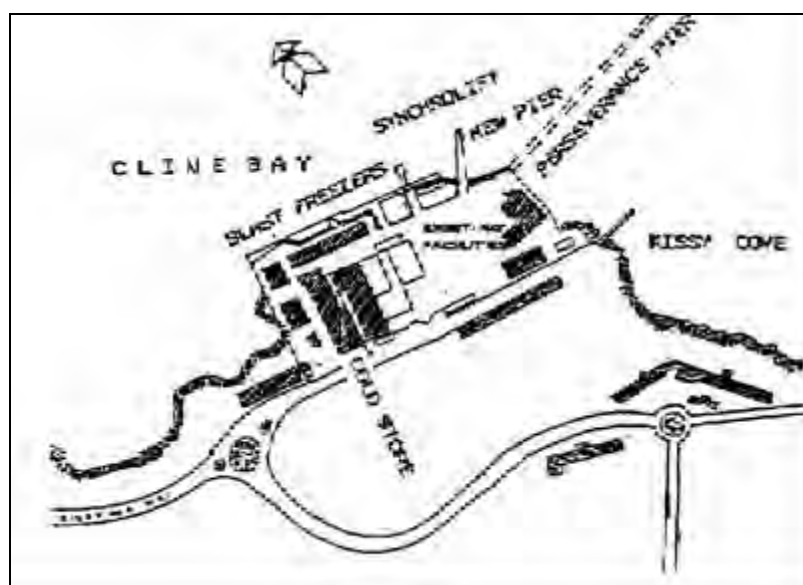


Figure 2: Sierra Fishing Company’s Existing Facilities

III. PROJECT RATIONALE

III.1. The goal of the *National Fisheries Sector Policy*³ is to foster responsible fishing practices and sustainable development of fisheries amongst the stakeholders for the present and future generations.

III.2. The policy objectives in the fisheries sector are to:

- Improve national nutrition and food security through increased fishing and reduction of spoilage and waste;
- Increase employment opportunities;
- Enhance the socio-economic status of people in the fisheries sector including women;
- Increase export earnings from the industry;
- Improve the skills of the fishing communities and ensure rational management of these fisheries based on scientific information.

III.3. The development of a fish harbour complex is an important component of the Ministry’s development policy for the industrial fishing sector which is currently dominated by foreign owned vessels, with nationals acting as agents and employing limited numbers of Sierra Leoneans who carry out menial jobs as deckhands. Most of the fishery products from these vessels are exported

III.4. The primary objectives of government industrial fishing sector development is to ensure that responsible fishing is practiced and that adequate fisheries resource rent (licenses and royalties, etc.),

³ Government of Sierra Leone, Ministry of Fisheries and Marine Resources, *Sierra Leone Fisheries Policy*, March, 2003.

is obtained, adequate employment opportunities are created and that the regulations governing industrial fishing are adhered to.

III.5. The government’s recent policy statement says that in striving to achieve the objectives government shall:

- Enforce existing regulations in landing of catch for local consumption;
- Promote the establishment of a central fishing harbour to facilitate proper handling and processing of industrial catch;
- Facilitate and encourage all industrial fishing vessels to employ the percentage of qualified Sierra Leoneans as stipulated in the fisheries regulations;
- In the short term, facilitate the provision of shore-based facilities for repairs such as slipway or Synchronlift;
- Ensure that hygienic standards on vessels and land based facilities should be maintained;
- Endeavour that proper rents and fees accrued to government are paid;
- Focus on increasing issuance of licences in order to maximize revenue from the sector;
- Facilitate and encourage private sector participation in industrial fisheries development;
- Undertake scientific research on all aspects of the fisheries;
- Emphasize the reduction of by-catch rates, promote utilization of discards for other uses;
- Undertake periodic surveys to establish mesh sizes and infringements on fishing gears;
- Facilitate the establishment of cold store-facilities, in large provincial towns including refrigerated trucks for distribution and marketing;
- Ensure the delineation of maritime boundaries;
- Develop cooperation with sister countries for the management of shared stocks (straddling and migratory stocks); and
- Encourage the participation of entrepreneurs in fish marketing and distribution.

III.6. The complete lack of a proper fish landing and handling facilities has led to loss of foreign exchange in such activities as transshipment by both local and foreign fishing vessels as well as repair and servicing of fishing vessels operating in Sierra Leone and other countries in the region which have to travel all the way to Dakar and Las Palmas to repair and service their vessels.

III.7. The current fish landing method is poor. This has sometimes led to loss of lives due to illicit transshipment, landing of poor quality fish and false declaration of the exported fish catch. This has contributed to revenue loss to the Government as well as to difficulties in meeting EEC fish hygiene standards, the major market for Sierra Leone’s fish export.

III.8. With the exception of the Sierra Fishing Company, small local industrial fishing companies cannot afford the cost of installing cold storage facilities and are therefore faced with the problem of storing their catch. This has the repercussions of a high risk of fish spoilage due to the uncertainty of a

reliable cold storage facility, often causing a shortage of fish supply to the market, leading to fluctuations in the price of fish.

III.9. It is anticipated that with the provision of centralized fish landing and storage facilities, the frequency of illegal practices should be much reduced, foreign exchange generated, and employment created in servicing and repair of fishing vessels. Furthermore, the facilities would create the opportunity for fishing companies to fulfil their surrender obligations as required by the Fisheries Management and Development Act, thus offering the possibilities of further expansion of the domestic fish trade.

III.10. The construction of a fishing harbour complex will facilitate the collection and distribution pattern of fish in the local fish trade and since this is dominated by women, it will promote their socio-economic status.

III.11. One of the advantages of the establishment of a fishing harbour complex should be the reduction of pollution from trawlers, which should be required to berth properly for servicing, refuelling, and for disposal of waste.

III.12. Finally, the construction of a fishing harbour complex would generate the following:

- Reduce the social cost of landings;
- Increase landings of catches and thus, encourage on-shore processing of catch with the corresponding increase in value added and industrialization opportunities;
- Attract landings of catch from neighbouring waters;
- Provide a boost for the fishing fleet service industry;
- Facilitate land based monitor, control and surveillance activity; and
- Facilitate the assessment activity.

IV. PROJECT CRITERIA AND OBJECTIVES

A. Project Objectives

IV.1. The project aims at maximizing foreign earnings, income and employment from Sierra Leone’s fisheries sector through controlled transshipment and the provision of services and repairs to industrial fishing vessels. It also aims to provide an improved system for monitoring, control and surveillance of Sierra Leone’s EEZ, as well as good quality fishery products to the domestic and export markets, and to enhance the local population’s access to fish protein.

B. Project Design Criteria

IV.2. The project involves the design, feasibility studies and construction and operation of a fish harbour complex in Freetown, the capital of Sierra Leone. The design of the components of the proposed project is based on a number of criteria described below.

(i) Trans–Shipment Terminal

IV.3. Trans–shipment, with all its associated problems of control, is presently being carried out at sea. The proposed trans–shipment terminal should be designed to handle as much of the foreign caught fish as possible. Due consideration should also be given to attracting other operators in the trans–shipment business by providing efficient facilities at competitive prices.

IV.4. Over the last 20 years the industrial fishing fleet has consisted mainly of demersal trawlers, shrimpers, canoe support vessels and purse seiners. The number of licensed vessels reached a peak in 1987, after which there was a gradual drop, principally due to the withdrawal of the Soviet fleet, and the effect of the rebel war in the 1990s.

IV.5. In the late 1980s over 25% of licensed vessels were over 500 Gross Registered Tonnage (GRT). The typical sizes of industrial (mainly foreign owned) fishing vessels in Sierra Leonean waters during the last decade, are summarised in Table 4.

Gross Registered Tonnage (GRT)	Shrimp Trawlers (%)	Demersal Trawlers (%)
Up to 100	30	4
101 – 300	64	60
301– 500	5	33
501 – 800	–	3
Over 800	–	–

Source: MFMR, 2003.

IV.6. The present estimated maximum monthly catch, frozen onboard, amounts to approximately 8 500 Tons per month, of which 85% or 7 300 is trans–shipped for export, with the remaining 15% sold on the local market. The estimated future trend for the sale of fresh fish on the local market is expected to rise to between 20 and 25%.

IV.7. The *Maritime Protection Service of Sierra Leone* (MPSSL) reported that the export yield is usually trans–shipped to 2000 GRT reefers calling off Freetown approximately once a week. Trans–shipment is usually carried out by single vessels; however, simultaneous trans–shipment by 2 or even 3 vessels, though not very common, has been experienced in the past. The reefers calling at Freetown have usually proceeded to Las Palmas to trans–ship to larger vessels, in effect acting only as feeder vessels.

IV.8. In planning the trans–shipment terminal, thought has been given to the idea of attracting the larger reefers themselves (Table 5), thereby cutting out the middle trans–shipment at Las Palmas and generating a leaner, more efficient contact with the end users of the exported resources.

Vessel Size (GRT)	Displacement (tons)	Draft (m)	Length (m)	Berth Draft (m)	Berth Length(m)
2,000	2,667	4.90	75	5.50	90
3,000	4,000	5.60	89	6.50	105
4,000	5,333	6.10	101	7.00	120
5,000	6,667	6.60	111	7.50	130
6,000	8,000	7.00	119	8.00	140
7,000	9,333	7.40	126	8.00	145
8,000	10,667	7.70	132	8.50	155

IV.9. The basic layout of the terminal consists of 4 unloading berths, each 75 m long, capable of handling four 600 GRT vessels simultaneously. All the frozen fish landed should be first weighed and then stored in bonded cold stores, each with a capacity of 1,000 tons and providing a total storage capacity of 8,000 tons. Lengthwise, the four berths provide enough space for an 8,000 GRT reefer vessel to moor alongside. After initial dredging, depths in front of the terminal can be maintained relatively cheaply by occasional dredging only, so that the trans-shipment operation can be carried out by a single 8,000 GRT vessel. Ideally, the trans-shipment terminal should be built in phases, with berths 1 and 2 under the first development phase and berths 3 and 4, if needed, under the second development phase.

(ii) Ship Repair Facility

IV.10. Basic ship repair facilities in Freetown that are currently available to the fishing industry consist of a 400 ton Synchrolift with one repair bay, owned by the Sierra Fishing Company, and 550 GRT slipway owned by the *Sierra Leone Ports Authority*. However, both facilities are in need of rehabilitation and repairs, which the owners expect to be undertaken over the next two years. Until such time as repairs are completed, all repairs must be done in neighbouring countries, such as Las Palmas, Abidjan and Dakar. Even when fully operational, these facilities will only be able to handle simple maintenance activities such as scraping and repainting of hulls. More complex repairs must continue to be undertaken in other facilities in or outside the country.

IV.11. Assuming that all steel vessels will need slipping at least once a year for regular maintenance (inspection, scrubbing and painting) the Synchrolift of Sierra Fishing Company has a potential of 40 vessels per annum whereas the slipway of Ports Authority can have a potential of 22 vessels per annum, assuming it services only fishing vessels. Depending on turnaround time, both facilities may be able to handle other foreign vessels for both maintenance and repairs.

IV.12. With a projected total fishing fleet of 120 vessels (the 1992 total, which is less than the 1987 maximum), the new proposed ship repair facility should be designed to handle up to 60 vessels (50% of the projected foreign owned fleet that is expected to operate in Sierra Leonean waters together with the total local fleet, except for the Sierra Fishing Company’s fleet, which would be serviced at the Company’s own facility.⁴ A 600 ton Synchrolift/Slipway would be required.

(iii) Landing Jetty

IV.13. The required length of the fish landing jetty should handle the estimated local fleet of trawlers of at least 30 vessels (excluding 15 of the 20 vessel fleet of the Sierra Fisheries Company), in addition to canoe-type vessels on a flexible basis. The required berthing space can be estimated as follows:

Vessel Type:	100 ton displacement shrimpers	No of Boats:	30
Dimensions:	Length 25 m, Draught 2.5 m	Landing berth occupancy per boat/trip:	1 day
Fishing Cycle:	7 day trip (5 days fishing, 2 days travel)	Occupancy 30 boats for 35 trips/year:	1,050 days
No Trips/Year:	35	No of berths required 1,050/365:	3 berths
No Days in Port:	3 days (1 day unloading, 2 days tied-up)	Length of jetty (25+10) x 3:	105 m

⁴ Sierra Fishing Company currently has five 120 GRT trawlers on order, with projection that it would have about 20 vessels by 2010. Without any expansion of the capacity of its current facilities, Company officials estimate that 5 of its vessels would need to have landing and major service facilities in 2010.

IV.14. The landing jetty should be equipped with small (2 ton) discharge cranes to allow any vessel to be discharged (including canoe–type vessels) irrespective of the tide level.

IV.15. After discharging their catch, the above vessels will probably (depending on the season) spend a further 2 days in port for refuelling, taking on supplies and general crew rest. A tie–up jetty is not anticipated. Instead, a *tie–up area* should be set aside for the vessels to moor in once fuel and stores have been taken on board (No of berths required $2 \times 35 \times 30 / 365 = 6$ berths).

(iv) Ice Production

IV.16. Assuming that the near distance fleet (excluding the Sierra Fisheries fleet) will consist of approximately 30 shrimp trawlers and some 30 Ghanaian type vessels, the probable daily ice requirement should be

Vessel	No.	Daily Catch	Type	% Ice	Daily Requirement
Shrimper	30	300 kg	shrimps	100%	45 ton/7days = 6.5 ton
Ghana	30	1,200 kg	Sardine	50%	18.0 ton
Distribution	0	22,500+36,000	Sardine	30%	18.0 ton
Total requirement 42.50 tons, say 50 tons/day.					

(v) Cold Storage and Freezing Capacity

IV.17. The Sierra Fishing Company is currently constructing a new 42 m x 20 m fish processing plant for cephalopods, shrimps and fish that is expected to service 10–15 of its trawlers. Both the freezing and cold storage capacities for fresh fish landed in new fish harbour should be decided by the companies operating within the harbour area. For this purpose, a typical standard, factory–type plot or building should be provided. It will then be up to the factory operator(s) to decide on the size of the cold store and freezing capacity.

V. PROJECT DESCRIPTION

V.1. The fish harbour complex can be developed in stages to maximise returns with minimal initial investment. Over time, fishing related activities at the port are expected to grow due to the following:

- As the vessel repair facility gains confidence and experience as a commercial venture, more foreign vessels should be tempted to call–in for repairs;
- As more artisanal fishermen become aware of the one–stop shop facility of the proposed port, more local vessels will turn up to sell their catch at the port, especially high value species;
- If the proposed land–based trans–shipment operation proves to be competitive, operators may opt for larger and more efficient vessels (5,000 to 8,000 GRT vessels) than at present.

V.2. Annex 1 shows the outline location of the four proposed development stages to be implemented as fishing related activities start to expand, while Annex 2 provides details of the location of the different facilities.

Stage 1: Kissy East

- ***Component 1 (Development of Infrastructure)***
 1. Feasibility studies and detailed engineering design
 2. Vessel repair facility (600 t) with associated support and training facilities
 3. Fish landing jetty (200 m)
 4. Service jetty (60 m)
 5. Trans-shipment terminal (140 m)
 6. Bonded cold storage (2,000–4,000 t)
 7. Landfill (3 factory sites)
 8. Industrial and commercial infrastructure
- ***Component 2 (Environmental Management)***
 1. Training and capacity building of stakeholders
 2. Monitoring, control and surveillance system
 3. Environmental management
- ***Component 3 (Project management)***
 1. Creation of a private share holding Company to run the facilities
 2. Technical assistance

Stage 2: Kissy East Trans-Shipments Terminal (140 m)

1. Bonded cold storage (if needed)
2. Landfill (3 factory sites)

Stage 3: Kissy East Landfill (2 factory sites)

Stage 4: Kissy West Landfill (to suit investors)

V.3. The detailed description of activities presented below refers to Stage 1 only.

Component 1: (Development of Infrastructure)

1. Feasibility studies and detailed engineering design

V.4. Feasibility studies and detailed engineering designs are necessary as a first step in the implementation of the fish harbour complex project. It can be implemented by a team of consultants or by a private sector firm interested in operating the facility on a Build-Operate-Transfer (BOT) basis. The consultants should collect all the relevant technical, economic and financial data necessary in order to prepare a detailed pre-feasibility study for Phase I of the proposed fisheries harbour complex.

V.5. The terms of reference of the consultants would include the following:

- Reviewing all existing documents and available information pertaining to the project area and fisheries sector;
- Topographic/hydrographic surveys of the area selected for the establishment of the shore-based facility;

- Preliminary geotechnical investigations of the same area;
- Preparation of layouts and preliminary designs and detailed cost estimates of the proposed facilities;
- Identification, listing and evaluation of the financial return on the proposed services to be offered by the complex;
- Preparation of financial and economic analysis of the proposed complex;
- Identification, listing and evaluation of the prospective candidates for the proposed fisheries harbour company;
- Investigation of all the legal, juridical and financial aspects of setting up the proposed share holding company including long term leases, mandates etc.
- Preparation of a manpower development plan for the complex
- Preparation of an environmental impact assessment of the complex.

V.6. Preparation of final designs, specifications and tender documents is not required at this stage and would be provided under a follow-up contract, or by the private sector firm implementing the project on a BOT basis.

2. Dredging and Land fill

V.7. Dredging of the estuary bottom will need to be carried out in front of the of the repair yard, landing jetty and perhaps in front of the trans-shipment terminal. The minimum guaranteed depth in front of the jetties should be around 4.0 m below chart datum. The depth of water in front of the trans-shipment terminal will most probably (pending further on-site investigations) be in the region of 8.0 m below chart datum, requiring no dredging.

V.8. If laboratory tests show that the dredged material is suitable for landfill, it should be pumped ashore to form the reclamation area. Sand should also be dredged from predetermined sites within the estuary, subject to an environmental impact study, and pumped ashore to complete the reclamation. The fill should be levelled off to ensure a finished land level of 4.80 m above chart datum or 1.50 m above Highest Astronomical Tide.

3. Trans-Shipments and Fish Landing Jetty

V.9. The main jetty, extending from the trans-shipment terminal down to the service area, should consist of a reinforced concrete platform supported on two rows of vertical piles and two rows of battered piles. The landfill should be finished-off in a 1:1 slope protected by a layer of adequately sized graded rubble. Vertical box piles provided at adequate intervals to absorb impacts at any level of tide (Figure 3).

V.10. The jetty along the trans-shipment terminal and the service area should be provided with refuelling points, potable water hydrants and adequate lighting for night time operations. The jetty along the fish landing area should be equipped with 2 ton electric cranes for the rapid discharge of fish from any type of vessel irrespective of the tide level.

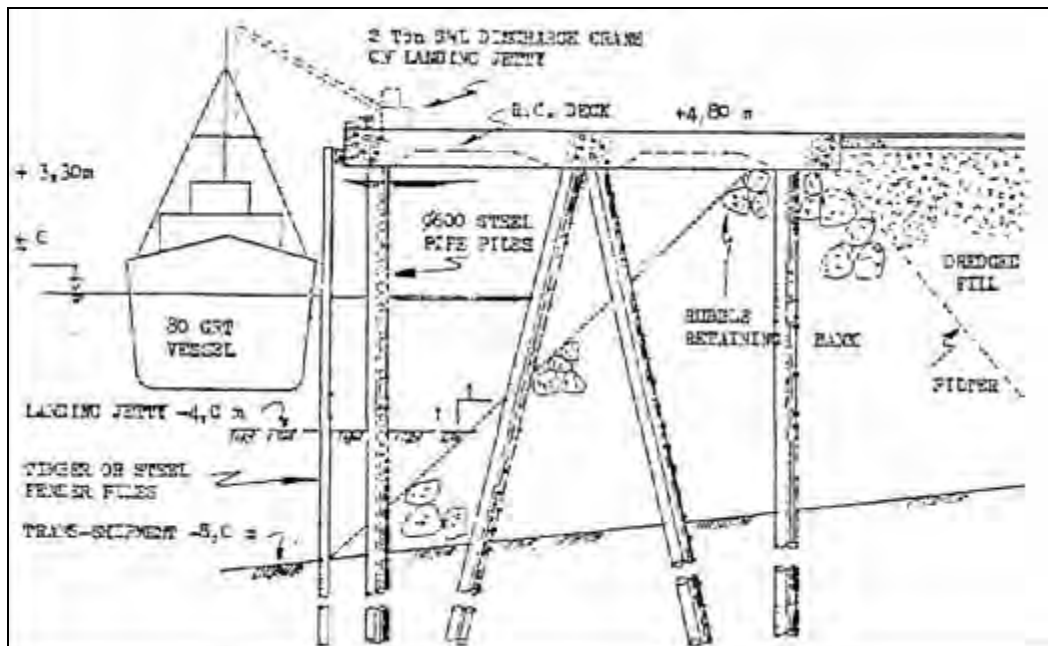


Figure 3: Jetty Cross-Section

4. Floating Service Jetty

V.11. The service area should consist of 50 m of standard jetty for the servicing of the shrimper-type vessels and a floating platform for canoe-type boats. This platform will consist of a steel pontoon, 12 m x 3 m wide, riding 4 piles driven into the sea-bed, Figure 4. The pontoon should be provided with a fuel and potable water outlet in order that vessels may refuel irrespective of the level of the tide. A hinged gangway will provide access to the store and ice factory located in the service area.

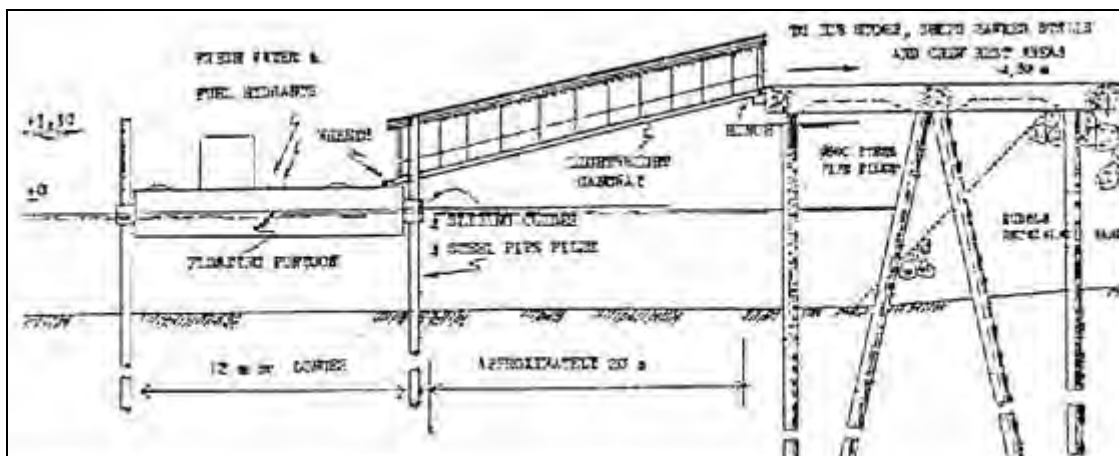


Figure 4: Floating Service Pontoon

5. 600 Ton Slipway

V.12. The slipway should consist of a rail mounted trolley running along two flat footed rails set 4.0 m apart. The rails should be clamped to reinforced concrete foundations and laid on a prepared bed of level rubble (Figure 5). The slipway should be designed to a 1:18 gradient, approximately 120 m long. A 25 ton winch should be provided and installed at the extreme end of the slipway. The level of the toe of the slipway will enable vessels to be slipped with the normal neap tides, thus increasing the access ‘window’ available. The slipway should also be equipped with a guide jetty running along the first 70 m of the slipway. On the shore side, four working bays should be provided for the simultaneous repair of four vessels, which should be side-slipped into place with the aid of side travelling trolleys. A workshop should be constructed to serve the slip way.

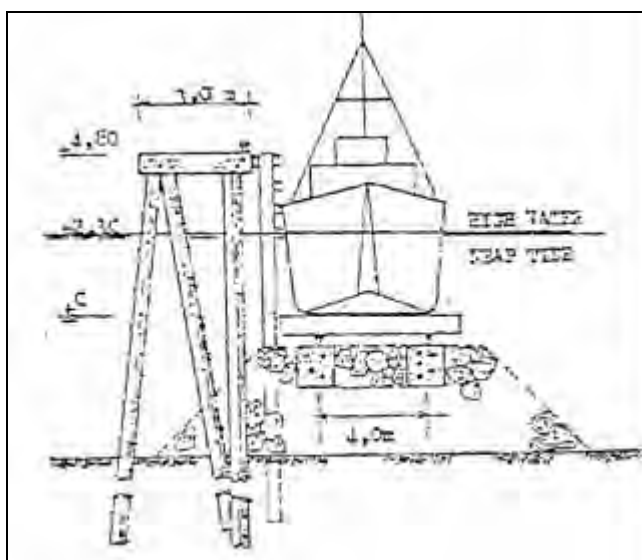


Figure 5: Cross-Section of Slipway

V.15. To avoid congestion around the entrance to the port, an area outside the port’s perimeter should be made available to local hawkers selling fresh fish to passers-by. The area should be provided with basic hygiene facilities and running water to attract the hawkers and prevent them from spilling out on to the adjacent roads.

7. Services, Utilities and Administrative Office facilities

V.16. Within the fenced-in area of the proposed port, a comprehensive package of services should be installed to render the port a self-contained work area. An administration block should be constructed to provide office space for (a) Fishing port company headquarters, (b) Branch Office of the Ministry of Fisheries and Marine Resources, (c) Customs and port Security Company, (d) Police and Immigration, (e) Maritime Surveillance Company, (f) Quality control laboratory, (g) Port operations unit, (h) Port maintenance unit, and (i) a small clinic. The administration block should be situated towards the entrance of the port complex and should be provided with its own parking area.

6. Access Roads and Parking

V.13. The access road from the main road, Pilgrim’s way, should be repaired. No widening is envisaged. Inside the port area, paved access roads should be constructed to service all the factory plots, office blocks and various other services. 4,500 m² should be reserved for parking. Unauthorised vehicles should not be permitted within the fenced port area.

V.14. Outside the fenced-in area, where the wholesale market is located, a further 1,500 m² of space should be provided for wholesale buyers. A private minibus service will also be encouraged to operate from this parking lot to Freetown centre.

8. Commercial Business Space

V.17. Commercial premises should be constructed and leased out to operators of business support activities. In particular, the complex will require two commercial banks, two travel/forwarding agents, two insurance companies, a telecomm centre independent of the national network (via satellite link), stationary suppliers, etc. Commercial premises should also be provided for local stockists of engine spares, shipboard communications equipment, fishing gear, marine paint, and general chandlery. Provision should also be made for canteen services in the form of restaurants and a hawker–centre for office staff and port labourers. Commercial premises should be leased out for at least two restaurants to set up within the commercial centre.

V.18. The Hawker Centre outside the port facilities should have stalls that should be made available street hawkers, say 20. The hawker–centre is intended to provide hot food, snacks and drinks at prices similar to the street side hawkers and amenities for visiting crews, like showers, toilets etc. A food supplies store should also be provided to supply fishing vessels with bulk supplies at wholesale prices.

V.19. In practice, the port should have facilities to operate on the basis of a one–stop shop where everything connected with the industry should be made available at competitive prices.

9. Ice Plant

V.20. A 50 ton/day ice plant and accompanying 150 ton ice store should be provided within the port area to sell ice to authorised port users.

10. Wholesale Market

V.21. A wholesale market should be provided for the sale of fresh fish to the wholesalers. The market itself should lie outside the port perimeter fence (to avoid congesting the port area) but access should be restricted to wholesalers only.

11. Refuelling Facilities – Water and Fuel

V.22. Fuel storage facilities within the port area should also provide fuel for the quayside refuelling facilities. The refuelling facilities at the trans–shipment terminal will consist of at least 3 metered hydrants inside a service duct at the quayside. At the service quay, a centralised system should provide refuelling points at both the quay and the floating pontoon jetty. Similarly, fresh water will also be supplied at the above points from the water storage tanks. Both fuel and water storage should be designed for at least 7 days supply.

12. Power and Lighting

V.23. The port complex should be provided with its own centralised power generating equipment. Power should be metered out to various users as well as to the general port infrastructure, such as the telephone system, lighting and air conditioning of the admin block and street lighting. Adequate lighting facilities will also be incorporated to permit night time operations, such as trans–shipment and sorting, boat repair etc, thereby increasing efficiency and turnover. It is estimated that approximately 3,000 KVA would be required for Stage 1 operations.

Component 2: Environmental and Urban Management

1. Training and capacity building of stakeholders

V.24. In order to ensure that the project fits well into the Sierra Leonean economy, and that a stakeholders in the marine fisheries sector including artisanal fisher folk, fish processors and marketers, are fully informed about its potential, an information management system would need to be developed and put in place.

V.25. Because of the existing shortage of all categories of skills that would be needed to operate the complex, the complex should have training facilities to fill project related skill gaps. This would ensure that the project components are adequately manned with trained manpower (management, refrigeration, electrical engineering, ship repair, fish quality control, certified captains, engineers and crew, etc.). The training programs should make provision for overseas training where it is determined that setting up such training facilities within the complex would not be cost effective.

2. Fisheries monitoring, control and surveillance system

V.26. The project should make provision for the design, and implementation of a suitable monitoring, control and surveillance system for the EEZ of Sierra Leone. This can be either by strengthening the present systems implemented by the Sierra Leone Navy, or setting up of a joint venture GOSL – private sector system, with suitable radar installations, air and sea patrols.

3. Environmental management

V.27. The fish harbour complex will need to have a good environmental management plan in place to prevent its becoming a source of pollution of the environment. The plan will be developed and implemented in close collaboration with the *Environmental Protection Agency of Sierra Leone*.

Component 3: Project management

1. Private Sector Management

V.28. The complex should be run by a private share holding company to run the fisheries complex, and possibly another (joint venture with the GOSL) undertake monitoring, surveillance and protection of the EEZ of Sierra Leone. Experience from other countries has shown that such complexes are best managed outside the public sector even if most of the capital investment comes from the State.

2. Technical assistance

V.29. The project would require both long term and short term Technical Assistance (TA) inputs. The long term TA required for staffing the Project Management Unit during the construction phase of the project (estimated at 3 years), would be in the fields of: (a) port management; (b) port engineering, (c) architecture and (d) international procurement

V.30. Short term TA inputs for preparation of feasibility and design studies, would include: (a) ports engineer, (b) marine surveyor, (c) architect, (d) refrigeration engineer, (e) services marketing expert, (f) economist, (g) legal specialist, (h) manpower development specialist, (i) environmental evaluation specialist.

VI. INDICATIVE COSTS

VI.1. Very preliminary costing for the project, including the costs of feasibility studies and engineering designs, is shown in Table 6. This is based on estimates originally prepared in 1991, adjusted for price inflation.

Table 6: Cost Summary per Component for Stage 1 – Fish Harbour Complex Facilities, Freetown	
Item	US\$
Feasibility and Engineering Studies (900 person–days)	900,000
Vessel Repair Facility (600t)	
120 m slipway complete with foundation, rubble, R.C. frames, rails, pawl rack	2,949,400
Approach jetty including piles, deck and fendering	1,375,500
Paving including cross–rails	1,158,700
Workshop and office building	739,200
Equipment, including 25 t winch and trolleys	792,000
Tools for workshop, including lathe power tools, forklift, etc.	660,000
Sub–total	7,674,800
Jetty (service + landing + trans–shipment; total est. length of jetty = 510 m)	
Jetty substructure in steel piles	8,580,000
Jetty substructure in RC	2,640,000
Fittings including fenders, bollards, hydrants, etc	
Rubble retaining bank including geotextile	660,000
Sub–total	13,860,000
Floating Pontoon Jetty	
4 Uniflote pontoons	174,200
4 large diameter steel piles	100,400
Lightweight Aluminium gangway	132,000
Sub–total	406,600
Dredging And Reclamation	
Dredging of approximately 500,000 m ³ of clean sand and pumping ashore for reclamation of around 8 ha	
Sub–total	3,960,000
Trans–Shipment Cold Storage	
4 bonded cold stores, each of 1 000 t capacity including machinery	5,940,000
Weighing equipment	264,000
Quayside equipment including forklifts 50 t mobile crane, etc.	396,000
Sub–total	6,600,000
Buildings	
Administration block – 800 m ²	439,560
Chandlery and stores – 1,200 m ²	567,600
Commercial centre – 1,000 m ²	488,400
Fish sorting bay – 600 m ²	290,400
Supplies store	95,040
Wholesale market	195,360
Power station	132,000
Shipyards offices	125,400
Shipyards workshop	237,600
Winch room	21,120
Security cubicles (7)	92,400
Sub–total	2,684,880

Item	US\$
Standard Factory Units	
Standard factory shell consisting of 400 m ² office block, services and steel factory shell built to a uniform standard, area 6,500 m ² – Each shell	3,168,000
Sub-total (3 Shells)	9,504,000
Utilities	
Roads and parking areas 80,000 m ² concrete paving	528,000
Water storage & supply	660,000
Fuel storage & distribution	660,000
Electricity supply & distribution	3,300,000
Ice plant and store	1,320,000
Sat-link telephone network	132,000
Public lighting	330,000
Miscellaneous: waste-oil disposal sewage treatment, fire fighting, greenery, petrol station, etc.	858,000
Sub-total	7,788,000
Environmental Management	
Training and capacity building of stakeholders	500,000
Monitoring, control and surveillance system	5,000,000
Environmental management	1,000,000
Sub-total	6,500,000
Project Management	
Capital for creation of a Private Shareholding Company	2,000,000
Technical assistance (12 man-years)	3,000,000
Sub-total	5,000,000
Grand Total	64,000,000
Source: Based on Sciortino, 1991, adjusted for price inflation at 2.3% (Global Commodity price prospects, ...).	

VII. PROPOSED SOURCES OF FINANCING

VII.1. The Government of Sierra Leone has long stated its interests in attracting financing for this project. In 1995 the Government of Iran indicated its interests in financing about 45% of the then indicative costs of US\$44.0m, i.e. US\$19.8m. It is possible that the offer is still valid, although this could not be confirmed at the time of preparation of the project. Also, some private sector international investors have recently indicated some interests in funding up to 80% of the costs on a Build-Operate-Transfer (BOT) basis. Government’s contribution in-kind to the project (value of land, some staff salaries, etc.) is expected to amount to 10–20% of the project costs.

VIII. PROJECT BENEFITS

VIII.1. The main benefits anticipated from the project are:

- Improved ability of the Government to effectively manage the fish industry in the country, including improved stock management;
- Increase in foreign exchange earnings from the transshipment and export of fish;
- Increase in employment for all categories of artisans and employees in the fishing sector;

- Increase in income and employment of women who dominate the domestic fish marketing sector;
- Increase in the supply of fish protein to the population of Sierra Leone;
- An improvement in general infrastructure of the Kissy area, and for fish handling in Sierra Leone;
- Reduction in illegal export/transshipment of fish from Sierra Leone;
- Growth in human capital formation as a result of the training/apprenticeship of all categories of workers in the domestic fish industry.

VIII.2. The main beneficiaries of the project would be:

- The budget of the Government of Sierra Leone which would have accessed to increased revenues for the fishing industry;
- Small scale local investors whose entrance into the fishing business should be facilitated by availability of domestic facilities for all aspects of industrial fishing;
- Poor urban household for whom the supply of fish protein, the most important source of protein, is likely to increase.

IX. IMPLEMENTATION ARRANGEMENTS

IX.1. The project should be implemented under the overall supervision of the *Ministry of Fisheries and Marine Resources*. For this purpose a special *Project Implementation Unit* (PIU) should be established in the ministry. It should be staffed by appropriate mix of technical officer (Port engineers, Architect, Fish experts, Economist, etc.) to effectively supervise the implementation of the project, even if it is to be financed on a BOT basis. There might be potential for the PIU to evolve into a *Harbour Management Authority*, after construction of the project. All construction work would be contracted to appropriate private sector firms using Standard International Competitive Bidding practices.

X. ISSUES AND PROPOSED ACTIONS

X.1. There are a number of areas which would need to be examined in detail as part of further processing of this project. They include the following:

- **Participation of the private sector:** Participation of the private sector is clearly crucial to successful implementation of this project. For such a major capital project the incentives for such investment in Sierra Leone must be competitive. An assessment as to whether the soon to be published incentive section of the recently enacted Investment Code for Sierra Leone are attractive enough to attract such investment, as well as the prospect for bilateral funding, should be an early part of further project preparation.
- **Site suitability:** Although preliminary indications are that the site chosen for the fish harbour is suitable, this needs to be properly assessed as part of further project preparation. Since the initial studies, many ship wrecks have been deposited within the

site, and it would be established whether clearing the wrecks, tide and depth would allow construction of the harbour at reasonable cost.

- **Environmental:** The project will have an impact on the environment of the area. Including possible changes in tides and waves that may adversely affect existing facilities such as the Sierra Fishing Company’s activities, as well as those of local fishermen and sand miners. These need to be clearly assessed.
- **Project scale:** By Sierra Leone standards, this will be a major capital investment project. Experience with such projects in terms of difficulties with financing and cost over runs may point to the need for scaling down the project and reducing the number of components implemented under Stage 1 of the project. Alternative, scaled down versions of the project may need to be developed early in further project preparation.

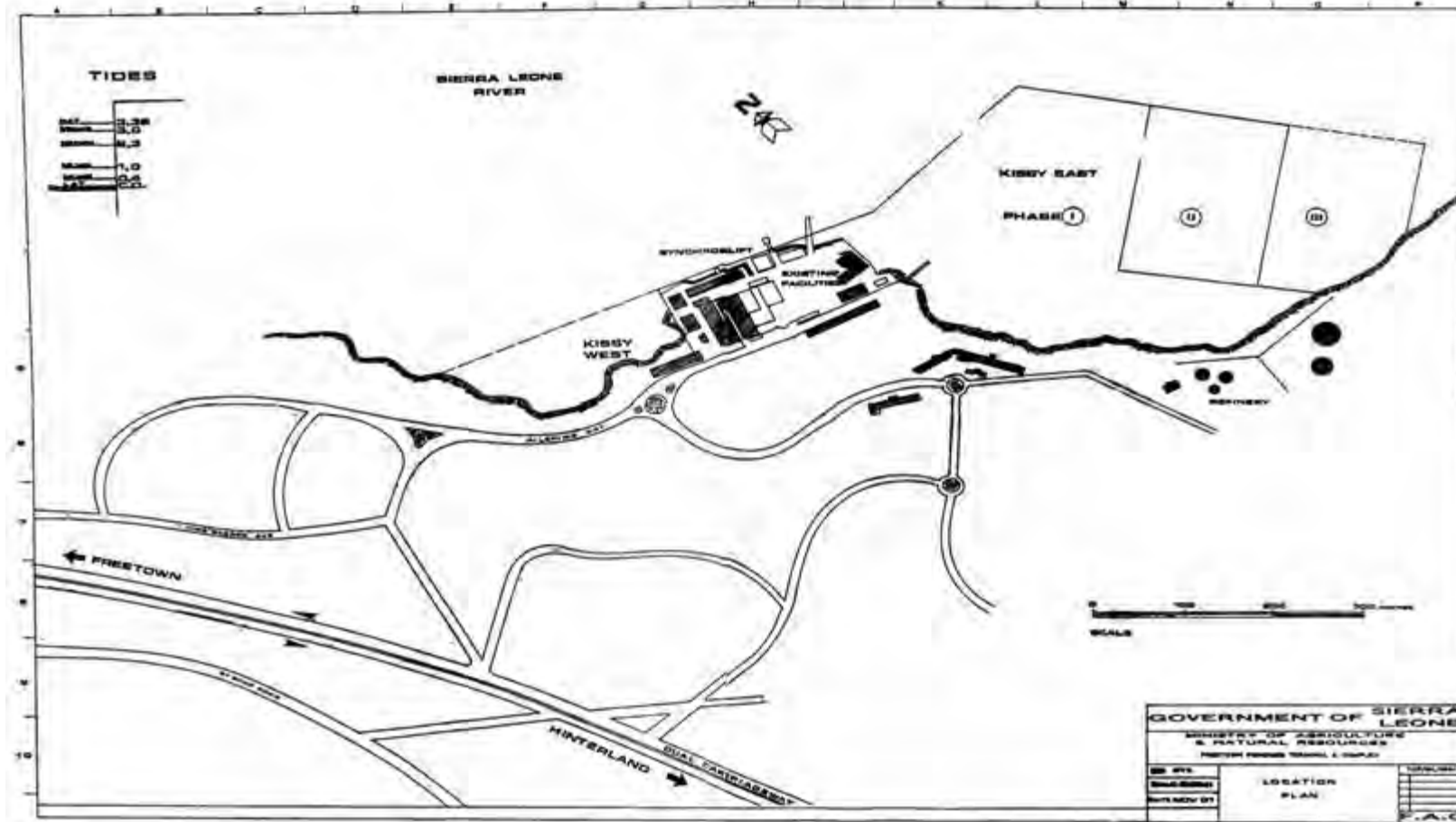
XI. POSSIBLE RISKS

XI.1. There are two main risks that can be identified at this stage:

- **Viability and attractiveness of Sierra Leone’s fish stocks:** The success of the project in the long run depends on enough fish trawlers being attracted to fish in Sierra Leone’s waters and to use the port facilities. There are no recent estimates of the sustainable fish stocks of Sierra Leone, and changes in the species of fish caught in recent years may indicate some level of over fishing. However, the gradual build up in the number of licensed vessels after the end of the rebel war indicate continued interests of both local and foreign investors in fishing in Sierra Leone’s *Exclusive Economic Fishing Zone*.
- **Interests of a foreign fishing fleet in using shore-based repair and transshipment facilities in Sierra Leone,** versus continued use of home-based facilities, even at higher costs. The experience with multinational companies in seeking lowest cost services overseas gives room for optimism. However, this implies that the project’s services must be provided efficiently and at competitive prices.

Appendix 1: Location of Different Stages of the Proposed Fish Harbour Complex, Freetown, Sierra Leone

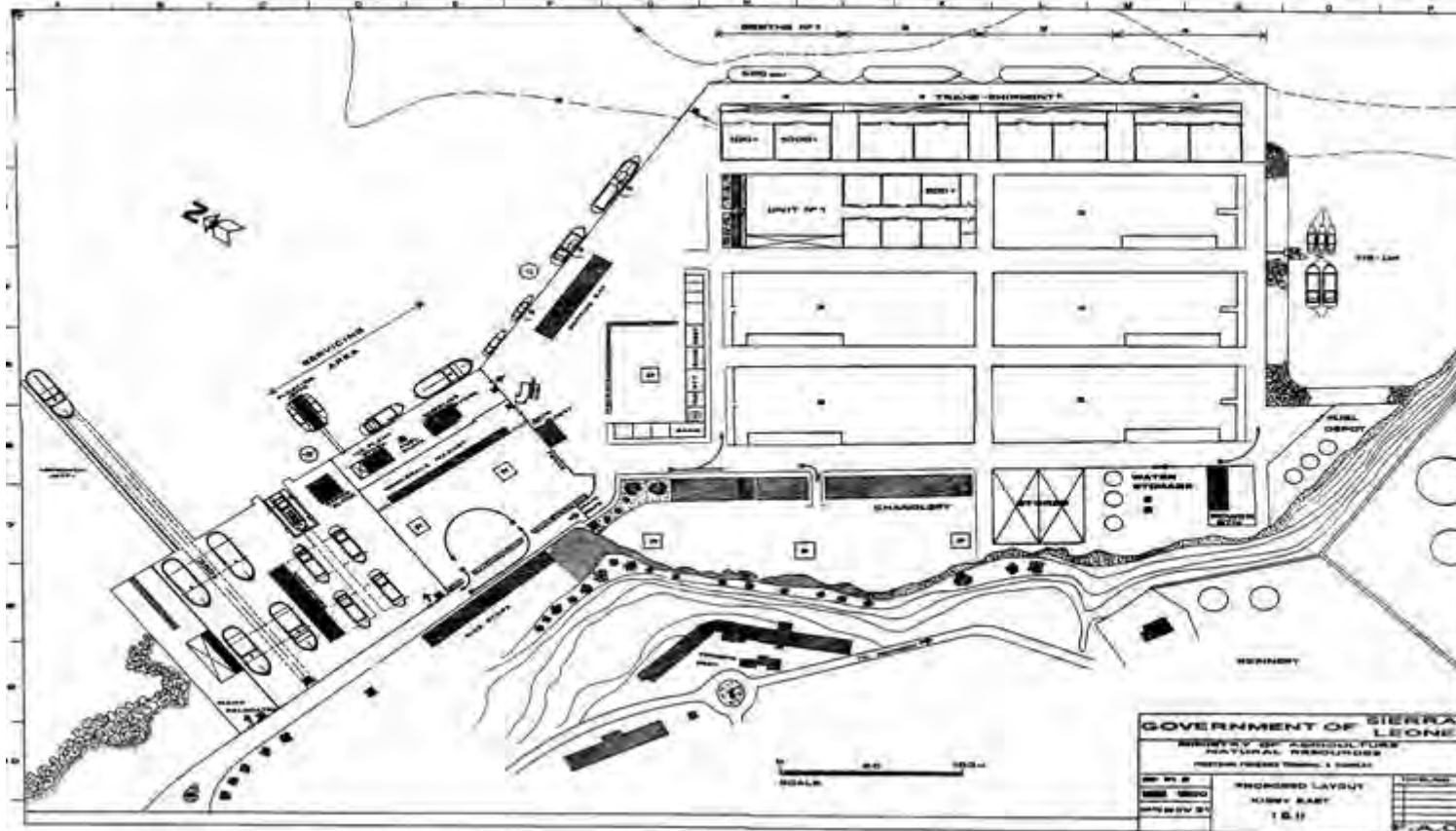
IStage 4IStage 1I. Stage 2I ...Stage 3 I



(Source: Sciortino, 1991)

Appendix 2: Implantation of Different Facilities in the Kissy East Stages of the Proposed Fish Harbour Complex, Freetown, Sierra Leone

I...Stage 1... I IStage 1IStage 2IStage 3I



(Source: Sciortino, 1991)