IV. THE FISHERIES SUB-SECTOR

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1. INTRODUCTION

The methodology of the study for the assessment of the fisheries sub-sector entailed reviewing the existing literature on fisheries and aquaculture; questionnaire surveys; consultations, discussions and interviews with diverse public and private sector stakeholders and actors (individually and in groups) including the Minister of Agriculture and other senior officials of the Ministry, FAO Resident Representative, personnel of the United Nations Mission in Liberia, representatives of industrial fishing companies, representatives of Non-Governmental Organizations, representatives of Community Based Organizations; officials of Local Government agencies, fisher folk and fish farmers including ex-combatants and women. Field visits were undertaken in Monrovia and environs; in Bong and Nimba Counties in the North and North East; Bomi and Cape Mount Counties in the South West; Margabi, Grand Bassa and Rivercess Counties in the south. Industrial fish processing establishments, artisanal fish landing sites and aquaculture establishments were also visited. The study also included data collection and analyses; the Bureau of National Fisheries (BNF) compiled most of the data. Information was also obtained from some international NGO's in the form of interviews and from Annual Reports.

Although the literature review provided useful data and information (to be verified and validated), much more information was obtained from the discussions with key informants and beneficiary groups. The group discussions were participatory and elicited more in-depth and revealing information and reactions. Whereas institutional memory is evidently lacking in Government institutions, the fisherfolk and the beneficiary communities have better recollections of past interventions and are clear about their constraints/problems and needs.

1.1 Background Information

Liberia has a coastline of 570 km and a continental shelf averaging about 34 km in width extending 200 nautical miles off-shore from the geographical baseline providing an area of about 20, 000 km^2 of fishing grounds. Liberia's continental shelf has considerable maritime fish resources and the most abundant species are Engraulis encrasicolus, Sardinella aurita, Decapterus spp, Caranx spp and Ethmalosa fimbriata. The main oceanic pelagic resources are tuna and tuna-like species such as bonito and marlin. Crustaceans such as shrimps and lobsters are less abundant but are of much higher value than finfish species. The pre-war estimated maximum sustainable yield (msy) of the continental shelf area was 180 000 tons per year. Liberia also has approximately 1 810 125 km of rivers that transverse the country and countless perennial swamps and inland water bodies with enormous potentials for increased production in inland fisheries and aquaculture. The estimated maximum sustainable yield (msy) for the inland fishery is 40 000 tons per year.

The fisheries sub-sector contributed 12 percent of agricultural GDP and 3.2 percent of the total GDP in 2002 and is a major source of revenue and foreign exchange earnings for the country. The sub-sector created job opportunities and income earnings for thousands of rural inhabitants particularly women; an estimated 33 121 full-time fishers and processors are operating in both marine and inland fisheries.

1.2 Institutional and legal frameworks for sustainable fisheries and aquaculture

The institutional framework for the management of fisheries and aquaculture is within the purview of the Ministry of Agriculture (MOA) through the Bureau of National Fisheries (BNF). The MOA is the highest Government institution responsible for the management and development of the agriculture sector of Liberia. The Minister of Agriculture supported by four Deputy Ministers and four Assistant Ministers heads the MOA. The MOA is divided into four main Departments namely: Department of Technical Services; Department of Planning and Research; Department of Administration; and Department of Extension and Rural Development. The Bureau of National Fisheries is sub-divided into Artisanal and Marine, Aquaculture and Inland Services, and Research & Statistics divisions. The Coordinator and Deputy Coordinator of the Bureau of National Fisheries (BNF) head the Bureau. The MOA makes policy pronouncements on fisheries and aquaculture and the BNF implements Government policy.

The BNF was created by an Act of the National Legislature under the Natural Resources Laws of 1956 and charged with the responsibility of managing and developing fisheries and aquaculture in Liberia. The BNF is divided into 4 Units: Statistics, Marine Fisheries, Aquaculture and Inland Fisheries, and Research. The current staffing is shown in Table 1. The role of the BNF is to implement fisheries policy; formulate guidelines, rules and regulations to govern national fisheries and aquaculture for its planning, development and management. NGOs are also active in the fisheries sector (Table 2).

Table 1. Institutional capacity of the Bureau of Fisheries

N^{o} of Staff	N^{o} of Ph.D	N^{o} of M.Sc.	N^{o} of B.Sc	N^{o} of AA	N^{o} of Dip. & Cert.	High School	Below High Sch.
28	0	2	3	2	1	18	2
Specialty	-	Fisheries& Agronomy	Management	Aquaculture & Education	Maritime safety	-	-

Source: Bureau of National Fisheries (2006)

Table 2. List of NGOs in Fishery related Activity

Name of NGO	Type of Activity	Area of Operation
Lutheran World Service	Aquaculture	Maryland, Lofa, Bong, Montserrado, Bomi, Grand Gedeh
Samaritan Purse	Aquaculture	Bong, Lofa
Faimaba Fisheries Development Coop. Inc	Aquaculture & Artisanal Fisheries	Bong, Nimba & Montserrado
Catalyst, Inc	Aquaculture	Bong, Nimba & Lofa
Caritas	Artisanal fisheries	Maryland, Grand Kru
Kpan-kpan Gbo, Inc.	Artisanal Fisheries	Cape Mount, Bassa
BUCCUBAH	Artisanal	Bassa
Asur-Liberia	Inland fisheries Research	Bong, Nimba
Solidaritaire	Aquaculture	Bong
CUSD	Aquaculture	Nimba
German Agro Action	Aquaculture	Grand Gedeh
Action Against Hunger	Aquaculture	Grand Gedeh
SDP	Aquaculture	Bong
Africare-Liberia	Aquaculture	Bong, Nimba

Source: Bureau of National Fisheries (2006)

2. REVIEW OF PAST EXPERIENCE IN THE SUB-SECTOR

Traditional fishers have operated along the Liberian coast and inland waters for centuries mainly at the subsistence level. Fishers were catching fish to feed their families and excess catches were bartered for other essential commodities and goods. The first attempt at commercial fishing in Liberia was in 1848 when the then President of the country, Joseph Jenkins Roberts, converted his yacht into a fishing boat. The first fishing trawler to operate in Liberian coastal waters belonged to Woerman Company, a German company that operated in the country between 1938 and 1939. Fishing was a daily activity with the trawlers returning to port at the end of each fishing day and catches were sold immediately to avoid post harvest losses because of lack of means for preservation of fresh fish.

Considering the success of the Woerman Company and the realization of the potential important role of fisheries in national socio-economic development, the Government of Liberia, in 1952, requested the assistance of FAO and the United States Government to help develop its fisheries sub-sector. This marked the beginning of research activities in fisheries. Experts were sent from FAO and USA to assess the fisheries potential of the country. As a result of months of exploratory fishing, it was established that a medium striving fishing industry could be established in the country.

The industrial fishery began in the mid 1950's and targeted mainly the shrimp resources within the Sherbro fishing grounds, which extends into Sierra Leone. The Mesurado Group of Companies became operational in the early 1960s and developed into the most dominant force in Liberian fisheries. The company owned and operated more than 25 vessels, including shrimpers and double rigged trawlers. The company was owned by the Tolbert family and operated its own harbour and processing facilities with three thousand (3 000) metric tons of freezing capacity. Shrimp was the company's major export commodity, with a monthly shipment of about 60 metric tons to Europe and Asia. The success of the Mesurado Group of Companies was quickly followed by the installation of shore-based infrastructure including cold storage facility of 2 000 tons, an 18-ton per day blast freezer, and a dry dock and associated repair and maintenance facilities at the fishing pier in Monrovia harbour. The Mesurado Group of Companies is said to have been one of the largest fishing entities in sub-Saharan Africa until 1980 when she began to decline following the military coup. The company's facilities are now in complete ruins, with all the cold rooms completely looted and vandalized. The success of the Mesurado group led to the acquisition of a research vessel by the government of Liberia. However, the needed manpower capacities and policies were not developed to enhance research and fisheries development.

Despite the civil war and difficult operating conditions, seven fishing companies managed to survive catching an average of 222 tons per year of shrimps and 4 500 tons per year of demersal fish between 1996 and 1999. At that time, most of the industrial fishing companies had adequate processing facilities and were exporting frozen crustaceans (shrimps) and small quantities of frozen demersal fish species to Belgium, Greece, United Kingdom and America. Fish distribution and marketing from the coastal area to the interior of the country was done through a system of depots and agents but this activity ceased because of civil strife and the poor conditions of the roads.

In the mid 1970's, small-scale fish culture was begun with the construction of fishponds at Suakoko village in Bong County to conduct research on Tilapia nilotica. Aquaculture development moved fairly quickly into Lofa County in the early 1970s through the initiatives

of the American Peace Corps. By the late 1970s, small-scale aquaculture development had gained momentum and spread into Nimba County with support from the German Technical Cooperation through NCRDP. The World Bank through LCADP and BCADP also supported the development of aquaculture in Bong and Lofa Counties. Aquaculture however remained subsistent, with no major fish multiplication and distribution-taking place. There was not much research done on developing local species for culture, as exotic species of Tilapia and Carp were often brought in and comprised the main culture species.

Prewar interventions by Government to develop artisanal fisheries was aimed at reducing post harvest loses. Government set up a mini- cold room for use by the artisanal community in Robertsports, Grand Cape Mount County in the mid 70s. This again broke down due to the lack of capacity & community ownership for its management and interference by MOA officials.

3. ANALYSIS OF THE CURRENT SITUATION

The fisheries sector of Liberia comprises: a Marine fishery involving industrial and artisanal fishing activities; an Inland fishery, which is exclusively artisanal; and Aquaculture that is practiced in rural areas through fishpond culture.

Fish production by the marine fisheries in Liberia has fluctuated between 856 901 mt to 15 472 mt per annum during the post-war period (Table 3). Sixty percent (60%) of fish is produced by the artisanal fishery, all of which is consumed locally.

Table 3. Total fish production (tons) including inland fisheries and aquaculture

Year	Total
1994	7721
1995	8829
1996	8308
1997	8580
1998	10830
1999	15472
2000	11748
2001	11300
2002	11014
2003	11714
2004	10359
2005	6856.901

Source: FAO (2005), BNF (2006).

Government revenue sources in fisheries are shown in Table 4.

Table 4. Sources of Fisheries Related Revenue

Agency/Type of charges	Import Permit	Import Duty	Export	GST	Sea Worthiness	Licenses	Customs Charges on local catch
BMA					$25/GRT		
Commerce	1.5% FOB						
Finance		2.5%		7%			$25/Ton
BIVAC	$5/ton						
BNF	$1.5/ton		2%			$15/GRT/yr	

Source: Statistics and Regulatory Unit, Bureau of National Fisheries.

3.1 Artisanal Fishery

The artisanal fishery provides a means of livelihood to 33 121 full-time fishers and processors in both marine and inland waters. Liberian participation is about 80.1% with females accounting for 59.86%. (Annex 5). Artisanal fishery operators are mainly indigenous Kru fishers and their families, and the Fanti, Popoe fishers and their families who migrated to Liberia from Benin, Ghana and Cote D'Ivoire. A recent development is the presence of Gambian and Senegalese fishermen in Cape Mount County. Malian and Fulani fishers operate in inland areas. Table 5 shows that about 7 700 mt of fish were landed at 10 sites around the country in 2004.

Table 5. Distribution of Fish Landing Sites in the Country

County	N° of Landing Sites	Ave. Catch (tons) 2004
1. Grand Cape mount County	14	1,095.2
2. Bomi County	4	739.3
3. Montserrado County	13	1,127
4. Margibi County	5	869.73
5. Grand Bassa County	18	2,304
6. Rivercess County	12	345.6
7. Sinoe County	30	526.7
8. Maryland County	8	439.95
9. Grand Kru County	35	312.4
10. Inland Sites	19	13.6
Total	137	7,773.48

Source: Statistics and Regulatory Unit, Bureau of National Fisheries.

3.1.1 Artisanal Fleet Structure

According to BNF, there are 3,473 canoes operating in the inland and marine waters of Liberia, 7.89% of which are motorized. Canoe sizes range from the 1-3 man kru canoes, (5-7meters) long, which are hand-paddled with a few powered by 15 or 25 horse power outboard engines, to the 15-18man (10-15meters) long fishing canoes that are powered by 45 horse power outboard engines. Senegalese and Gambian fishermen operating in Grand Cape Mount County are using much larger fishing canoes (above 20 meters).

3.1.2 Catch/Production

The average catch per canoe/annum was 2.2 tons and 1.16 tons in 2004 and 2005 respectively (BNF, 2006). The major species exploited are the Sardinella, Barracudas, Croakers, Sharks and Ilisha africana, which make up the major commercially valuable species for the local markets, and constituted 83 % and 59.06% of local fish supply in 2004 and 2005 respectively.

3.1.3 Value Chain

The value chain for the artisanal fishery is very short, and in most cases there is very little or no value addition at all. There is no use of ice or chillers for post-harvest fresh fish preservation. Fish once landed on the beaches is available for sale. The processes of value addition are simple. The fish is first washed with seawater and then gutted (for small size fish) and for larger fish, decapitation and dismemberment, before being smoke dried using

firewood. Metal drums are most commonly used for smoking in all coastal communities. There are however some improved chokor smoking ovens built of clay in use particularly in Margibi and Grand Bassa Counties. In inland artisanal communities, traditional smoking kilns made of sticks or wire meshes are used. Traditionally, the Fanti and Kru fish processors mainly practice this method of smoking. Salting and fermentation is also used to process fish into what is locally known as "moin-moin".

3.1.4 Market Chain

There are two market chains; a shorter one for fresh fish leaving the beach directly to the markets for sale to consumers, and a much longer chain for smoke dried fish. Dried fish products are bought from the fish landing sites of Monrovia, Robertsport, Marshall and Buchanan and taken (by road transport) to the major rural markets from where they are purchased and distributed to towns and villages by women, usually on foot. Fresh water species are often smoke dried and transported to urban markets for higher market value.

3.1.5 Price structure

Table 6 below shows the price/kilo of Herring, which is of major commercial value on the local market. The price structure for other species is very much the same. Prices tend to increase at every stage of the market chain. Consumers at the village level tend to spend more money per kilogram of fish.

Table 6: Fish Price distribution and variation along the market chain

Price/kg(LD$)	Beach	Urban Market	Rural Market	Village Level
Fresh Fish	25	35	45	55
Smoked Dried	35	45	55	65

Source: Statistics and Regulatory Unit, Bureau of National Fisheries.
Note: Exchange rate: US$1 = 58 LD (Liberian Dollar).

3.1.6 Cost of fishing inputs:

The costs of construction of fishing canoes vary according to size, locality and the type of wood used for construction. Table 7 below shows the prices of canoes by sizes, capacities and their construction time.

Table 7: Costs of constructing fishing canoes in Sinoe County

Types of canoe	Size	Capacity	Production time	Price
Kru Canoe	< 1.5 furlong	1-2 man	2 weeks	6,000 -12,000 LD
Kru Canoe	1.5 furlong	2-4 man	2 weeks	17,000 LD
Fanti Canoe	2 furlong	5-7 man	3 weeks	20,000 LD
Fanti Canoe	Above 2 furlong	15 – 17 man	4 weeks	25,000 LD

Source: Statistics and Regulatory Unit, Bureau of National Fisheries.
Note: Exchange rate: $1 = 59 LD (Liberian Dollar).

The availability of fishing gears and inputs is dependent on importation by merchants. The high import charges on fishing gear have put these materials out of the reach of many ordinary fishers.

Table 8: Average unit price (US$) of fishing inputs

Nets (bill)	Rope (Roll)	Float (piece)	Lead (sheet)	Hook (pkt)	Outboard Motor (15HP)
$500.00	$60.00	0.25	3.00	4.00	3,275.00

Source: Statistics and Regulatory Unit, Bureau of National Fisheries.
Note: Exchange rate: $1 = 59 LD (Liberian Dollar).

3.1.7 Situational analysis

Artisanal fisher folk are still operating in individual family units but are slowly coming together through established cooperative societies for the pursuit of common aspirations/interests. However, migrant fisher folk are better organized and tend to cooperate better with the fisheries administration. Migrant fishers operate bigger fishing units and catch more fish and realize more revenue from fishing than the local fishers. The fishing units owned and operated by Liberian nationals are small in size and non-motorized and the mesh sizes of the fishing nets are very small catching many juvenile fish and threatening resources sustainability. There are high operational costs in artisanal fisheries because of the high costs of fishing inputs (fishing nets, related equipments and materials, outboard motors, premixed fuel) as a result of high import duties on these items. The average cost of a fishing trip is LD$ 7,000.00 (cost of gasoline, food and supplies for the crew). Industrial fishing vessels are habitually encroaching in artisanal fishing grounds destroying fishing nets of artisanal fishers and disrupting artisanal fishing operations. The encroachments are causing economic losses to fishers (loss of fishing gears, loss of earnings) and reductions in catch landings for the domestic market. There is no MCS system to control and regulate fishing activities in Liberian waters. The fishing gears are difficult to replace because of their high prices made worse by the absence of credit schemes to support artisanal fishing and related activities.

The artisanal fish landing sites are devoid of basic fisheries infrastructures such as fish handling and processing areas, storage facilities for processed products, ice and chill storage facilities. Potable water supply systems and sanitary facilities are also not available and environmental hygiene is a major problem. Fish when caught is landed on the ground affecting fish quality through microbial contamination.

Fish processing in artisanal fisheries is still traditional in nature and is limited to fish smoking and fermentation to a lesser extent. The increasing demand for fuel-wood for fish smoking is causing deforestation in the coastal areas and the loss of mangrove forests. All fish and fishery products produced by artisanal fisheries operators are for local consumption and fish marketing is the exclusive domain of women fish traders who walk several miles to and from markets because of poor road transport conditions.

Fisheries development projects and programmes should be directed at improving local artisanal fisheries and should have components to specifically address issues such as capacity building (training in modern fishing, improved fish handling and fish processing technologies); credit schemes; numeracy and literacy; infrastructural development including Community Fisheries Centres, health centres, schools; Strengthening fisheries cooperative societies; Co-management; empowerment particularly women fisher folk.

3.2 Industrial Fishery

The industrial fishery is high capital investment involving fishing trawlers and cold storage facilities. Foreigners presently dominate this fishery. There are currently fourteen (14) fishing companies operating legally in Liberia; 6 companies are solely engaged in the importation of frozen fish from the high seas, and 8 companies are engaged in industrial fishing activities operating 27 fishing vessels with a combined Gross Registered Tonnage (GRT) of 4 122.71. The fishing vessels operating in Liberian waters range in size from 91 GRT Chinese pair trawlers (ice carriers), to 251GRT fishing trawlers with onboard freezing, processing and storage facilities. Industrial fishing vessels land their catches at the fishing pier in the Free Port of Monrovia. The employment of Liberian nationals in industrial fisheries is estimated at 75%, representing 28.4 % of the total employment in the fisheries sub-sector.

3.2.1 Fish Production

Fish landed locally by all trawlers is estimated as 1 502.71 and 2 806.811metric tons for 2004 and 2005 respectively (BNF, 2006). It is believed that the catch is grossly under reported, and there is strong suspicion that a number of industrial fishing vessels are engaged in illegal transhipments in the high seas which is not reflected in the national statistics. Catch statistics reported by Observers posted on board licensed fishing vessels are also not reliable because of the loyalty of the Observers to the vessel owners who pay their salaries. Some licensed fishing vessels have no Observers posted on board and catches by these vessels are not reported.

The importation of fish is much higher with 4 738.47 tons in 2004 and 11 071.743 tons in 2005 (Table 9), than recorded fish landings by licensed fishing vessels for the same period.

Table 9. Frozen Fish Imports

Year	Import (mt),	Value (US$)
2004	738.47	1,139,274.20
2005	11,071.743	2,013,575.56
Total	11,810.213	3,152,849.76

Source: Division of Foreign Trade, Ministry of Commerce (2006)

3.2.2 Value Chain

The industrial fishery is expected to be the main avenue for fish exports to international fish markets to earn much-needed foreign exchange for the country but presently there are no reported exports of fish and fishery products. At the moment, there is very little value addition in industrial fisheries and the value chain is very short as in artisanal fisheries. Fish is preserved on ice or packaged and frozen on board fishing vessels. The processes involved are: washing, sorting into size categories and according to species, crating or packaging in cartoons, icing or freezing and outright sales to fish traders (women). Onshore processes are very much the same: icing, freezing, crating and packaging. The packaged products are landed, transported to the factories and sold to the fish traders.

3.2.3 Market Chain

Unlike the artisanal fisheries, fish from the industrial sector is marketed frozen from factories in and around Monrovia. The fish distribution network for industrial fisheries is more urban-based and involves the establishment of depots with mini- cold rooms in major cities and

towns scattered around the country (Table 10). Good road access for supply and distribution of fish and regular electricity supply is needed for the operation of the cold rooms. Unsold frozen fish is often returned to the factories and re-frozen or smoked if freezing is no longer possible. The women also dominate the marketing of fish landed by the industrial fishing vessels.

Table 10: Distribution of Cold rooms and price structures for two major species

			Price (US$/30 kg)	
Location	Number of cold rooms	Total Capacity(MT)	Horse Mackerel	Sardinella
Monrovia	32	18,808	34.00	29.00
Kakata	4	96		
Totota	1	32		
Gbarnga	3	84		
Tubmanburg	2	48	35.00	30.50
Ganta	4	96		
Buchanan	2	60	35.60	31.00
Sanniquellie	1	24		
Zorzor	1	24		
Harbel	2	60		
Total	52	19, 332		

Source: Bureau of National Fisheries 2006.

As the situation of fishing improves and fish catches increase, it is expected that Cold rooms will play more important roles in fish distribution and marketing in the country especially in rural communities where protein intake is low and malnutrition is a major health concern.

3.2.4 Situational analysis

Foreign nationals presently dominate the industrial fishery. The development of industrial fisheries in Liberia is hampered by various constraints, worsened by the civil war, which ruined what little infrastructures there were.

The sanitary conditions at the fish factories are very poor and do not meet international standards and requirements. The fish factories do not have appropriate fish-processing facilities, proper drainage systems and potable water supply is a major problem; ice and cold storage facilities are absent in some of the factories. The factory workers have no uniforms and the work in the factories is haphazard and without proper flow of products. None of the factories are implementing Quality Management Programmes.

There is potential for adding value to fisheries production, handling, processing, distribution and marketing particularly for industrial fisheries. It is quite possible to produce value added fish products such as cocktails, fillets, marinated products, fish fingers, peeled/boiled products, colouring of products, ecolabelling etc. However, this can be done when fish factory standards (technical and hygiene) are improved and that the factories implement quality control (QC) programmes and good manufacturing practices to ensure food fish product safety and quality that meet international standards and requirements. This will require institutional strengthening and capacity building at the fish processing factories. Value addition will significantly increase the profitability of the fisheries sub-sector. Fish

quality and safety should be addressed across the entire value chain. It is also important that the relevant Government institutions are capable and have the requisite human, financial and technical resources to ensure compliance with the agreed international standards and requirements and to offer technical support to the fishing industry in the form of training programmes on fish handling, processing, quality assurance and inspection.

The absence of a fisheries harbour to facilitate the discharge of cargo (fish) and the supply of essential commodities, refuelling, transhipment, and for dry-docking is a major constraint to development of industrial fishery. Fishing vessels are obliged to buy fuel and essential supplies from others ships and carriers operating in international waters.

The tariffs on the importation of fishing inputs are high, so are import duties, landing dues, inspection dues and other charges. Operational costs are also very high reflecting on the high prices of fish.

3.3 Aquaculture

Fish farming in Liberia is largely subsistent. There are about 3 581 fish farmers nationwide engaged in some form of fish culture on part-time basis. 449 ponds of various sizes with a total area of 17.47 hectares are distributed in 159 communities around the country. Most of these ponds have been dormant since 1990 and are now being rehabilitated although the process of rehabilitation is slow and labourious. The rehabilitation works are providing employment for women and youths; currently there are 704 women, constituting 20% of total female participation in aquaculture (BNF).

The major species cultured in Liberia are *Oreochromis niloticus* and other local species of Tilapia, and catfishes, including *Heterobranchus longifilis and Clarias sp*.

The production method is extensive and very simple technology is used to develop earthen ponds, which are supplied water from natural creeks or springs by gravity. Most fish farmers cannot afford to adequately feed their fish due to competition for feed ingredient by the households for food.

3.3.1 Production

Aquaculture production in Liberia has been concentrated around Bong, Nimba and Montserrado Counties with an estimated annual production of 38.81 tons in 2004 (BNF). With peace prevailing in the country and pond development and rehabilitation gaining momentum in other parts of the country, aquaculture production is expected to increase.

The irrigation potential of Liberia is estimated as 600,000 Ha, with a renewable water potential of 235m^3/yr. These factors present a great potential for aquaculture development. However, culture methods should be diversified to include; Cage, Pen and tank culture, considering the increasing demand for lowlands for irrigated rice production.

3.3.2 Value Chain

There is no value addition for aquaculture. Fish is usually bought fresh and/or live from pond sites during harvest for direct consumption.

3.3.3 Market Chain

The market for aquaculture product is more localized in the pond communities since production is still low. Production around large urban centres has high value due to increased demands for fresh water fish. Around Monrovia, pond fish is sold for US$ 3.00/kg, but prices also vary according to species with the air- breathing catfish, *Heterobranchus sp.* more highly priced at US$6.00/kg.

3.3.4 Situational analysis

The development of aquaculture is constrained by several factors including the following: the lack of tools and materials for pond development/ or rehabilitation; lack of an aquaculture policy and development plan, lack of sufficient trained manpower in aquaculture development; lack of quality fish fingerlings for stocking; lack of improved fish feed; lack of proper irrigation schemes for sustained aquaculture production; the absence of credit facilities, and low level of research on aquaculture. Pond sites, which are isolated from other activities of the farmers, tend to be forgotten and not maintained to inadequate water storage and control scheme.

The existing fish hatcheries were looted and vandalized during the civil war. Furthermore, the quality of fingerlings produced is poor due to very poor brood stock quality and hatchery management. The number of hatcheries is inadequate and they lack transportation facilities for moving live fish over long distance.

The absence of credit facilities for farmers is responsible for the non-sustainability of many projects, especially after donor funding runs out. The ACDB, which was the main government institution for granting loan to farmers, is no longer operating.

The lack of improved fish feed has contributed to a large extent to farmer disenchantment, as the expected yield at harvest is often quite low and discouraging.

The development of proper irrigation and water control structures is vital for sustaining continuous aquaculture production. Production is often hampered by either flooding of production facilities during the heavy rains, or the lack of water during the dry season, due There is very little research activity in aquaculture.

4. THE WAY FORWARD

The Government of Liberia is fully aware of the enormous potential of the fisheries sub-sector both marine and inland (including aquaculture), to make substantial contribution to national socio-economic development and help address the major challenges of the rehabilitation and recovery efforts of the country's economy in the short and long-term. The Government is also aware and concerned but is, at present, totally unable to address the serious problem of poaching and other forms of illegal fishing especially along coastal and marine waters, which are impacting negatively on the national economy and possibly on national security. The Government is also lacking the economic, fiscal, human and institutional assets with which to manage the fisheries sub-sector on a sustainable basis to benefit present and future generations of Liberians. The MOA was allocated US$ 3 million only out of the total national budget of US$ 126 million in 2006. However, the Government

is determined to harness the potential of the fisheries sector. The following actions are recommended, some of which are already in the plans of the Government.

4.1 Sub-sector policy objectives for sustainable fisheries and aquaculture management and development

There has never been a Government fisheries policy and the fourteen years of civil war, which ended in 2003, compounded this situation by rendering the concerned Government institutions unable to function properly. The Government of Liberia should formulate national fisheries and aquaculture policy and strategy and will strengthen the country's maritime and fisheries laws, regulations and capacity to ensure sustainable management and development. Fisheries management should be geared towards the attainment of sub-sectoral development policy objectives such as: contribution to national food security and improved nutritional standards, creating employment opportunities and poverty reduction particularly in rural communities, improving incomes and quality of life, and revenue and foreign exchange earnings for the country. The policy should address the following: the development of the requisite infrastructures for industrial and artisanal fisheries and aquaculture development; improve monitoring, control and surveillance; capacity building and man power development; community capacity building and co-management; conduct scientific research and data and information collection and analyses on a regular basis; promote sub-regional, regional and international cooperation in fisheries management. Government should create the enabling environment for local and foreign investments in fisheries and aquaculture by reviewing the investment code and putting into place appropriate provisions including an incentive package. *The Code of Conduct for Responsible Fisheries* should guide the national policy and relevant sections/provisions of the Code will be incorporated in the national fisheries legislation.

The Government should endeavour to undertake the development and management of fisheries and aquaculture with the collabouration and support of its development partners: FAO, World Bank, IFAD, FRG, USAID, African Development Bank, The Government of the Peoples Republic of China, Swedish International Development Agency, Islamic Development Bank, DANIDA, and WFP. Grass roots (including community-based organizations) participation in all phases of management and sustainable development is critically important. Also important is the support from the local private sector and that of international and local Non-Governmental Organizations involved in fisheries and aquaculture.

4.2 Fisheries Legislation

In 1972, FAO assisted the Government of Liberia to revise the Natural Resources Laws of 1956 but Presidential approval was not obtained up to the time of the Coup d'etat in 1980. In March 1999, draft fisheries legislation was prepared but never finalized and approved by Government.

Government should seek the assistance and technical support of the Legal Department of FAO to which elaborate a new fisheries legislation to replace the Natural Resources Laws of 1956. The new fisheries legislation will have an international character incorporating relevant provisions of the Code of Conduct for Responsible Fisheries and other international agreements, conventions and protocols addressing fisheries, natural resources and environmental issues. The new fisheries legislation will strengthen the maritime and fisheries

laws and regulations and at the same time strengthen national capacity for Monitoring, Control and Surveillance (MCS) to control and regulate fishing and effectively curb and eventually eliminate poaching and other forms of IUU fishing within the Exclusive Economic Zone (EEZ) of Liberia.

4.3 Improve Monitoring, Control and Surveillance (MCS)

In addition to poaching, Illegal, Unreported and Unregulated (IUU) fishing is another serious concern that the Government cannot address at the moment. Poaching and IUU fishing pose serious threats to the continued availability of fisheries resources. Without an effective MCS system, the management of fisheries on a sustainable basis may prove unattainable because the fisheries resources are likely to be at risk of being depleted and may lead to the failure of development projects and programmes and Government not able to achieve sub-sectoral development objectives and aspirations.

However, Government is totally committed to combat poaching and IUU fishing with the collabouration of national agencies and institutions, fisheries stakeholders and support of international development partners. Government should request UNMIL to once again provide support to MCS activities on a short-term basis. Although UNMIL's mandate is on territorial surveillance and security, UNMIL is willing to once again lend support to fisheries surveillance activities by conducting aerial surveillance in support of maritime surveillance. During the period of UNMIL assistance and support, Government should prepare and submit a funding request to a friendly Government for the supply of two patrol boats.

Henceforth, maritime patrols would not exclusively target unlicensed (poaching) fishing vessels but also regular boarding of fishing vessels operating with valid licenses/permits to inspect fishing gears to ensure that fishing gears conform to the conditions of license. The maritime patrols would also enforce the zonal limits for the different categories of fishing vessels.

Parallel to this, the BNF should liaise closely with importers of fishing gears to ensure that fishing nets of approved mesh sizes are imported into the country. The Department of Customs will be requested to assist in monitoring of imported fishing materials. Co-management between Government and fisher folk would ensure that all restrictions are observed at the community level. Inspection of artisanal fishing gears at landing sites should become a regular activity of fisheries extension personnel. Fisher folk will be encouraged to participate in MCS activities and will be equipped to report to the MCS Coordinating Unit any poaching, IUU fishing, transshipment at sea, and encroachments in unauthorized fishing zones.

But given the present situation of the Ministry of Agriculture in terms of limited capacity and resources to undertake MCS activities on its own and without adequate fisheries legislation to prosecute violators, the Ministry should seek interagency collabouration in MCS activities. This implies working in close collabouration with the following Government agencies: Ministry of Defence, Ministry of Justice, Maritime Affairs Agency, Police Department, Immigration Department and Customs and Excise Department. The legislation of the Maritime Affairs Agency is adequate and shall be used to prosecute arrested fishing vessels pending the coming into force of the new fisheries legislation.

4.4 Capacity Building

Without the requisite manpower and resources, the Bureau of National Fisheries will not be able to meet its mandate. Presently, human resources and enforcement capacity are almost non-existent. There is an acute shortage of trained personnel in key disciplines (Biology, Statistics, Management, Economics, Fishing Technology, Aquaculture, Extension etc). The BNF has been ruined by war; ill equipped and lacks the capacity to monitor the fisheries resources. The role of the BNF has now been limited to licensing control and fisheries statistical data collection. Fisheries catch data collected by the BNF does not have national coverage and the data is often inaccurate and the data cannot be analyzed and interpreted into useful management tools. The BNF does not have budgetary allocation to support its activities around the country including: training of its personnel, data collection & analysis, providing extension services to fish farmers and artisanal communities, research in fisheries and aquaculture, monitoring of the fishing grounds and regulation of fishing activities.

The NBF should be strengthened as a matter of priority and a capacity building programme should be elabourated and implemented for staff of the BNF. Also, the Ministry of Agriculture should advocate the introduction of Fisheries Science in the Curricular of the University of Liberia and Cuttington University so that Liberians can study fisheries science and related disciplines in country; this will reduce the cost of training personnel of the BNF in institutions outside of Liberia.

Capacity building programmes should also be implemented for private sector operators in industrial and artisanal fisheries and in aquaculture. Training programmes on improved fishing, fish handling and fish processing technologies, and modern aquaculture techniques should be designed and implemented. Training programmes on good manufacturing practices, quality management programmes are also important and relevant to sustainable development. Numeracy and literacy programmes will help artisanal fisher folk and fish farmers to improve the performances of their respective business operations.

4.5 Fisheries Scientific Research

The Government realizes that the sustainable management and development of fisheries will have to rely on a sound research based management programme that recognize the limitations of the fisheries resource base and the need to improve the productivity of public and private investments to generate sustainable development and growth. Government should promote fisheries scientific research at the national level including capacity building and institutional strengthening.

At the sub-regional, regional and international levels, Government should seek collabouration and cooperation with neighbouring countries on scientific research especially on the shared fisheries resources and on how best to manage the shared resources on a sustainable basis for the benefit of all countries. The cooperation with the Nansen Programme on acoustic surveys is very useful to the country as it provides accurate data and information on the status of the pelagic fish resources on a regular (annual) basis. Government should seek to expand the cooperation with the Nansen Programme to include periodic surveys of the demersal fisheries resources. In addition, Government should also seek collabouration and technical support from the IRD (Institute for Research and Development) of France, to conduct studies on the fisheries resources of the river systems of Liberia. Similar to the Nansen Programme, the IRD

assistance will be on a continuous basis and would include capacity building and institutional strengthening components.

The rehabilitation of CARI and the resumption of applied aquaculture research are crucially important, as the institution will be the main source of expertise and technical knowledge to assist in the sustainable development of aquaculture. The production of fingerlings and brood stocks to supply fish farms will be an important activity of CARI.

As a country within the Guinean Current Large Marine Ecosystem (GCLME) region, Liberia shares the concern of the other countries about the effects of climatic, environmental and socio-economic factors on the fisheries resources, the maintenance of biological diversity, and also on the health and proper functioning of the Large Marine Ecosystem.

Liberia should actively participate in research activities aimed at providing useful data and information on fisheries, natural resources, environments and ecosystems. The results of scientific research will be quite essential as they provide reliable data and information that will enable fisheries administrators and policy makers to make informed decisions on sustainable fisheries, natural resources, environment and ecosystem management.

4.5.1 Baseline Surveys

The 14 years of civil war did not allow for the collection, analyses and storage of other useful national fisheries data (number of artisanal fishermen, artisanal fisheries production on a regular (monthly) basis, catch statistical data from industrial fisheries, annual audits of industrial fish processing establishments etc. Fisheries trade data (imports/exports) on a time series basis is also not available. Certain figures (data/information) are available but the accuracy and validity of the data/information cannot be confirmed. As peace and stability return to the country, it is the ideal moment to start compiling some useful data/information on fisheries and aquaculture and establish a fisheries data bank. Baseline studies that should be undertaken include the following:

Frame Survey

a) The conduct of Frame Survey on the artisanal fishery should be an annual activity of the BNF. Frame Surveys would help determine the distribution of fishing effort and the structural aspects of the artisanal fishery; the total number of fishers and fisher assistants by nationality; the characteristics of fishing economic units (types and sizes of fishing canoes, motorized/non-motorized, number of crew per canoe, fishing gears employed per canoe); fishing status of fishers (full-time/part-time, other occupation); fishing habits (migratory or sedentary). The Frame Survey will identify fish landing sites with development potential. Also, the results of the Frame Survey can be used to develop a statistical data collection method for estimating monthly catch landings of artisanal fishers by species and by area/location (the PPS method).

Socio-economic studies

b) Socio-economic studies on fishing communities (Community/Household profiles, Poverty profiles, Vulnerabilities, Livelihoods security, economics of artisanal fishery, etc) are also important in terms of providing useful information for development planning purposes.

Aquaculture Production

c) In all the aquaculture sites visited during the assessment exercise, actual quantities of cultured fish produced were not obtained; it was not even possible to estimate the number of baskets of fish produced per pond/per village/per community. In collabouration with Farmer Cooperatives, local and international NGOs, extension staff of the BNF should commence collecting such data.

4.6 Sustainable Fisheries Conservation and Management

Liberia is presently lacking in scientific data and information on the status of fisheries resources as a direct result of the civil war during which period no scientific studies were undertaken and very little information was collected and analyzed. Without scientific data and information it is difficult for the fisheries administration to make informed decisions on issues such as the number of fishing licenses to be issued, determine sustainable levels, declare closed areas and seasons among other things. Faced with this situation of uncertainty about the state/status of the resources, the Government should apply the precautionary approach to sustainable fisheries management and introduce management actions/measures to ensure the long-term rational and sustainable use of fisheries and aquaculture resources. Government policy for sustainable fisheries management shall be consistent with the Code of Conduct for Responsible Fisheries. With technical support of FAO, Government should conduct awareness campaigns to sensitize fisher folk on the Code and the need to adopt the principles of responsible fisheries.

A co-management regime should be established for partnership between Government and private sector operators (artisanal and industrial) in the management of fisheries and aquaculture. Community involvement and participation in natural resources management have proved successful in the management of small-scale fisheries including MCS activities within artisanal fishing grounds in some West African countries (Gambia, Guinea Conakry). The success stories will be studied and adapted to the Liberian situation. The positive attributes of local communities (social cohesion, respect for community rules and regulations, affinity to the natural environment) are important management tools that are more likely to engage communities in natural resources management and development than the conventional top-down approach that has so far failed to produce the desired management outputs.

4.7 Development of Artisanal Fishery

Government is aware of the enormous potential of artisanal fishery to contribute to national socio-economic development through employment generation and poverty alleviation, national food security and improved nutrition, revenue and foreign exchange earnings for the country. Presently, the artisanal fishery (marine and inland) generate employment for more than 33,000 people in the production, processing, distribution and marketing chains and accounts for more than 60 % of total fish production all of which is consumed locally. However, artisanal fishery is basically underdeveloped; production methods and systems are outdated and processing technology is still rudimentary and unhygienic; distribution and marketing systems are not well established, and post harvest losses are very high.

The widely dispersed nature of artisanal fish landing sites and the old age tradition of fishers working in isolated family groupings make artisanal fishery management a very difficult undertaking. For the better management of artisanal fisheries, Government should establish

Community Fisheries Centres (CFC's) with requisite infrastructure including ice plants, chill and cold storage facilities, fish boxes, fish processing areas, storage facilities for processed products, mechanical workshops, boat building areas, individual lockers for safe keeping of fishing equipments, insulated/refrigerated vehicles for fish distribution and marketing. The establishment of CFC's should be started along the coastal areas targeting the bigger fish landing sites/communities and gradually move to the major sites/communities in the inland areas. International donor assistance and support is required and countries such as Japan, China, and Norway can be requested to assist. The African Development Bank, Islamic Development Bank and IFAD should also be requested to support the development effort.

Government should focus attention on building and strengthening the human resource capacities of the different fisheries economic operators (fishermen, fish processors and fish dealers) through training on issues relating to fishing, fish hygiene, fish processing and quality control in the artisanal fisheries with the objective of improving fishing methods and techniques, fish handling, processing and quality control standards and reducing post harvest losses. Reduction in post-harvest fisheries ultimately implies increase in supply of wholesome/ quality fish for local consumption. Also, reduction in post-harvest fisheries including discards and spoilage will significantly increase the incomes of the artisanal fisheries operators helping to alleviate poverty and also ensure household food security. Access to finance through credit schemes is crucial to artisanal fisheries development and credit schemes for artisanal economic operators, particularly women fisher folk, should be integral components of development projects and programmes.

4.8 Quality management programmes in post-harvest fisheries, value addition and export opportunities

Fisheries food chains are constantly changing to respond to changing international demands for quantity and quality of fisheries products. The international agreements on Sanitary and Phytosanitary standards and requirements for fish exports from developing countries to markets in the developed countries are becoming more and more stringent and complex and have significant cost implications. Fish safety and quality issues have both social and economic dimensions in the present day modern world. Some of the major export problems faced by developing countries are: access to the resources required to comply with SPS standards, scientific and technical expertise, appropriate technologies and skilled labour.

Among the development policy objectives for the fisheries sub-sector of Liberia is the exportation of fish and fishery products from which Government can generate revenue and foreign exchange earnings. But presently, the reality on the ground in Liberia is that food (fish) standards and quality are quite low and the fisheries value chain is very basic/rudimentary, informal, unregulated and does not comply with the international agreements on Sanitary and Phytosanitary standards and requirements. The fisheries value chain should be able to assure fish quality and safety from primary production to final consumption. As a country that is keen to develop its fisheries for both domestic consumption and export, it is very important to the Government that fishers, fish handlers and processors in Liberia implement quality control (QC) programmes and good manufacturing practices to ensure food fish product safety and quality that meet the international standards and requirements. Fish quality and safety should be addressed across the entire value chain. Value addition will significantly increase the profitability of the fisheries sub-sector. It is also important that the relevant Government institutions are capable and have the requisite human, financial and technical resources to ensure compliance with the agreed international

standards and requirements. To achieve this will require institutional strengthening and capacity building at the level of public institutions and also in the private sector (artisanal and industrial operators: fishers, processors and fish dealers).

The BNF is the competent Government authority to regulate the fishing industry and ensure compliance to standards and regulations. Government should strengthen the BNF through the recruitment of highly trained nationals and the training of staff of the BNF in the relevant disciplines (fish microbiology; fish inspection, quality assurance and control; fish processing technology etc.). Other Government agencies working with the food industry such as the Department of Health, Department of Livestock Services, Department of Veterinary Services can also benefit from the training programmes. Government will also implement capacity building training programmes for artisanal operators in basic food hygiene, environmental health and sanitation, improved fish handling and processing methods and techniques, and on the importance of icing, chilling, freezing, drying and smoking to preserve fish and maintain quality and shelf-life of products. With support of development partners, the Government should implement capacity building programmes in industrial fisheries particularly in fish factory operations and will conduct training programmes on quality control, fish inspection and quality assurance, Quality Management Programmes and on HACCP based systems. With the support of INFOPECHE in Abidjan, Cote D'Ivoire and the Common Fund for Commodities in Amsterdam, Holland, the Government should implement training programmes in the development and promotion of value added fish and fishery products. Liberian fish and fishery products should be exhibited at international fish fairs and exhibitions to attract international buyers and sellers. Also, the Government should support the proposal to build a Regional Training Centre for Fish Quality Assurance in Monrovia. The proposed Centre will be a component of the E.U funded Post Harvest Project on Strengthening Fishery Products Health Conditions in ACP/OCT countries. The Centre in Monrovia will be of tremendous advantage to the fishing industry in many respects: capacity building, quality assurance and control etc.

For the long-term, the Government should introduce an Eco-labeling scheme for fish and fishery products as a valuable instrument for the integration of environmental requirements into the management of fisheries. Eco-labeling would be an economic incentive for the fisheries sub-sector to act in a more sustainable way and contribute to the sustainability of the fisheries resources and provide for an adequate level of protection of the ecosystem.

4.9 Promote sub-regional, regional and international cooperation in fisheries management

Liberia should accede to international fisheries agreements, conventions and protocols as an essential foundation for partnership and sub-regional and regional cooperation in sustainable fisheries management. As reflected in Statement of Policy Intent for Agriculture, 2006, the Government of Liberia will collaborate with the neighbouring countries for the setting up of a sub-regional fisheries commission for Benin, Cote D'Ivoire, Ghana, Togo, Nigeria and Liberia for sustainable fisheries management that would also eventually assist Liberia in addressing monitoring, control and surveillance problems in its coastal waters. Participation in the activities of the Guinean Current Large Marine Ecosystem (GCLME) project is very useful in terms of ecosystem-based management of fisheries and natural resources.

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ANNEX 1

INVESTMENT PROPOSAL

CAAS-Lib. Fisheries Sub-sector Investment Proposal

Name of Project	**Development of Artisanal Fisheries.**
Institutional Responsibility	Ministry of Agriculture and National Bureau of Fisheries.
Aim(s) of Project	The aim of the project is to increase fish production levels in artisanal fisheries to contribute to national food security and poverty reduction. The objective of the period is to develop artisanal fisheries so as to enhance the sustainable utilization of the fisheries resources of the country for increased fish production and improved livelihoods in artisanal fishing communities.
Description of Main Activities	The project will be implemented in the Counties of Maryland, Grand Kru, Sinoe, Rivercess, Grand Bassa and Cape Mount. The goal of the artisanal fisheries development component is to restore artisanal fishing activity to a sustainable level by providing fishing inputs and training 3643 fishers, fishmongers and fish processors. The project will benefit some 21,858 direct beneficiaries, including returnees (ex-combatant youths and women, fishmongers and fish processors). The main activities to be undertaken under the project include the following: 1) Selection of beneficiaries Assessments will be carried out in the selected Counties for the identification and selection of beneficiary groups for the distribution of inputs, and communities for the construction of fish smoking units (kilns). 2) Training of fishers and fish processors Previous interventions have provided training for trainers in various artisanal fishing communities in gear repairs and maintenance, small-scale business management, fish processing and the role and importance of CBOs. Two (2) trainers will be identified in each community and given refresher TOT training. A total of 232 trainers will be trained to serve as trainers in the training of 3643 fishers, fishmongers and processors in their various communities. The training of fishers will be community-based, continuous, and spread over the duration of the project, with one consolidated training for trainers annually. Other community members will be identified and trained in boat construction, repairs and maintenance, and repair of outboard engines. Each community will have a team of trainers comprising of three (3) persons who will be empowered to facilitate community training to coincide with each level of project implementation. Fish processors and fishmongers will be trained in improved methods of fish processing and preservation and in small-scale business and marketing. A total of 2000 processors and fishmongers, comprising mainly widows, ex-combatants and returnees, will also benefit from the training. 3) Procurement and distribution of inputs The aim is to increase fish production through increased fishing effort by providing fishing inputs including nets of various mesh sizes, ropes, floats, outboard engines etc. to be distributed to about 200 fishing groups. 4) Promoting the use of larger fishing canoes by local fishers A consultant will be hired to conduct the training of trainers in boat building and maintenance. Four persons per County will be trained and upon completion of the training, the 24 trainers will be equipped to return to their communities where boat building workshops will be established for training and maintenance purposes. The workshops will be managed by local fisher associations under the supervision of the Ministry of Agriculture through the Bureau of National Fisheries.

	5) Construction of fish smoking units and storage facilities 116 smoke houses will be constructed in selected communities using skilled labour recruited from selected beneficiary communities. The design and dimensions of the smoke houses will be determined by community demands and requirements. 6) Provision of Micro-credit A revolving loan fund scheme will be set up through the Agricultural Development and Cooperative Bank to assist fisher folk increase their production and expand their businesses. The loan scheme will not exceed $1500/fishing group, and $200/processor, and will benefit 200 fishing groups and 2000 fish processors and fishmongers. The selection criteria will include: Group organization; Credible and transparent account/book keeping system and; Good and consistent production levels. 7) Provision of fish storage and preservation facilities Fishers will be encouraged to carry cool boxes with ice, fitted onto canoes, to help preserve their catch prior to landing. Mini cold storage facilities of 6 tons capacity will be provided in selected project communities. The cold storage facilities will be managed by a committee of fishers and processors association under the direct supervision of the Project Implementing Committee. Beneficiary communities will be selected based on level of production, community organization, a record and financial system that will ensure the maintenance of the cold store, and market access. 8 mini-cold storages will be established, with some 30,000 fishmongers and processors expected to benefit. 8) Monitoring and Evaluation The project implementation committee in collabouration with the Ministry of Agriculture and donor representatives will develop a detailed Monitoring and Evaluation Plan. Close monitoring of project activities will be continuous throughout the duration of the project. However, it is expected that there will be annual evaluation of project performance.
Expected Result(s)	The expected outputs are as follows: 200 groups in 116 communities selected; 232 fishers and processors trained as trainers; 3643 fishers and processors trained in respective disciplines; fishing inputs provided to 200 groups; 24 fishers trained in boat building and 6 workshops established; 8 mini- cold storage facilities established, and 116 fish smoking kilns constructed.
Impact on Food Security, Poverty Reduction & Economic Development	The Project is directly linked to CAADP Pillar 5 (Increasing Food Supply and Reducing Hunger with a complementary link to CAADP Pillars 3 and 4 (Land and Water Management; Development of Agricultural Research, Technological dissemination and adoption and sustainable development of livestock, fisheries and forestry resources).
Period of Execution	The Project will be implemented from January 2008 to December 2010.
Estimated Cost	US$ 2 045 155

Name of Project	**Small-Scale Aquaculture Development**
Institutional Responsibility	Ministry of Agriculture and National Bureau of Fisheries.
Aim(s) of Project	The aim of the project is to increase fish production levels in small-scale aquaculture to contribute to national food security and poverty reduction. The objective of the period is to develop small-scale aquaculture so as to enhance the sustainable utilization of the water resources of the country for increased fish production and improved livelihoods in rural and peri-urban communities.
Description of Main Activities	The project will be implemented in the Counties of Lofa, Grand Gedeh and River Gee. The project will bring into aquaculture production, 50 ha of swamps through the provision of tools, materials, fingerlings and training. These include 10.3 ha of ponds to be rehabilitated and 39.7 ha of new ponds to be developed. Three (3) hatcheries and 1 research facility will be rehabilitated. The main activities are as follows: 1) Site survey and selection Surveys will be carried out in each County to verify swamp location and size, soil quality, water regimes, land tenure, vegetation, community enthusiasm and organization, before final selection for implementation. The surveys will assist in determining the magnitude of development work to be accomplished. The rehabilitation/development work is expected to involve land preparation, construction of dams and water control structures, and fishponds. 2) Training of aquaculture technicians Aquaculture technicians who have received training in basic aquaculture techniques will be identified in project communities and given refresher training. They will be responsible for the training of 20 farmers/site. Each of the 100 technicians, chosen from amongst farmers or community, will be assigned/site, and training will be scheduled to coincide with the level of pond development activities at each site. The training will focus on pond construction and management; water quality; stock management and post harvest management and marketing. 3) Pond rehabilitation and development Fishponds will be rehabilitated and developed using very simple technology. Gravity-fed irrigation system will be developed to sustain annual aquaculture production. Manual labour will be used as much as possible, utilizing mainly ex-combatant youths and women. The activity will require 3,500 man-day/ha of labour for land preparation and soil movements to construct 200m3 of bund/ha. Fishponds with average size of 400m2 will be developed under community initiative. Communities will be supplied pond construction tools and materials including: wheelbarrows, shovels, tools for site preparation and PVC material. Pond construction activities involve soil excavation, movement and compaction following specified designs and measurements. All bunds will have a minimum width of 3 meters with a minimum height of 1.3 meters. This will allow a minimum water depth of 1 meter in the pond for stocking. Ponds will have 1-2 percent bottom slope, and a bund slope of at least 1:1:1 ratio of slope: crest: slope. Ponds will be stocked at a density of 2 fish/m2 of pond water surface area. Fingerlings and fertilizers (576kg/ha/yr) will also be provided to farmers, on loan basis for the first year and the loan will be repaid before or at harvest time. Semi-intensive culture system will be encouraged initially until supplementary feed is available, for ease of management by farmers. 4) Farmer training Training will be site specific and carried out by trained field technicians under the supervision of extension officers. 20 farmers will be trained per site constituting 1000 farmers. Field training will be an on-going activity through out the duration of the project, with one intensive training a year to consolidate farmer's skills and knowledge in culture techniques.

	5) Intensify aquaculture research Research aimed at introducing indigenous fish species for culture will be prioritized. Developing local species of Tilapia and catfish for culture will be a major research focus. There is also need to develop/or adopt technologies that are cost effective and will ensure maximum benefits and profits. 6) Establishment of a feed mill Supplementary feeding is a major constraint to sustainable aquaculture development. A complete hammer mill with pellet mill will be established at CARI where feed for livestock, fish, poultry, etc will be produced for distribution nationwide. The mill will also be used by CARI for developing new feed formulae for enhancing livestock production. The facility will also provide a market outlet for maize producer, as it will constitute a major feed ingredient. The brewery waste and by-catch of the shrimp industry will also be utilized. The by-product of other agricultural sectors, i.e., oil cakes from palm kernel, coconut and groundnut, and rice brand will be utilized as feed ingredient. However, micronutrients and other ingredients, which cannot be sourced locally, will have to be imported. Technicians will have to be trained to operate and maintain the mill which will be self-sustaining as feed produced will be sold. 7) Provision of micro credit facility Micro-credit will be provided to farmers in cash or kind (fingerling, feed, fertilizer, etc) to improve their production capacities at 5 % interest rate. The loan scheme will be revolving, and 100 farmers' groups are expected to benefit. The criteria for selection for loan will include: adequate level of production, consistency in farming and record, and transparent and credible record system.
Expected Result(s)	The Project is expected to benefit 1000 fish farmers in 100 communities; 24 aquaculture extension officers and 100 field technicians trained; 50 ha (1200 ponds of 400m^2) developed; 3000 assorted tools and materials provided to 100 groups; 0.5 million fingerlings stocked; 28.8 tons of fertilizer supplied to farmers; 1 complete fish meal established. There will be 6000 direct beneficiaries comprising mainly youths, women, ex-combatants and returnee farmers.
Impact on Food Security, Poverty Reduction & Economic Development	The Project is directly linked to CAADP Pillar 5 (Increasing Food Supply and Reducing Hunger with a complementary link to CAADP Pillars 3 and 4 (Land and Water Management; Development of Agricultural Research, Technological dissemination and adoption and sustainable development of livestock, fisheries and forestry resources).
Period of Execution	The Project will be implemented from January 2008 to December 2010.
Estimated Cost	US$ 1 091 355.

Name of Project	**Enhancing National Capacity for Sustainable Fishery Sector Management.**
Institutional Responsibility	Ministry of Agriculture, BNF and CARI.
Purpose(s) of the Project	The main purpose of the project is to improve the institutional capacity of the Bureau of National Fisheries (BNF) and the legal environments to enable it effectively monitor and manage the fisheries resources on a sustainable basis. The other purpose is to introduce and consolidate a co-management arrangement between the Government and the private sector in the artisanal fishery sub-sector.
Description of Main Activities	The project has two components: Capacity Building and Institutional Strengthening and, Project Management. The main activities of the of the two components are as follows: ***Capacity Building and Institutional Strengthening*** 1) Rehabilitation of the BNF Headquarters and Fisheries Research Facilities The office facility of the BNF will be rehabilitated and equipped; including a fisheries biology labouratory. The office will be used as a command centre of the project implementation committee, and for the monitoring, regulating and control of fishery activities. The office will also be the coordinating centre for fisheries research and extension, and for all fisheries related activities within the country. Three (3) fish hatcheries at Douyee town, Gbegbedu and Klay will be rehabilitated to ensure the adequate supply of fingerlings for the stocking of farmers' ponds. Production and office/training facilities will be rehabilitated using youths, including ex-combatants and women to provide the labour. Fish transport and office equipment will be supplied to the hatcheries. The hatcheries will be used as farmer training centres, and for research and extension. The fisheries research facility at CARI will be rehabilitated to initiate the development of indigenous species for culture. Required equipment and logistics, including office and labouratory equipment, data collection materials, vehicles and motorbikes to support research and extension will be acquired to enhance the BNF operation and performance. 2) Research and Training Personnel of the BNF will be selected for training in such areas as fish biology, fisheries statistics and management, fish health and quality, monitoring, fisheries economics etc. The training will improve staff performance, build staff confidence to carry out research, and make data collection and analysis more efficient and reliable. Six (6) staff of the BNF will be trained at M.Sc level in specialized courses in fisheries and aquaculture, and these will serve as trainers for fisheries and aquaculture extension officers through out the country. Research will be focus on cataloguing the major fish species in Liberian waters, particularly inland, and a study of their biology so as to enhance their ecological management. 3) Strengthening legal capacity A new fishery monitoring and regulatory law will be drafted and enacted into law to strengthen the management capability of the BNF. The law will be circulated among the various stakeholders of the fisheries sector to create adequate awareness for its enforcement. A fisheries management plan will also be developed in line the Government agricultural development policy. The fishing areas will be demarcated to reduce/eliminate conflicts between artisanal and industrial fishing vessels. The new law will reserve the three (3) nautical mile inshore zone for the sole exploitation of the artisanal fishery, and will be rigorously enforced so as to sustain artisanal fishing activities. 4) Set-up a Monitoring and Regulatory System (MRS) A Monitoring and Regulatory System will be set up, using local fishers to monitor and report industrial fishing vessels intruding in artisanal fishing areas. A team of fishers will be trained and equipped with hand compasses, GPS, and VHF radios. In addition, fisheries monitors (Observers) will be trained and assigned aboard all licensed industrial

	fishing vessels to monitor their activities while at the same time conduct some basic biological sampling and take statistics of their catches. A patrol boat will be acquired (from bilateral cooperation with the Peoples Republic of China) and a core of national from the Navy will be trained to man the patrol boat. The patrol boat will be used for monitoring, control and surveillance activities within the EEZ (Exclusive Economic Zone) to regulate industrial fishing activities prevent poaching and illegal transhipments in the high seas. A central communication unit will be established at the headquarters of the BNF to coordinate information from the field. ***Project Management*** 1) Project Implementation Unit The BNF was established as the technical arm of the Ministry of Agriculture responsible for management and development of fisheries and aquaculture in Liberia and it is supervised by a Deputy Minister. A Project Implementation Unit will be established under the Directorate of the BNF to oversee the implementation of all fisheries and aquaculture and will be assisted by a project coordinating committee. 2) Private Sector Management Artisanal fisheries and aquaculture projects will be run largely by fishers' and farmers' associations, in a co-management arrangement with the Government. Similarly, they will undertake monitoring, surveillance and protection of the demarcated fishing areas, manage cold storage and fish processing units, maintain boat building workshops, and fish hatcheries and feed mill. 3) Technical Assistance For the effective implementation of the outlined in the Investment Proposal (Artisanal Fisheries Development Project and Small-Scale Aquaculture Development Project), short-term technical assistance will be required for the following areas: • 1 Fisheries and Aquaculture Consultant • 1 Financial Comptroller • 1 Project Manager • 1 Surveyor (specialized in soil and fringe surveys) In addition, the following experts will be required: • 1 expert in feed technology for 3 months • 1 expert in boat building for 6 months • 1 mechanical engineer (outboard engine) for 1.5 months • 1 expert in community development for 3 months 4) Monitoring and Evaluation The project implementation committee in collabouration with the Ministry of Agriculture and donor representatives will develop a detailed Monitoring and Evaluation Plan. Close monitoring of activities of projects will be continuous through out the duration of the projects. However, it is expected that there will be annual evaluation of the performances of the projects.
Expected Results	• The BNF is strengthened. • BNF headquarters rehabilitated and equipped. • Fisheries labouratory established. • 3 Fish hatcheries rehabilitated. • New fisheries legislation enacted and enforced. • Monitoring and Regulatory System set up. • Patrol boat acquired. • Project Implementation Unit established under BNF. • Co-management arrangement between Government and private sector realized. • Technical assistance personnel attached to projects. • Monitoring and Evaluation Plan developed.

Impact on Food Security, Poverty Reduction & Economic Development	The project is linked to CAADP Pillars 3 and 4 (Land and Water Management; Development of Agricultural Research, Technological dissemination and adoption and sustainable development of livestock, fisheries and forestry resources).
Period of Execution	The Project will be implemented from January 2008 to December 2010.
Estimated Cost	Capacity Building and Institutional Strengthening Component- US$ 2 183 500. (excluding the patrol boat valued at US$ 4 million). Project Management Component: US$ 1 029 140. Grand Total: US$ 3 212 460.

ANNEX 2

PERSON MET

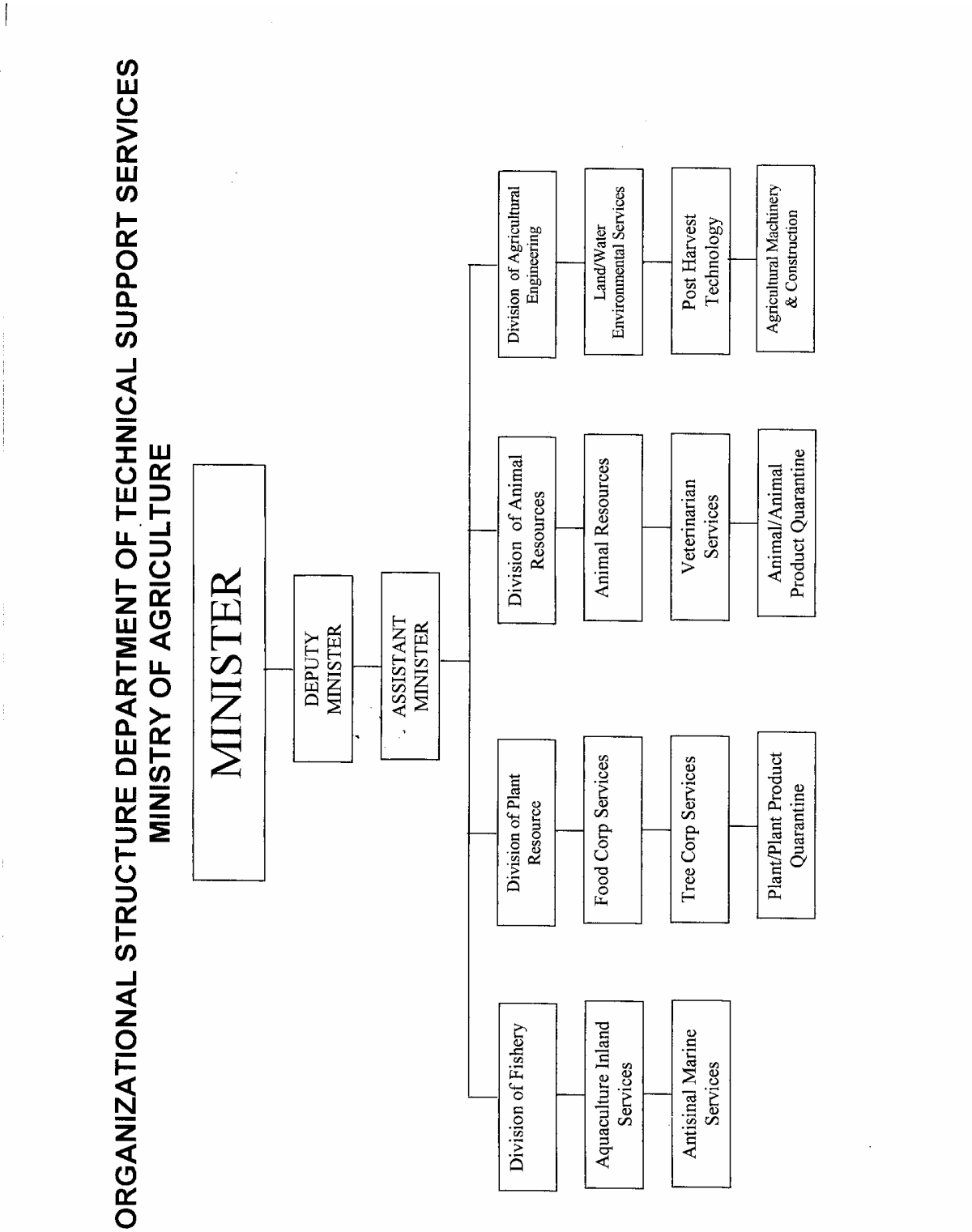
Dr. J. Christopher TOE - Minister of Agriculture
Mr. James B. LOGAN - Deputy Minister of Agriculture.
Mr. Emmet MEZIA - Assistant Minister of Agriculture, Planning & Development
Mr. Solomon Hedd. WILLIAMS - Assistant Minister, Technical Services.
Mr. Joseph G. MUSAH - Coordinator of Planning & Policy, Ministry of Agriculture.
Mr. J. Hilary MASON - Adviser, Minister of Agriculture
Dr. Winfred N.O. HAMMOND- FAO Resident Representative, Liberia..
Dr. Dunstan S.C. SPENCER - Team Leader, CAAS-LIB.
Dr. Othello Brandy- National Project Coordinator.
Mr. T.E.C. PALMER - Senior Policy/Programme Officer, FAO Regional Office for Africa.
Mr. Chet AESCHLIMAN - Rural Finance and Marketing Officer, FAO Regional Office for Africa.
Mr. Zakary RHISSA - Livestock Specialist, FAO Regional Office for Africa.
Mr. Sampson AGOZDA - International Consultant (Land and Water Resources).
Dr. Peter SMITH - International Consultant (Institutions).
Mr. Michael CONNOLLY - International Consultant (Land and Water Resources).
Dr. Ponniah ANANDA - (International Consultant, Agricultural Research).
Dr. Joseph Sam SESAY - Civil Affairs Officer, UNMIL.
Mr. Isaac Flowers-Coordinator, National Bureau of Fisheries, Ministry of Agriculture (MOA).
Mr. Yevewuo SUBAH - Deputy Coordinator, National Bureau of Fisheries, (MOA).
Mr. Momoh N. JOHNSON - Statistician, National Bureau of Fisheries, (MOA).
Mr. Eric B.C./ KEKULA - Extension staff, National Bureau of Fisheries, (MOA).
Mr. Denis J. HYNES - Country Representative, Africare, Liberia.
Mr. Bai Rogers - Agric Coordinator, Africare, Liberia.
Dr. Yves FERMON - Fish Biologist, ASUR (French NGO).
Ms. Claire GSEGNER, Fish Farming Specialist, ASUR.
Mr. Thomas GAYFLOWA - Coordinator, Catalyst Incorporated (local NGO).
Mr. Michael SHI- General Manager, Ma-Sanja Fishing Company.
Mr. Abdallah HAMDAN - General Manager, Sham Incorporated (Fishing CO.)
Mr. Francis TAY - Head Fisherman, Popo Beach, Monrovia.
Mr. Gabriel SAGBAH - President, United Fisherman Cooperative Society, Popo Beach No. 4, Monrovia.
Mr. Joseph BLAMOH - Head Fisherman, Kru Beach, West Point.
Mr. Yarkpazuo KORVAH - Farm Manager, Cuttington University.
Mr. John MENNEU - Fish Pond Attendant, Memyen Village, Nimba County.
Mr. Jackson WHALEAH - Spokesman, Kpodo Farmers Cooperative Society, Zayeglay Village, Nimba County.
Mr. Wheye GONLE - Village Head, Gneukpanlah Village Development Committee, Nimba County.
Mr. Zogbay WIMBEH - Fish Pond Attendant, Gneukpanlah Village, Nimba County.
Mr. Oliver VANNE - Fish Pond Attendant, Gneukpanlah Village, Nimba County.
Mr. Adnan Monsour - Manager, West African Enterprise, Tubmanburg
Mr. Sando Kplor - Head fisherman, Jornii Town, Cape Mount
Mr. Abdoulai Seidi - Migrant Fisherman, Robertsport

Mr. Joseph Dortu - Head fisherman, Kru town, Robertsport
Mr. Alex Appleton - President, Robertsport Fishing Development Union
Ms. Cecelia Doryen - Head Processor, Robertsport
Mr. Boimah Sombai - Fisherman, Farlie, Cape Mount,
Mr. Miatta Sonii - Processor, Farlie, Cape Mount
Mr. Armah Parker - Fisherman, Mandoe, Cape Mount
Mr. J. Konah McCauley - Commissioner, Marshall City, Margibi County
Ms. Cecelia Bestman- Kru - Governor, Marshall City
Mr. Solomon Dadzie-Fanti - Governor, Marshall City
Mr. Kweku Aku-Fanti - Head Fisherman, Marshall City
Mr. Borbor Nappy- Kru Head Fisherman
Ms. Cecelia Gweh - Head processor, Port Beach, Buchanan, Grand Bassa
Mr. Dweh Pupo - Fisherman, Port Beach, Buchanan
Mr. Mathew Puo - Fisherman, Kroc Beach, Buchanan
Mr. Andrew Nketsiah - Fanti Governor, Bassa
Mr. Kwamena Mensah - Fanti chief Fisherman, Bassa
Mr.Comfort Nketsiah - Head Processor, Fanti Town, Buchanan
Mr. Abbas Nasser - Manager, African Fisheries, Buchanan
Ms. Julliet Cassel - Superintendent, Grand Bassa
Mr. C. Tero Coker - County Coordinator, Kpan-Kpan Gbo, Inc.
Mr. Varney Corneh - Program Coordinator, Concern World Wide
Mr. Emmanuel Yarkpazua - Agriculture Coordinator, Lutheran World Service
Mr. Augustus Varney - Agriculture Coordinator, Samaritan Purse
Mr. Solomon Tucker - Fisheries Inspector, Grand Bassa
Mr. James Zayzay-Co - Chairman, National Investment commission
Mr. Getee Sulunteh - Agriculture Coordinator, Bong County
Mr. J. Boimah Konto - Fish farmer, Bong County
Mr. Joseph Pope - Fish Farmer, Bong County
Mr. Belle Dumbar - Fish Farmer, Montserrado County
Mr. David Wiles - Director, GCLME Project, EPA
Ms. Yvonne Clinton - Deputy Director, Operations, Bureau of Maritimes
Mr. David Mendeh - Director, BUCCUBAH, Buchanan, Bassa.
Mr. Macon Tubman - Agriculture Assistant, LCIP

ANNEX 3

ORGANIGRAM

THE MINISTRY OF AGRICULTURE



ANNEX 4

FISHERIES SECTOR REVIEW – ARTISANAL FISHERIES

Artisanal Fisheries A

County	No. of fishing communitites	No. of fishers	Processor/monger	No. of Liberian	Migrant	Total
Bassa	18	2,748.00	6,037.00	1,785.00	7,000.00	8,785.00
Rivercess	12	817.00	753.00	1,255.00	315.00	1,570.00
Sinoe	30	1,452.00	938.00	2,040.00	350.00	2,390.00
Maryland	8	508.00	646.00	654.00	500.00	1,154.00
Montserrado	13	4,230.00	6,574.00	7,804.00	3,000.00	10,804.00
Grand Kru	35	964.00	1,119.00	1,883.00	200.00	2,083.00
Bomi	4	298.00	261.00	331.00	228.00	559.00
Cape Mount	14	1,799.00	842.00	1,950.00	691.00	2,641.00
Margibi	5	398.00	1,200.00	1,050.00	548.00	1,598.00
Bong	3	167.00	124.00	285.00	6.00	291.00
Lofa	4	36.00	36.00	72.00	-	72.00
Nimba	6	230.00	326.00	556.00	-	556.00
Grand Gedeh	2	62.00	216.00	278.00	-	278.00
Gbarpolu	2	72.00	158.00	230.00	-	230.00
River Gee	2	47.00	63.00	110.00	-	110.00
Total	158	13,828.00	19,293.00	20,283.00	2,838.00	33,121.00

Source: Bureau of National Fisheries (BNF) 2006.

Artisanal Fisheries B

County	% Liberian	% Migrant	No. of Canoe	No. of canoe with Motor	% Motorization	Large (12-18 man)	Fleet structure medium (3-5 man)	Small (1-2 man)	No. of cold stores	Freezing capacity (ton)	Catch (ton) 2004-05
Bassa	20.32	79.68	581.00	90.00	15.49	40.00	50.00	2.00	2.00	48.00	2,304.00
Rivercess	79.94	20.06	500.00	30.00	6.00	6.00	12.00	-	-	-	345.60
Sinoe	85.36	14.64	211.00	20.00	9.48	10.00	25.00	-	-	-	526.70
Maryland	56.67	43.33	204.00	13.00	6.37	8.00	51.00	-	-	-	439.95
Montserrado	72.23	27.77	638.00	43.00	6.74	21.00	135.00	32.00	32.00	26,000.00	1,127.00
Grand Kru	90.40	9.60	515.00	7.00	1.36	5.00	8.00	-	-	-	312.40
Bomi	59.21	40.79	163.00	28.00	17.18	12.00	16.00	2.00	2.00	48.00	739.30
Cape Mount	73.84	26.16	483.00	21.00	4.35	21.00	33.00	-	-	-	1,095.20
Margibi	65.71	34.29	178.00	22.00	12.36	14.00	15.00	6.00	6.00	150.00	869.73
Bong	97.94	2.06	-	-	-	-	-	4.00	4.00	96.00	2.10
Lofa	100.00	-	-	-	-	-	-	2.00	2.00	48.00	1.80
Nimba	100.00	-	-	-	-	-	-	5.00	5.00	20.00	3.70
Grand Gedeh	100.00	-	-	-	-	-	-	1.00	1.00	24.00	2.00
Gbarpolu	100.00	-	-	-	-	-	-	-	-	-	2.80
River Gee	100.00	-	-	-	-	-	-	-	-	-	1.20
Total	**80.11**	**19.89**	**3,473.00**	**274.00**	**7.89**	**137.00**	**345.00**	**54.00**	**54.00**	**26,534.00**	**7,773.48**

Source: Bureau of National Fisheries (BNF) 2006.

ANNEX 5

LIST OF LICENSED INDUSTRIAL FISHING VESSELS (Source: Bureau of National Fisheries 2006)

Boat name	Boat #	GRT	Cold Store capacity (ton)	Catch(ton) 2004	Catch(ton) 2005	No of employee	# of Liberian	# of migrants	Type of Fishing
Greecoland		159	300			10	10	0	Trawl fishing
Soroya	1	180	1000			13	10	3	Trawl fishing
Soroya	2	180	0			20	20	12	Trawl fishing
Jeogin	15	97.35	2000			325	25	300	Paired Trawling
Jeogin	16	97.35	350			14	8	6	Paired Trawling
Heibei*	803	125	350			140	70	70	Shrimping
Yuanyu*	10	150	0			32	18	16	Shrimping
Honglin	23	166	105			8	8	0	Paired Trawling
Honglin	24	166	0			0	0	0	Paired Trawling
Haida	5	116	0			0	0	0	Paired Trawling
Haida	6	116	0			0	0	0	Paired Trawling
Haida	7	120	4000			36	30	6	Paired Trawling
Haida	8	120	1500			24	20	4	Paired Trawling
Haida	9	120	1000			38	32	6	Paired Trawling
Haida	10	120	2000			22	16	6	Paired Trawling
Tania		221	500			11	8	3	Fish trawling
Seta	70	214	0			0	0	0	Fish trawling
Tae Woong	607	201.5	0			0	0	0	Fish trawling

Boat name	Boat #	GRT	Cold Store capacity (ton)	Catch(ton) 2004	Catch(ton) 2005	No of employee	# of Liberian	# of migrants	Type of Fishing
Cidadea de olhao		124.16	0			0	0	0	Fish trawling
Medna		235	0			0	0	0	Fish trawling
Ocean		225	0			0	0	0	Fish trawling
Twin Port City	101	91	0			0	0	0	Paired Trawling
Twin Port City	102	91	0			0	0	0	Paired Trawling
Twin Port City	103	91	0			0	0	0	Paired Trawling
Twin Port City	104	91	0			0	0	0	Paired Trawling
Global	7	97.35	0			0	0	0	Fish Trawling
Beverina		112	0			0	0	0	Fish Trawling
Guoji	801	148	0			0	0	0	Paired Trawling
Guoji	802	148	0			0	0	0	Paired Trawling
Total	29	4122.71	13105	1502.74	2806.811	693	275	432	

Source: (Bureau of National Fisheries 9BNF) 2006.

ANNEX 6

FISH FARMERS

County	District	# of Community	# of fish farmers		# of Ponds	Area(Ha)	Production
			male	female			(ton)/2004
Bong	Suakoko	27.00	320.00	80.00	65.00	5.61	
	Zota	6.00	184.00	46.00	10.00	0.40	
	Panta	7.00	172.00	43.00	15.00	0.60	
	Kpaii	2.00	43.00	11.00	8.00	0.32	
	Jorquelleh	8.00	81.00	20.00	17.00	0.68	
	Kokoya	4.00	78.00	19.00	5.00	0.09	
Sub-Total	6	54.00	878.00	219.00	120.00	7.70	
				-			
Nimba	Saniquellie Mahn	6.00	234.00	58.00	25.00	0.83	
	Saclepea Mahn	9.00	330.00	72.00	29.00	1.02	
	Gbelegeh	7.00	206.00	51.00	17.00	0.60	
	Zoegeh	13.00	271.00	68.00	36.00	1.44	
	Tapita	10.00	186.00	46.00	35.00	1.75	
Sub-Total	5	45.00	1,227.00	295.00	142.00	5.64	
				-			
Lofa	Zorzor	3.00	58.00	14.00	12.00	0.36	
	Salayea	5.00	98.00	24.00	15.00	0.75	
	Voinjama	17.00	170.00	42.00	67.00	1.00	
	Kolahun	7.00	68.00	17.00	30.00	0.35	
	Foya	2.00	2.00	-	5.00	0.01	
Sub-Total	5	34.00	396.00	97.00	129.00	2.47	
Bomi	Klay	6.00	157.00	39.00	20.00	0.68	
Margibi	Todee	2.00	40.00	10.00	7.00	0.24	
	Kakata	1.00	20.00	5.00	6.00	0.20	
	Careysburg	2.00	3.00	1.00	18.00	0.38	
	Johnsonville	1.00	5.00	1.00	1.00	0.00	
Sub-Total	5	12.00	225.00	56.00	52.00	1.50	
Grand Gedeh	Tchien	8.00	135.00	33.00	30.00	1.38	
Maryland	Keleway	1.00	5.00	1.00	1.00	0.00	
	Harper	1.00	3.00	1.00	1.00	0.00	
	Keluway	4.00	8.00	2.00	4.00	0.16	
Sub-Total	4	14.00	151.00	37.00	6.00	0.16	
Grand Total	25	159.00	2,877.00	704.00	449.00	17.47	38.81

Source: Bureau of National Fisheries 2006.