AN OUTLINE OF WEST AFRICAN
SMALL-SCALE FISHERIES
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by

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Programme de Développement Intégré
des Pêches Artisanales en Afrique
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GCP/RAF/197/NCR.
With financial assistance from Denmark and Norway, and in collaboration with the Peoples Republic of Benin, the Fisheries Department of FAC is implementing in West Africa a programme of small scale fisheries development, commonly called the IDAF Project. This programme is based upon an integrated approach, involving production, processing and marketing of fish, and related activities; it also involves, in particular, an active and full participation of the target fishing communities.

This report is a working paper and the conclusions and recommendations are those considered appropriate at the time of preparation. The working papers have not necessarily been cleared for publication by the government(s) concerned nor by FAO. They may be modified in the light of further knowledge gained at subsequent stages of the Project and issued later in other series.

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1. INTRODUCTION

This outline of small scale fisheries in the West Africa maritime region has been written to serve as a background to the work of the Programme for Integrated Development of Artisanal Fisheries in West Africa. It does not aim to be comprehensive, nor does it aim to give equal importance to all items which are necessarily important to small scale fisheries development. Nevertheless, an attempt is made to highlight certain important features and trends which presently, and which might possibly in the future, affect the state of small scale fishery development in the region.

In comparison with other parts of the world, the region has a relatively small population of nearly 200 millions spread over a vast land area. However, the area and population of each country vary greatly and, for example, the population of Nigeria dominates the region with over fifty percent of the total.

The most abundant fish resources are concentrated along a relatively lowly populated coastline stretching from southern Morocco to Guinea, and the principal species caught are sardinella and horse mackerel. About one million tons of fish often caught off Northwest Africa are imported into the area Liberia to Zaire each year. Brackish water fisheries, together with aquaculture, account for only a small percentage of total landings (but brackish water fisheries are important to artisanal fisheries).

The total volume of fish caught in the territorial waters of the coastal countries fluctuated around 3 million tons during the last fifteen years (with an increase between 1972 and 1977, and a decrease after that due to the introduction of EEZ's), but the African coastal countries increased their share from 37% in 1972 to 42% (by volume) in 1983. It is estimated that the share of the coastal states in the catch (by value) increased from 28% in earlier years to 45% in 1983. The total landed value of fish caught in these waters was estimated at around US$ 1,400 million for 1983. For all fisheries based on countries from 20°N to 5° the total catch is estimated at 934,000 tons, of which the canoe fishery makes up about 69 percent. (This area excludes Morocco, and indeed this outline only gives an account of small scale fisheries along the coast from Mauritania to Zaire).

With the introduction of the Exclusive Economic Zones in most coastal states in recent years governments were confronted with the problems of rationally exploiting the living and non-living resources in their waters. The development and management problems in fisheries were many. For the artisanal sector, the problem often centers around the question of how to increase production, how to increase fisherman’s incomes and how to protect them from the direct physical and economic competition of the industrial sector.

The maritime canoe fishery is based on a relatively low
investment and stimulates high employment, in associated fishing and post-harvest activities. Nevertheless the investment costs are increasing and the units and required support organisation are becoming more sophisticated. The basic investment required for a canoe which purse seines exceeds US$ 10,000 and this puts ownership well beyond the scope of the poorest fisherfolk. Not only is the canoe fishery becoming more costly; it is also becoming more concentrated, with more canoes basing their activities in sheltered landing places in ports, or small urban areas. This increasing complexity of the canoe fishery has implications for the correct orientation of any external assistance designed to aid this activity of the fishery sector. Nevertheless the lagoon fishery remains an area where very low cost fishing continues to be possible, and it is open to access by the very poor and vulnerable groups (although in many lagoons the cost of fishing units and traps - e.g. brush park acadja fisheries - now approach the cost of a marine unit).

Although GNP per caput is an unreliable guide to the wealth of a country it does indicate to some degree the differences in order of magnitude of living standards between countries. Using GNP per caput it is apparent that Gabon is by far the wealthiest country in the region, with a GNP per caput of about US$ 3480, and Zaire is the poorest country with a per caput GNP of about US$ 140. According to the 1986 World Bank Atlas, between 1973 and 1983 the actual average change in GNP per caput per annum in fifteen of the nineteen coastal countries was either negative or showed an increase of less than one per cent. Population of all countries is increasing at about 2.6 per cent per annum; and this increase coupled with a negative or negligible change in GNP per caput in many countries, raises considerable concern about the overall trend in living standards.
Table 1.1

Population and GNP
1984 preliminary data

<table>
<thead>
<tr>
<th>Country</th>
<th>Population Million</th>
<th>GNP per caput US$</th>
<th>% growth in GNP '73 - '83</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mauritania</td>
<td>1.7</td>
<td>450</td>
<td>0.3</td>
</tr>
<tr>
<td>Senegal</td>
<td>6.4</td>
<td>380</td>
<td>-0.4</td>
</tr>
<tr>
<td>The Gambia</td>
<td>0.7</td>
<td>290</td>
<td>-1.3</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>0.3</td>
<td>320</td>
<td>5.3</td>
</tr>
<tr>
<td>Guinea Bissau</td>
<td>0.9</td>
<td>190</td>
<td>-2.1</td>
</tr>
<tr>
<td>Guinea</td>
<td>5.9</td>
<td>300</td>
<td>0.2</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>3.7</td>
<td>300</td>
<td>0.4</td>
</tr>
<tr>
<td>Liberia</td>
<td>2.1</td>
<td>470</td>
<td>-1.3</td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>9.9</td>
<td>610</td>
<td>0.0</td>
</tr>
<tr>
<td>Ghana</td>
<td>13.4</td>
<td>350</td>
<td>-4.5</td>
</tr>
<tr>
<td>Togo</td>
<td>2.9</td>
<td>250</td>
<td>-0.4</td>
</tr>
<tr>
<td>Bénin</td>
<td>3.9</td>
<td>270</td>
<td>2.4</td>
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<tr>
<td>Nigeria</td>
<td>96.8</td>
<td>770</td>
<td>-1.1</td>
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<tr>
<td>Cameroon</td>
<td>9.9</td>
<td>810</td>
<td>3.6</td>
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<tr>
<td>Equatorial Guinea</td>
<td>0.4</td>
<td>n.c.</td>
<td>n.c.</td>
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<tr>
<td>Gabon</td>
<td>0.8</td>
<td>3480</td>
<td>-4.7</td>
</tr>
<tr>
<td>São Tome and Principe</td>
<td>0.1</td>
<td>320</td>
<td>0.2</td>
</tr>
<tr>
<td>Congo</td>
<td>1.8</td>
<td>1120</td>
<td>4.3</td>
</tr>
<tr>
<td>Zaire</td>
<td>30.6</td>
<td>140</td>
<td>-3.0</td>
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TOTAL: 192.2

<table>
<thead>
<tr>
<th>Country</th>
<th>Total</th>
<th>Artisanal catch (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>3 400</td>
<td>3 000</td>
</tr>
<tr>
<td>Cameroon</td>
<td>32 459</td>
<td>30 000</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>9 021</td>
<td>7 500</td>
</tr>
<tr>
<td>Congo</td>
<td>19 297</td>
<td>10 000</td>
</tr>
<tr>
<td>Eq. Guinea</td>
<td>3 600</td>
<td>3 400</td>
</tr>
<tr>
<td>Gabon</td>
<td>50 005</td>
<td>40 000</td>
</tr>
<tr>
<td>Gambia</td>
<td>9 182</td>
<td>8 000</td>
</tr>
<tr>
<td>Ghana</td>
<td>198 424</td>
<td>120 000</td>
</tr>
<tr>
<td>Guinea</td>
<td>17 453</td>
<td>15 000</td>
</tr>
<tr>
<td>Guinea Bissau</td>
<td>2 696</td>
<td>2 000</td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>65 691</td>
<td>40 000</td>
</tr>
<tr>
<td>Liberia</td>
<td>10 650</td>
<td>9 000</td>
</tr>
<tr>
<td>Mauritania</td>
<td>44 000</td>
<td>15 000</td>
</tr>
<tr>
<td>Nigeria</td>
<td>190 265</td>
<td>140 000</td>
</tr>
<tr>
<td>Sao Tome and Principe</td>
<td>4 289</td>
<td>3 500</td>
</tr>
<tr>
<td>Senegal</td>
<td>222 552</td>
<td>150 000</td>
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<tr>
<td>Sierra Leone</td>
<td>36 000</td>
<td>30 000</td>
</tr>
<tr>
<td>Togo</td>
<td>13 897</td>
<td>13 000</td>
</tr>
<tr>
<td>Zaire</td>
<td>1 000</td>
<td>1 000</td>
</tr>
<tr>
<td></td>
<td>934 080</td>
<td>640 600</td>
</tr>
</tbody>
</table>

Source: FAO Yearbook of Fishery Statistics, IDAF estimates.
2. COUNTRY REVIEWS

Much attention of the government of the Islamic Republic of Mauritania in recent years has been addressed to industrial operations and the creation of Mauritanian owned, and managed, fishing and processing companies at Nouadhibou. Sometimes these companies were joint ventures in partnership with foreign investors. At least eight of these large freezer and cold store complexes were built in the early 1980's as a result of the government policy to eliminate licensing of foreign fishing and their replacement by onshore investment with locally controlled fleets. Unfortunately there was then overinvestment and now a number of the large plants lack supplies and are in financial difficulty. Furthermore the joint ventures independently transacted foreign business and it was difficult for government to ensure that foreign exchange earnings were returned to Mauritania.

Partly as a result of the need for central government to earn foreign exchange the decision was taken in May 1984 to set up the Société Mauritanienne de Commercialisation du Poisson (SMCP). Now all frozen fish, frozen at sea or ashore, must be exported through this organisation. The SMCP pays the companies in Ouguiya at the world market price. This appears to have the companies' collaboration. It has also stimulated activity by the artisanal fishermen, who are now assured of a ready market.

A number of Nouadhibou businessmen own craft and/or buy fish from small scale fishermen. The fish are frozen on contract with one of the big freezer companies, and then sold abroad via the SMCP. The exporting of fresh fish on ice, or live lobster, or poutargue (dried mullet roe), or dried and cured fish is not subject to SMCP regulations.

In fact a number of new fishermen from Senegal have entered the artisanal fishery, and they concentrate on line fishing over three days, keeping their fish on ice in cold boxes. Mauritanian fishermen use gillnets as well as handlines. Thus although there is a ready market for high value handline caught fish the fishing of small pelagics with purse seines has not yet had the same impetus to develop.

Purse seining from small craft was developing in the late 1970's when there was a fish meal plant. This plant has since closed, and there is only a very limited local market outlet for small pelagic fish. Prices are not high enough to justify more investment in this type of fishing.

The climate of Nouadhibou is ideal for fish drying and dried fish products have a good potential for increasing exports.

Over 5,000 tons of artisanally caught fish are landed at Nouadhibou each years, and almost all this fish is of high value demersal species. The increase in landings at Nouakchott and the Imraguen villages nearby and the villages towards Senegal has been impressive. In 1980 the catch was estimated at 3,888 tons,
and in 1985 this was 7,549 tons. The catch of the purse seiners has remained at 1,500 tons, and almost all the increase has come from gillnets (now 2,508 tons) and handlines (3,682 tons). Beach seiners are estimated to catch 85 tons.

The artisanal fishery around Nouakchott has intensified as demand for fish from the rapidly expanding city has increased. The city is estimated to have doubled in population every six years since its creation. In addition there is a growing demand for marine fish from the River Senegal valley where local fish catches have dropped as a result of building the Maka Diama dam. Fish landings are expected to increase further as the old wharf becomes available to the fishing sector when soon the new Chinese built port is ready for use by cargo vessels.

The Japanese have had a substantial impact on artisanal fishery development since start of their cooperation programme in 1975. Their aid led to construction of the fishermen's school in Nouadhibou and an initial assignment of instructors. The FAO/UNDP Project MAU/84/012 has been working to produce improved designs of craft used in inshore waters.
For Senegal, the earlier years of rapid increase in catch appear to have been arrested, and artisanal and industrial catches are increasing only modestly. The exports of fish and fish products in volume terms have been static in recent years, but the value continues to increase steadily. Present indications are that increased fishing activity cannot be expected to increase catches, although landings might be increased if less fish is discarded at sea by trawlers.

There is substantial scope for increasing the value of the catch through better handling, storage, processing and presentation. This is particularly evident for the high value species which are following the path of crustacea and becoming luxury products on world markets. A problem remains with some low value fish where local consumers do not have the purchasing power to force up prices paid to fishermen.

Another priority for the sector is to find ways of catching fish at less cost. Some of the purse seiner canoes spend seventy percent of their operating costs on fuel charges, and this cost could be reduced. Fuel as a percentage of the operating cost is often 66 percent for ringnet units, 36 percent for handliners, 26 percent for Gillnetters and only four percent for beach seine units.

Fishermen are highly mobile and move along the coast depending upon season and availability of fish. There is extra handling activity off Kayar (on the Grand Côte north of Dakar) in the cool season, but the increased activity with purse seines is transferred to the Petit Côte (south of Dakar) and the centres of Mbour and Joal in the warm season. A number of fishermen use different fishing techniques according to the season. In general it appears that full-time fishermen spend about 150 days at sea per year (according to a study undertaken with the assistance of the CECAF Project in 1982/83).

FAO has a long involvement with the development of artisanal fisheries in Senegal. The fleet of wooden handliner boats based on Dakar port were built to an FAO design in the 1960's and have been operating for some twenty years. In the framework of an FAO/UNDP project there was introduced the small purse seines for use from a canoe and this technique is now practised along the entire coast, producing more fish than any other technique. In a later project FAO assisted with improving the collection of catch statistics on the artisanal fleet. Through a recent TCP activity trials have been undertaken with development of an inboard diesel powered improved canoe. The artisanal catch was estimated at 143,000 tons in 1983, and 159,614 tons in 1984.

In September 1983 the number of operational canoes was estimated at 4456 by CRDDT/ISRA, in 1985, with 3656 of these canoes engaged in gillnetting/handlining/trapping. There were 269 purse seine canoes accompanied by 246 canoes which carry the fish caught by the purse seines. There were 176 canoes used for beach seines and 106 canoes used for ringnetting. Twenty five per cent of the canoes are based in Saint Louis. Other main centres are
The Canadian International Development Agency (CIDA) has had an involvement in the artisanal fishery since first financing a supply of outboard motors through the Centre d’Assistance à la Motorisation de Pirogues (CAMP) in 1972. This supply was provided through the fishermen’s cooperatives. The motors were provided free of tax, and continued a system of supplying tax free motors which was first started in 1966 (the first motors being introduced to the Senegal pirogue in 1953).

In 1978 CIDA assisted creation of the Centre d’Aide à la Pêche Artisanale Sénégalaise (CAPAS) which was given the objective of improving fish marketing so that more fish would be available in the interior of the country, and higher prices would be gained by members of the fishermen’s cooperatives managing the centres at Kayar, Rufisque and Joal. In fact, the project only partially achieved its aims, and CIDA decided to withdraw its support for the organisation in 1986.

The FAC project for shrimp culture, through France Aquaculture, has had many problems in Casamance but funding is reasonably modest and the activities expect to be continued to ensure that more trials can be continued. It seems there have been problems with disease and salinity.
In the Cape Verde Republic the Direcção de Biologia Marítima (DBM) of the Secretaria de Estado das Pescas (SEP), has collected numerous data and analyses so that a rational plan for government action in the sector can be elaborated. This has been supplemented and assisted by work of the UNDP/FAO Institutional Strengthening Project (CUI/82/003).

In addition, there are a number organisations specifically established to support certain activities. For example the SCAPA (Société de Commercialisation et d'Appui à la pêche Artisanale) assists fishermen in Santiago, Fogo, Brava, Maio, Boavista and Sao Vicente with selling fish, providing equipment, and running small tuna canneries on Santiago and Boavista. Initially it was planned that SCAPA control all buying and selling of fish; but now the main commercial activity is trading of fish only in isolated areas where entrepreneurs have not become involved.

Fishing gear and motor sales are also handled through SCAPA via PROMOTOR (with Japanese aid). On the island of Santo Antão the organisation PAPASA (Projet de Développement de la Pêche Artisanale de Santo Antao) does similar work with financial and technical assistance provided by the Government of the Netherlands.

Besides the handline the fishermen also use beach seines. Other capture methods include diving for lobster, which is common around the island of Sal.

The activities of handline fishermen (fishing mainly for tuna) from the island of Sao Nicolao are particularly pertinent in view of the integrated nature of the operation associated with the island’s cannery (SUCLA). This cannery was able to pay high prices for tuna in the early 1980's, but since then the world demand for tuna has decreased and prices paid to fishermen for tuna have remained static.

It is estimated that fish provides forty per cent of the animal protein consumed, and provides between thirty and fifty per cent, according to the year, of export revenues. These exports, worth about US$ 2 million, comprise lobster (12% value), canned tuna (32% value), and frozen tuna (49% value). There are 1,173 craft of 4 to 6 metres length of which about one third have outboard motors. The small scale fisheries employ 3,300 fishermen and land between 8,500 and 10,900 tons. The catch composition is estimated at 3,000/4,500 tons of tuna, 1,000/1,500 tons of ‘Serra’ (small tuna), 2,500/2,800 tons of small pelagic and 1,800/2,100 tons of demersal species.

It has been estimated that 23 per cent of craft and 38 per cent of outboard motors are owned by non fishermen. In general the investment per fishing unit is $ 430 per craft.
In one interesting study of the fishing community of Ribeira da Barca in 1985 it was found that the 59 operational boats went out on average for 15 days per month over a five month period, and caught on average 10 kilos per trip. All fishing was by handline on daily trips. It is also interesting to note how 72% of the fishermen in Ribeira da Barca and 60% in the nearby village of Rincoa are aged below 25 years. There are very few fishermen between the ages of 35 and 45, indicating a probable emigration, before some persons return to the villages to fish in later years. There is often a low catch, in spite of there being many fishing trips, because of the congregation in one particular fishing area, the small size of the boats preventing movement to more distant locations, the little knowledge of fishing techniques, and the high percentage of young people with their generally low experience. Further constraints to a more vigorous artisanal activity have been identified as the lack of supply of fishing gear, and difficulties in obtaining small fish as bait during the tuna season.
Total artisanal landings for The Gambia marine and lower river strata were estimated at 8,906 tons in 1982, 8,993 tons in 1983, and 4,151 tons for January to June 1984. Species which are prevalent in the landings are bonga, catfish, grouper, croaker, threadfin, barracuda and mackerel. Other species frequently landed are sharks, rays and sea snails (*Cymbium spp.*). Some three hundred tons of shrimp are caught annually by canoe fishermen upstream in the river and sold to processing companies in Banjul prior to export. Many of the canoe fishermen in The Gambia have strong links with Senegal and frequently go there to buy (cheaper) fuel and sell high value fish.

From the 1983 frame survey, of a total of 1299 canoes, 360 (28 per cent) were motorized, and of this number 72 per cent were located on the coast and the remainder operated along the river. In recent years the number of foreign fishermen in the fishery has remained steady but the number of Gambian fishermen has been increasing.

Table 2.1

<table>
<thead>
<tr>
<th>Administrative areas</th>
<th>1981</th>
<th>1983</th>
<th>1984</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine Coast</td>
<td>160  330  490  152  245  397  175  215  390</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower river (estuarine)</td>
<td>297  85   382  560  195  755  633  155  788</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper river (fresh water)</td>
<td>81   101  182  68   99   167  94   144  238</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>538  516  1054 780  539  1319 902  514 1416</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Results of frame survey, Fisheries Department, Banjul, The Gambia.

The European Development Fund has been supporting artisanal fisheries development, through provision of funds for a revolving loan scheme, installation of a ten tons per day ice plant and a complex at Gunjur beach for smoking, drying and storing fish, and construction of access roads to landing sites along the coast.
Japanese funds have provided for supply of outboard motors and fishing gear, as well as four small vessels and a five ton per day ice plant.

Solar driers for reducing post-harvest losses have been provided by FAO, and ODA has also assisted with trials on this equipment.

It is reported that the company Scanagua, subsidiary of the Bartz group of Bergen is assisting a joint venture Norway-Gambia company ‘Scan-Gambia Shrimp Ltd.,’ with fifty one percent of the shares to be held by Norwegian investors, for shrimp aquaculture in The Gambia. A pilot project is first to be established, and slowly the project will be expanded before reaching full capacity within five years. If the initial trials with imported Asian shrimp are successful the project may cover 100,000 square metres and eventually produce up to 4,000 tons of shrimp each year. The total cost of the project is projected to be US$ 21 million, with the possible employment of one thousand workers.
The organisation PESCARTE within the Guinea Bissau Secretariat of State for Fisheries is responsible for artisanal fisheries development, and for the various externally financed projects to assist the artisanal activities. Nationals of Guinea Bissau until now have had a limited interest in canoe fishing, and the more professional artisanal fishermen have either been of Senegalese nationality, or had strong links with Senegal.

The Swedish SIDA financed project has been operating for some ten years, and continues to be based on the island of Bubaque. Swedish funds cover cost of the project manager, accountant/administrator, mechanic, masterfishermen, and sends it on two transport boats to Bissau. Recent throughput at the centre has been 654 tons in 1981, 566 tons in 1982, 643 tons in 1983 and 429 tons in 1984.

The success of the Bubaque centre and other artisanal activities have been to some extent limited by the low incentives available to fishermen to sell fish at the high prices consumers are prepared to pay. The fixed government price for fish has in fact been raised recently and this may encourage canoe fishermen to be more active. The rise in price may discourage fishermen at Cacheu from landing fish to Senegal traders in return for F.CFA and/or in exchange for foodstuffs. So far the artisanal centre at Cacheu, financed by the European Development Fund has been having difficulties in attracting fishermen to land their fish for sale through official channels.

The installations of the Guinea Bissau-France joint venture Semapesca are large for the actual throughput (for the plant was originally built on the assumption that trawlers would land their catch to the plant, which only occurred over the first few months). The company exports about 3.5 tons of shrimp per month to the French shareholders Dubois Express Marée of La Rochelle. The artisanally caught shrimp are collected from the Cacheu River, mainly around Farim, and it is intended that operations be extended to cover other rivers, e.g. the Mansoa and the Geba, in the next year or so.

In the framework of Chinese aid six pair trawlers of 24 metres length, built of a local heavy wood, have been constructed in Bissau. The vessels have engines of 135 hp. Although the Chinese are to stay on for one year after completion, to provide technical assistance with fishing, it is unclear which government agency will be responsible for the craft, and it is doubtful if results will be very positive.
The artisanal fishery sector in Guinea was subjected to various forms of organisation in the last fifteen years; at one point canoe fishermen were formed into 'Brigades' and controlled by the Navy. However, over the last two years the canoe fishermen have been permitted to operate without interruption, and activity has increased substantially.

There is considerable movement of canoe fishermen along the coasts of Sierra Leone and Guinea (and some Senegalese fishermen work off the north coast); frequently fishing materials are from one location where supplies are plentiful across the border for sale in the neighbouring country. Some fishermen that were previously working out of Sierra Leone now operate from Conakry, because of changed working conditions and higher fish prices. A Japanese aided project for the supply of outboard motors, fishing gear, and outboard motor repair services has been recently established in Conakry.

With funds from the African Development Bank and the Arab Bank for African Development (BADEA US$ 35 m) the Republic of Guinea is embarking on an ambitious development of the artisanal sector through improvements to canoe landing places, introduction of the improved canoes, supply of motors, gear, and cold stores, and provision of technical assistance. Funds for these projects are being channelled through ODEPAG (Office de Développement de la Pêche Artisanale en Guinée).

The Canadian International Development Agency (CIDA) has provided an adviser to work with the Government, and he has been able to provide key advice for promoting rational development of the artisanal subsector.
Three important small scale fisheries projects are now operating in Sierra Leone, at Tombo, Kambia and Shenge, funded respectively by aid from the Federal Republic of Germany, the European Development Fund and the UNDP/FAO.

The Fisheries Pilot Project Tombo (FPPT) started in 1980 with the main objective to improve the supply of inexpensive fish for the low income population using labour-intensive and village-oriented production devices. At the present moment the project has been financed until August in 1987. The financial commitment of the Federal Republic of Germany up to the end of the present phase stands at approximately 12.0 million Deutschmark (approx 5 million U.S. Dollars). The Sierra Leone financial input from 1980 to 1986 has been 1.2 million Leones. This amount covered staff salaries and other recurrent costs. On the Sierra Leone side the executing agency is the Fisheries Division of the Ministry of Agriculture and Natural Resources. The responsibility for the German side is undertaken by GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit).

Tombo is a fishing village situated about 60 km south of Freetown on the Freetown Peninsula and the intention has been to develop Tombo into a 'model fishing village'. The project aimed at introducing appropriate fishery technology and community development.

In addition to the pilot development centre at Tombo and the Freetown administrative office, the FPPT has outstations at Bonthe/Sherbro Island (South coast), and at Lungi (North coast). The station at Bonthe/Sherbro Island is conducting development programmes in five pilot villages in the Bonthe District. The station at Lungi is to prepare a similar programme. It is intended to develop these stations to be financially self-sufficient. The outstations are run with assistance of U.S. Peace Corps personnel. Micro project funds are also being provided by the U.S.A. The project has direct radio communication network with all its outstations.

The following experiences have been explained by Mr. Uwe Beck, Project Manager, at the 1985 Lomé artisanal meeting:-

(a) Tombo Project is not in many respects a typical Sierra Leonean fishing village. It has a comparatively industrial character with high production potential. It has a horizontal political structure, for there are seven different tribes owing tribal allegiances to seven different headmen.

(b) The acute shortage of fishing materials in Sierra Leone during the past three years is a serious problem for the artisanal fishermen. This was because of the lack of available foreign exchange.
(c) The artisanal fishery is made up of different kinds of enterprises with different types of production. It can be assumed that the people who operate these enterprises are differently motivated towards maximizing their production. It is therefore obvious that the reaction of each group towards economic incentives would vary.

It became clear that some of the projects initial failures cannot only be explained by technical and economic causes. Boatowners do not receive reliable information on the economics of their fishing business as their relationships with the fishmammies are not strictly business-like. Hence, losses occurring in the production sector could be absorbed within this chain. Such a system is operated through credits of goods and cash at varying prices and different conditions. This pattern of operation obscures the awareness of improving the mode of operation by appropriate technology and efficient management. Thus, should there be a change of external factors (e.g. increase in the price of fuel, engines, spare parts, fishing equipment etc.) the business could find itself unable to accommodate the additional financial inputs. The close social link between production, processing and marketing staves off the economic pressure on the fishing enterprises at an early stage.

(d) FPPT has its doubts as to whether the transfer of technology alone may lead to increase productivity, and the introduction of technical innovations should go pari passu with suitable additional measures. Such additional measures should lead to the creation of more economic awareness and a change in attitude of the target groups, but this takes time. The lack of economic awareness means they undertake short-term investment at low initial costs. From experience it has been found that the shoddily built herring boat has a life-span of 2 - 3 years during which period it requires constant repairs, not taking into account seafarers lost while on the beach under repair. The properly built boat could have a life-span of 5 years or more with very little need for repairs during that period.

(e) The Sierra Leone endeavour to promote small-scale fisheries calls for a lot of government inputs. The Sierra Leone budgetary situation in the 1985/86 fiscal year is such that only 4.6 per cent of the proposed expenditure for development was provided by the Government. 95.6 per cent would be provided from external sources (foreign governments and donor agencies). This is a pointer that Sierra Leone may not be able to provide funding for a coastwide programme for the development of artisanal fisheries.

The FPPT realizes that it has to develop, at an early stage, an economic strategy in order to ensure the long-term financial viability, and if possible at least the partial funding of a coastwide small-scale fisheries development programme.
(f) The development of small-scale fishing enterprises requires field officers who have received training as entrepreneurs with relevant field experience. Such qualified personnel are not available in the Government Fisheries Division. A project that wants to operate efficiently needs such officers. That means such officers have to be recruited from the open market at attractive salaries. The Project therefore has to be in a position where it can generate enough funds to pay the salaries and other allowances to such highly qualified personnel.

(g) Since January, 1984, FPPT adopted the novel step of importing and selling fishing equipment to the artisanal fishery at prices slightly below the current prices prevailing in the local shops. The financial results and developmental effects of these activities are promising. The outcome of such transactions from the fishing equipment stores at Tombo, Bonthe and Lungi indicates that sufficient funds could be generated to provide fishing equipment to the artisanal fisheries and embark on community development and on technical fisheries extension services.

The preparatory phase of the UNDP/FAO project for Integrated Development in Rural Fishing Villages, Shenge region (SIL/82/015) started in February 1985, and was followed by approval of the project document in July 1985. The overall project objective is to improve the income, welfare, and prospects of the fishing communities in the Shenge Region with the dual objectives of improving their fish production capacity and their socio-economic well-being. The principal internationally recruited staff are a master-fisherman and a community development specialist.

Initial development has been with improving supply of motors and gear through sale of outboard engines and nets; other work has involved improvements to smoking ovens, craft, sails, and the carrying out of various surveys. The project has given special attention to ensuring the supply of fuel to the village. Soon the activities will involve substantial improvement to buildings, and creation of better communications links. Preparatory work for creation of a cooperative and setting up of a revolving loan fund has been accomplished.

The project area covers fourteen villages, and there are 1066 fulltime fishermen (as determined by Magermans 1985). The fishermen use 196 dugout canoes, 85 plank boats, 37 large Ghana boats, and 10 other craft. There are 43 outboard engines in operational condition as at December 1985. The principal fishing community is at Plantain island, with secondary communities at Katta, Bauma and Bompetoike. There are 31 ringnets in the area, 59 beach seines, and 297 different types of setnets and driftnets.
The original design for the European Development Fund pilot project on Yelebuya Island (Kambia) envisaged the importation of various boats from other parts of the world with similar operating conditions. These vessels would be tested in the Kambia District to determine the most appropriate design of vessels which could be introduced to the region. The primary objective of the project was to reduce the propulsion costs incurred by the fishermen by introducing diesel inboard engines and promoting a greater use of sail power.

MacAlister Elliott and Partners (on the basis of one of their reports this account has been written) were recruited to provide the technical assistance inputs to the project. The project manager joined the project in September of 1983, and conducted a detailed study of the constraints and possibilities implied in the implementation of the original project design. This study revealed that the system of boat-building, ownership and operation is far more complex than could have been envisaged in the original project design phase. It was found that this system is entrenched in the social cultural and economic traditions of village life in the Kambia District and that the introduction of vessels from outside this system would be resisted by the community. It was therefore felt that the most appropriate improvements to the propulsion of village boats would arise from acceptable modifications of the existing vessels.

It was thus decided that the pilot project should concentrate its efforts on testing the use of diesel engines in existing vessels, improving vessel construction techniques to reduce maintenance downtime and increase hull longevity, experimenting with various types of sail, gaining a more detailed understanding of the fishing requirements of the area, and defining the socio-economic links between boat construction and other village activities.

This change of approach resulted in the project moving at a slower pace than was originally envisaged. However, the reduced speed of implementation allowed the project time to understand the cultural environment in which it is expected to operate and provide a sound basis on which to generate improvements capable of long term viability.

In December 1983 a peace corps volunteer initiated a study of the relationship between boat builders, owners, and the fish processing women of Yelebuya Island. This study revealed the close links between these groups and the complexity of the socio-economic system inherent in the traditional culture. Of particular importance was the link between the profitability of the fish smoking and marketing operations and the available money which could be loaned for vessel purchase. Experiments are currently under way with improved Altona fish smokers which reduce processing costs. The volunteer also established a women's cooperative to coordinate and rationalise the lending facilities of the women and is carrying out a fish marketing study to improve the marketing potential of Yelebuya catch.
In April 1984 a master boatbuilder installed two diesel engines in existing Ghana plank canoes and carried out sea trials. Although far more efficient than the existing use of petrol outboard motors, the traditional vessels were found to be of insufficient strength to accommodate the new diesel engines long term. It was therefore decided to construct new vessels using improved techniques. Two traditional design Ghana plank canoes have now been built using these improved methods and are currently fishing successfully in the Kambia Region.

These diesel boats are being monitored and their performance compared with outboard powered craft. Initial results show a dramatic reduction in fuel cost. Speed and manoeuvrability of the boats is largely similar.

In December 1984, another Peace Corps volunteer reviewed the existing use of sail in the Yelebuya area and began experiments with new sail designs.

A master fisherman joined the project for two months in January 1985, and worked with local fishermen on Yelebuya to determine the existing fishing techniques, required modifications to existing vessels to facilitate more efficient fishing and to determine future needs of the industry.

A master boatbuilder joined the project in January 1985 to train fisheries staff in improved boat building skills and to build prototype vessels which are upgraded versions of traditional craft. The project buildings, new simple housing, workshop and storage have been completed at Yelebuya Island.

Over the life of the project, the general economic development of Sierra Leone has undergone a downward trend, the main manifestation of which is a shortage of foreign exchange. This has resulted in fuel shortages and a resulting decline in transport services, shortages of essential food supplies, delayed payment of public servants’ wages and resulting strike action, devaluation of the Leone with rapid inflation of prices and a scarcity of essential equipment and supplies. These factors have created major problems for the project and continue to delay its implementation.

Equipment purchases have been particularly badly affected. The supplies of local timber for boat construction has been restricted and prices have risen dramatically. The supply of boatbuilding tools purchased from Europe had been pilfered before the crates arrived in Sierra Leone and local replacement has been a slow process. The building construction on Yelebuya Island has also been delayed by cement shortages within the country.
In Liberia the artisanal fishery is responsible for the greater part of the local landings of fresh fish for local consumption. The industrial fishery used to depend almost entirely on the activities of Mesurado, which was involved almost entirely in shrimping and importing of fish. The shrimping activities were taken over by operations of companies named Worldwide Seafoods and "Mesaiccom" but these companies have now ceased to exist. However importing of frozen fish, mainly from Las Palmas, is continued by four companies of which "Omnicom" is the most important (it imported 7,429 tons in 1985).

The artisanal landings are estimated to fluctuate around six to eight thousand tons. The catch is mainly by Ghanaians who fish with a number of techniques including the large mesh drift net, the ring net, and the purse seine. Local fishermen from Liberia use small dugout canoes for hand lining.

Government personnel continue to have problems with finding funds to cover running costs. No vehicle is permanently available to the Bureau of Fisheries, and even salaries are frequently late in being paid.

There are three main lagoon systems, all connected permanently to the sea, namely Aby, Ebrié and Grand Lahou. The annual potential catch is 15 to 20,000 tons depending on natural fluctuations, and on the intensity of management measures associated with additional production practices such as accadjas and aquaculture.

Table 2.2 Production of Ivorian Lagoons

<table>
<thead>
<tr>
<th>Name</th>
<th>Surf. (ha)</th>
<th>Recent Production (t)</th>
<th>Potential prod.(t)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Average</td>
</tr>
<tr>
<td>Aby</td>
<td>42600</td>
<td>4250</td>
<td>6375</td>
</tr>
<tr>
<td>Ebrié</td>
<td>56400</td>
<td>4800</td>
<td>7800</td>
</tr>
<tr>
<td>Grd. Lahou</td>
<td>19000</td>
<td>600</td>
<td>715</td>
</tr>
<tr>
<td>Total</td>
<td>118200</td>
<td>11650</td>
<td>14990</td>
</tr>
</tbody>
</table>

The IDAF associated project on the lagoon Aby is a project financed by IFAD (US$ 2.8 m reimbursable over 20 years) and the ADB is the agency which handles local disbursements. All lagoon Aby staff are now at Adiaké; the Project Manager and his Deputy are on contract for 2 1/2 years until end 1987, and both are provided by French consulting firms. The Co-Project Manager is Ivorien and will take over as Project Manager at end 1987. There is a substantial funding contribution from the Côte d'Ivoire Government towards the Project.

The lagoon Aby system (generally up to 4 m deep, but some deeper areas) consists of interlinking but separate lakes Aby, Tendo and Eby. One shore of lakes Tendo and Eby is in Ghana which complicates management decisions. The catch is by beach seine, purse seine and gillnet, with smaller amounts by fixed gear.

Adiaké was the most important base for lining water transport on the lake by road to Abidjan. Now roads have been built to most places round the lake so Adiaké as a lake base has declined in importance. The lake side people mainly worked on plantations so initially had little interest in fishing.

Foreign fishermen, mainly Ghanaians and some Malians, then came during the 1970's. In 1979, there was the project "Programme Pêche Artisanale Adiaké" organised with Groupements à Vocation Coopérative (GVC) with Ivoriens rather than Ghanaians by the ex-Office National de Promotion Rurale, the Ministry of Animal Production and the Banque Nationale pour le Développement Agricole. There was an increase in catch and then a collapse of the ethnalosa fishery, possibly linked to ecological factors. Fishermen themselves requested in February 1982 that the fishery be closed for six months. In the meantime the "cooperatives" disbanded and bank loans were not repaid. However, small scale subsistence fishing was allowed to continue. Annual catches have fluctuated between 11,000 t in 1979 and 3,500 t in 1982. There are about 40 villages on the lake, with 1092 canoes (140 large, 360 average, 592 small). There were 38 cooperatives (GVC) in 1983. There are 43 purse seines and 34 beach seines. Beach seines are owned and operated mostly by Ghanaians, whereas purse seines are owned and operated mostly by Ivoriens.

The idea of the IFAD project is to assist re-establishment of the fishery through controlled use of fishing gear, assistance with developments at the village level, with regard to wells, landing spots, simple health care, access, etc. In addition, a loan programme was started to aid established fishermen to renew equipment, as well as to try out new types of craft and fishing gear. There was an initial plan to provide cold stores and ice plants but this has been dropped because they would be difficult to manage.

The credit is provided after recommendation by the project through the BNDA at 10.5% interest p.a., reimbursable over three years. The BNDA pays 5.5% interest on this loan provided by IFAD to the government at 4 per cent interest p.a.
A number of linings for the wells have been purchased, and the design of the well pump has been decided, but there is now some concern about how best to place the wells to avoid the influx of saline water. Although the well water might become partially saline it will at least be clean (compared to the polluted fresh water presently being taken in barrels around the lake by the fishermen and their families, which has led to a number of cases of cholera in recent years).

It was also planned to introduce the Altona smoking oven, but this has been subjected to re-examination, as the Altona is expensive to build and not necessarily the most appropriate.

One of the microprojects that is being tested is a sort of acadja modelled on the Benin type but using less branches. The outer "fence" is a small mesh net. It is placed in water at two metres depth to avoid fish poisoning which is quite a common practice.

The project intends to examine appropriate management techniques. Already some zones have been declared non fishing areas by local groups either for fetish reasons or because of attempts to protect nursery areas. Certainly the project is not assisting purchase of any new purse seines (only assisting replacement of netting, and purchase of outboard motors).

Statistics on catch and effort are collected and analysed by the Centre de Recherche Océanographique at Abidjan. Fishermen in selected villages are paid to collect information on catch quantities and fishing activity. A frame survey is carried out yearly, and the total catch is extrapolated. It is expected that this system will continue.

The project has to work through the GUC. These GUC are required to repay previous loans before new ones can be authorised. In 1983 some US$ 200,000 had been loaned and 50% of this sum was not yet reimbursed.

There is some discussion about whether to recommend introduction of kerosene outboards. The Ruggerini 14 hp diesel outboard has proved to be rather slow, at 6 knots, and heavy at 100 kg.

The Mali fishermen set lines with up to 2,000 hooks in the evening and collect them in the morning, often with 10 to 15 kilos of Tilapia and Machoiron. Trials are being carried out by the project on set traps made from wire. Crabs are caught throughout the lagoon, and shrimps are caught in traps near the canal to the sea (which is always open). The price of fish sold by fishermen at the Centre de Pêches at Adiaké is fixed at 450 FCFA per kilo for Tilapia and 550 FCFA per kilo for Machoiron (choysechthys). Wednesday is market day and in fact all fishing stops this day.
The transport boats are privately owned and operated and appear to provide a good service. There is a small vehicle ferry from Framlo to the Ghanaian side.

An area beside the channel has at Assini Mafia been reserved by the Direction des Pêches for the shrimp culture project to be run by France Aquaculture with EDF and FAC finance.

In the past three years the marine sardinella fishery has been satisfactory and government is prohibiting the fleet of semi-industrial purse seiners from increasing. This has allowed a number of canoe sardinella operations to become quite successful. The sardine catches were high in the 1985 season so that at one stage a quota for the landings of each small seiner was set. Some canoes also land in the commercial fishing port (and a number carry ice boxes).

Aquaculture development in the lagoons is progressing slowly and more and more farmers are learning the necessary techniques. At one point one farm alone produced 200 t p.a. but the farm collapsed when not enough attention was given to selling at a good price. Now lagoon aquaculture is believed to yield no more than 40 t p.a. but there is every indication this will soon increase substantially. Overall, fresh and brackishwater fish culture yield about 400 t p.a.

The change in Ghanaian fisheries over the last thirty years has been quite remarkable, given that in the early 1950's practically all fishing in Ghanaian waters was undertaken from canoes propelled by paddles. Nowadays, just about every type of vessel available for fishing in the world is found in Ghana, and Ghanaian personnel are skilled in all facets of the industry.

Another striking feature of the fishery scene is the difficult circumstances of Government staff who, in contrast to the private sector, now have access to few funds for carrying out their tasks. Whereas in the 1950's the Government staff were in a position to lead the private sector it is now clear that the development initiative has passed into the private sector. The State Fishing Corporation has large debts and almost ceased operating.

In spite of the great progress made by the Ghanaian industry there are numerous possibilities for improvement. Some improvements can be assisted by the IDAF Project. These could include assistance with making up small trawls and assistance to smaller fishing communities particularly in the Western Region.

There are about 450 vessels of less than 45' length. Many are non functional because of gear box problems and engine breakdowns. An EDF 6 million Ecu project is being implemented through the Agricultural Development Bank to improve the supply of engines and spare parts so this fleet of small vessels can be "rehabilitated". Some caution is required with actual choice of engine under this loan because the cheapest engine may not actually lead to the best performance in terms of after sales
operating and service. An African Development Fund loan for purchase of Ruston Hornsby (India) 60 HP engines was not a success mainly because of the poor service and after sales organisation.

The EEC is also funding the EEC Phase II Rural Banks project through the Bank of Ghana, and 1.5 m Ecu is available for purchase of outboard motors and fishing gear.

The recent trend in the national economy of Ghana has improved conditions for the artisanal sector to obtain fuel gear and necessary supplies. The boat building industry is very active and new canoes also are being built at almost all fishing centres, so the whole fleet is expanding. The sardine season of June to August 1985 was good, and the open craft and canoes were able to make high catches, but the consumer could only pay low prices. This led to much fish going to the cold stores, and since this was costly, the actual return to the fishermen from the season has not been high. The tuna fleet had been operating out of Abidjan in 1984, but returned to Tema in mid 1985, partly due to the high port charges in Abidjan, and partly due to the improved economic conditions in Ghana. Balestes continue to be abundant, and the women processors at Elmina maintain a most active trade in salting and drying the fish. This has stimulated an expanded production of salt from saltpans newly built in the nearby lagoon.

The artisanal sector now has a momentum all of its own. However, it will be important for government to ensure that the activity can continue, and not be detrimentally affected by uncontrolled industrial fishing. An improved surveillance and law enforcement system, to encourage better management, will be one factor, and in 1985 the O.D.A. of the U.K. mounted a mission to make recommendations for improvements to be made. IDAF also paid for the first frame survey of the canoes to be made since 1980.

The dominant feature of the marine fishery in Togo is the role played by the port of Lomé in the artisanal fishery. The industrial fishery (500 tons) is based on only one trawler of the state owned company Stalpeche and one or two trawlers that fish up and down the west african coast and land intermittently at Lomé. In 1983/84 the total artisanal catch was 13,174 tons of which 10,279 tons (78 per cent) was landed in Lomé port. The total catch landed along the coast outside the port was 2,895 tons of which 80 per cent was caught by the beach seine. This quite clearly shows that almost all canoe fishermen catching fish at sea rather than off the beach actually land at the nearby port rather than risk crossing the breakers to land on the beach. The greatest majority (93 per cent) of the fish landed at the port was caught by purse seine. Line caught fish only totalled some 167 tons, but the value of such fish in general is relatively high. Thus the fishery off the short 47 kilometre coastline yields a high catch.

Another important feature of the Togo artisanal marine fishery is the fluctuation in number of canoes and fishermen
according to season. In the high fish catching months of July-September some 450 canoes with 5250 fishermen were working, whereas in the other less productive fish catching months some 250 canoes with 3500 fishermen were working fishermen come into the country mainly from Ghana and Benin.

Other interesting information that has been gathered recently shows that the Lac Togo is generally overfished, with a total estimated catch of 960 tons and a production of 150 kilograms per hectare. An attempt was made to introduce acadijas in 1970 - 75 but this was opposed by fishermen that traditionally fished in the lake, and since then no attempt has been made to reintroduce the technique.

The high demand for fish is not met from local catches and the imports of frozen fish reach 12,000 tons annually (about equivalent to local landings). This imported fish sells at a lower price than locally caught fish, but the availability of this imported fish is not believed to compete with or lead to reduction in price of the locally caught fish, which obtains a higher price and is always in high demand.

Many of the visiting fishermen are Ewe from the nearby zone of Ghana where beach seining is a traditional activity. The owner of the net canoes and material, often worth US$ 10,000, organises a "company" with specialist labour, which travels along the coast.

The Unicoopéma groups fourteen cooperatives, and facilitates bulk purchase of materials and motors. Some of the aid from Japan, destined for the fishery sector, valued at 460.0 million CFA will be distributed through this organisation. The Japanese aid also includes supply of 100 outboard motors of 40 hp, and a small 20 metres length trawler.

The Direction de la Protection et Aménagement des Pêches depends on the Ministère de l'Aménagement Rural, whereas the Service du Développement et la Vulgarisation des Pêches depends on the Direction des Productions Animales of the Ministère du Développement Rural.

It is only possible to make a subjective evaluation of changes in total fish supply in Benin as there is no systematic collection of data from the country's varied fisheries. By far the largest production comes from the lagoon system, which extends along the whole coast line from the Nigerian border to Togo. Shrimp catches have improved as result of the opening of the sand bar allowing the entry of both larva and saline water, which favours the growth of these animals; it is not known, however, if this has had any effect on the growth of fish in the lagoon.

In the marine artisanal fishery 1986 was a particularly poor year for sardinella and catches fell, but industrial catches in general have increased as a result of the operation of two vessels by the Libya/Benin joint venture BELIPECHE, even if the
results obtained have not yet been as good as predicted.

The potential of the Benin lagoons has attracted the interest of the Federal German aid agency GTZ, which in addition to a long-standing project (operated through the CARDER Atlantique) for the development of cooperatives, has recently begun a new project for the collection of statistics and better management of the lagoon fisheries, in particular, Lake Oueme and its associated river flood plan.

Cotonou is the headquarters of the Integrated Project for the Development of Artisanal Fisheries, which covers most of West Africa.

The Government of the Federal Republic of Nigeria has implemented numerous fishery development projects over the last decade. The projects have included credit schemes for purchase of craft, outboard motors and gear, creation of a research institute, construction of port facilities, introduction of small trawlers, fish farm development, a tuna survey, establishment of rural fishery development centres, formation of a shrimping company, and formation of a company for importing fish and distant water fishing.

However, the government is now faced with serious economic constraints to carrying out further development. The earnings from oil exports (95% of foreign exchange revenues) have normally provided seventy percent of government revenues and are now in such decline that they can provide only one quarter of the equivalent earnings of 1980. The foreign exchange debt is estimated to be about twenty billion dollars.

The depressed state of the economy is having a negative impact on the fishery sector, and some of the particular effects have been

(i) lack of new engines, spare parts and nets,
(ii) reduction in licenses for fish imports, and
(iii) higher naira prices for locally caught fish.

The funds available to the NIOMR and FDF have been reduced, and some personnel have been laid off. A number of Fourth Development Plan (1981-85) projects could not be completed because of funding problems, and it is not sure if the Fifth Development Plan (due to start in 1986) will be initiated as scheduled (and in any case the proposed list of projects is unrealistically ambitious). In addition there has been further reorganisation of Federal responsibilities, and much of the work given formerly to River Basin Authorities is now scheduled to be once again the responsibility of more traditional civil service institutions. It is apparent therefore that persons working in the fishery sector are facing increased difficulties in carrying out their jobs.

The FAO/UNDP fisheries project NIR/77/001 has been having some successful results with trials of large mesh (over 5") gillnets, as carried out by a UN volunteer. The NIOMR is preparing a catalogue of artisanal fishing gear as used in Nigeria (and working on improvements to beach seines).
The steady upward trend in fish catches was "officially" arrested for 1984 which was due mainly to a steep decrease in reported catches for the coastal and brackishwaters. It has recently been reported that the fish catch was 373,755 tons in 1984, and only 240,220 tons in 1985.

At the 1985 World Food Day show in Lagos the NIR/77/001 fibreglass banana boat (27 foot long, with outboard motor) for work in Ondo State and negotiating the mudflats was shown and elicited praise-worthy comments. There are also plans to build a small wooden trawler. There are some interesting results with small vessels operated commercially. For example the "Farcha" company has a fleet of twenty 15m trawlers that go out on day trips. The Nigerian Institute of Oceanography and Marine Research (NIOMR) is monitoring the results of a commercial opendeck vessel 8m long with a 25 hp inboard diesel that is gillnetting.
According to official sources for Cameroon the main animal protein consumed is fish. However, local fish supplies appear to be declining, firstly because of drought in the North, and secondly because of the industrial vessels (based on Douala) being limited to fishing Cameroon waters. Reliable statistics on many of the fisheries are not at present available. As a result of the rising population and declining local production the demand for fish is increasing, and it is being met mainly by increased imports (now about 60,000 tons per year).

The artisanal marine fishery is dominated by Nigerian canoe fishermen who own about 75 percent of all canoes (about 4,000). They operate in isolated camps, often in the mangrove swamps. The catch is estimated very approximately at 20,000 tons much of which is small shrimp dried for adding flavour to local food.

Douala has long been a base for trawlers fishing throughout the sub-region. However, with the assertion of fishing rights by neighbouring countries over their 200 mile zone, the Douala-based vessels are now restricted to fishing in Cameroon waters. The landings of trawlers have decreased from 20,000 t in 1982 to about 12,000 t in 1984. There is an urgent need to improve evaluation of the resource in order to regulate fishing effort.

Government assists fishermen through MIDEPECAM (Mission de Développement à la Pêche Artisanale Maritime) which provided detaxed nets and motors through a series of centres along the coast. The centres were first assisted by CIDA, then by the Government, and soon Japanese aid (JICA) is also to provide motors and materials.

MIDEPECAM was first established in 1977. The principal centres are at Douala and Limbe, with a coordination centre at Edea to cover the secondary centres of Muanko and Delané. Other secondary centres are at Kribi and on the island of Biafra towards Nigeria (an island approached by boat from Ekundotie after about 5-6 hours). There are 54 fishing villages along the coast.

Through CIDA six Canadians worked with MIDEPECAM at start of their activities, but due to disagreements the Canadian assistance was withdrawn. MIDEPECAM has to turn in a profit. Fishermen are required to pay for outboard motor repairs at the different centres. The agency has sold 250 motors so far in two years. Each order is of 100 motors and they are sold free from tax. Each set of 100 motors is sold within one week of arrival, because the demand is so high (and only eight motors were sold on credit). The bulk of the fishing nets recently ordered were of a mesh size slightly bigger than required because it appears fishermen require 2 3/8" mesh to catch the ethmalosa which are now of a generally smaller size.

All core staff in MIDEPECAM continue to be paid by the Direction des Pêches. However, extra staff of the Direction would have to be assigned to the agency if the nationwide statistics system is to be initiated. This would also be the case if the
agency was required to undertake extension work. This would have to take into account the outlook of the different ethnic groups involved in artisanal fisheries.

The mainland Equatorial Guinea coastline has some mangroves and trawling grounds from which shrimp can be taken. The island territory, including Annobon, sometimes attracts tuna and European tuna vessels exploit these stocks.

The government decided in 1984 that the economy enter the CFA zone and since that time the economic life has slowly recovered. However, the canoe fleet needs to be built up and equipment imported in order to increase local landings.

The FAO Investment Centre has formulated projects for fishery development and it is expected that the African Development Bank will soon approve financing. Bilateral aid for the sector has already been received from Spain, France, and the European Development Fund.

Sao Tome and Principe have fishing communities in scattered communities around both islands, and hauling is the most common fishing technique. A Secretary of State for Fisheries was nominated in 1981 and this was the basis for establishing a Ministry for Fisheries in 1983.

IFAD has financed construction of a workshop and purchase of spare parts to support an outboard motor programme to the value of US$ 470,000. However, many of the craft used by artisanal fishermen are not big enough or strong enough to support motors. There is the State Company "EMPESCA" which is responsible for marketing fish and actual fishing operations. Retail prices are fixed by the company. Two trawlers have been acquired in Spain, and fish in the waters of Angola (after an agreement concluded in 1980). This is because there are no substantial trawling grounds around the two islands. The two vessels of 43 metres length and 60 metres length disembark to the cold stores at the landings point called Neves. Relative to the catches of the canoe fishermen (about 1,500 tons per year) and the few semi-industrial catches (about 500 tons per year) the trawler catch, at about 1-2,000 tons must have a considerable impact on local supply and reduce prices obtained by artisanal fishermen.

Along the entire coast of Gabon there are canoe fishermen from Nigeria, Benin, Togo and Ghana. Generally the long line is used to catch high value demersal fish and gillnets catch the lower value pelagic fish.

Near the port of Owendo the European Development Fund paid for construction of an artisanal fishery centre which supplies fuel, ice, and fishing materials. The cold store will allow fish to be stored in times of high catches.

There has been rapid expansion of the industrial fleet in recent years, with introduction of trawlers and handlines. One company purchased a series of trawlers specifically for shrimp
fishing, and recruited Koreans as crew. In the vessels of other companies can be found many Senegalese skippers, mechanics and deckhands. It is reported that all companies operating in the fishery sector should have a ten per cent shareholding reserved for government participation.

Prices of the fish for sale at the quay, wholesale, and retail level are fixed by Government and are generally respected by the companies. A subsidy for gasoil is provided by Government to operators, in the industrial field, of 10 FCFA per litre, and this reduces the price from 120 to 110 FCFA per litre. However, official fish prices in the artisanal sector are not always respected, and the fuel subsidy available to artisanal fishermen is rarely requested. There are some outboards in use which are kerosene fuelled.

Trawlers also now land at the relatively new port of Port Gentil where a small processing plant was set up in 1983. The plant is mainly for filleting sole, and sorting cuttlefish. It is attached to the Amerger fishing company in Senegal. It is probable that the company will soon start sorting and processing shrimp for export. The Italians, French, and Americans have made proposals for developing Port Gentil as a tuna base.

Some frozen fish enters the southern part of Gabon through the port of Pointe Noire. Frozen fish also enters the country through Owendo, primarily for marketing along the line of rail up to Boué. This frozen fish is imported free of tax, and the quantity of fish imported is increasing year by year. In 1985 France reported that 1560.6 tons of shrimp at a value of 93,925m FF were imported from Gabon.

In November 1983 the EEC paid for participation at a meeting in Libreville of Ministers responsible for fisheries in Equatorial Guinea, Sao Tome and Principe, Gabon, Congo and Zaire (as an observer). At this meeting the Ministers agreed to set up an Advisory Committee for Gulf of Guinea Fisheries. The Ministers requested that a report on possibilities for harmonising fishery legislation of countries in the sub-region be submitted to the next meeting of the Committee held in mid 1984. The meeting followed two acoustic surveys undertaken recently in the sub-region’s waters (these were undertaken in 1982, and were paid for by the European Development Fund). There had been an earlier meeting of authorities from countries in the region in March 1980 following a report by the consultants SCET, who had carried out a study of the potential for fishery development in each country in 1979.

FAO has recently prepared a report on legislation for the marine fishery, which will contribute towards improving the possibilities for enforcement.
The Congo artisanal fishery is characterised by a large number of immigrant fishermen from Ghana, Bénin and Nigeria. These fishermen use larger canoes and more sophisticated techniques than the indigenous fishing groups. The total canoe fishery lands about 4-5,000 t annually. A fleet of small purse seiners and trawlers work to land an industrial (or 'semi-industrial') catch of about 14,000 t annually. Imports of frozen fish (much of which originates in Senegal) fluctuate around 8,000 t per year. Imports of salted and dried fish are at about 17,000 t fresh weight equivalent which may reflect on the large quantity of this product finding its way into Zaire where it is highly appreciated.

In 1981 the Congo Government financed a Trust Fund through FAO (UTF/PRC/008/PRC) for formulation of an artisanal fishery landing centre just north of Pointe Noire. Unfortunately Government funds were not available to follow-up the preliminary design. In 1985 a short study by an FAO consultant was undertaken on individual and social attitudes of fishermen towards new technologies, which was prepared as a paper for submission to the Lome (December, 1985) meeting on artisanal fisheries.

There is also a project for development of fisheries on the Congo River, financed through IFAD ($4.58m) and executed by FAO (UTF/PRC/010/PRC) with a total cost of $ 7.74m.

The FAO/UNDP Project ZAI/80/003 in Zaire entitled ‘Assistance à l’Office National des Pêches et améliorations de la pêche artisanale’, was terminated at the end of 1984 after a successful national seminar on fisheries, held at Kinshasa in October 1984. In the final year a number of important reports were prepared on the fishery situation of various zone (such as Lacs Mai-Ndombe, Mobutu Sese Seko, Moero etc. as well as the Zaire River) and on statistics.

A preparatory project (ZAI/84/015) to lead up to support of the Fisheries Directorate, was initiated at the end of 1985.
Table 2.1

<table>
<thead>
<tr>
<th>Country</th>
<th>Canoes</th>
<th>Fishermen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>350 (-450)</td>
<td>2 595</td>
</tr>
<tr>
<td>Cameroon</td>
<td>4 450</td>
<td>15 000</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>1 172</td>
<td>2 306</td>
</tr>
<tr>
<td>Congo</td>
<td>4 450</td>
<td>2 000</td>
</tr>
<tr>
<td>Eq. Guinea</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Gabon</td>
<td>1 130</td>
<td>4 000</td>
</tr>
<tr>
<td>Gambia</td>
<td>1 204</td>
<td>2 800</td>
</tr>
<tr>
<td>Ghana</td>
<td>8 500</td>
<td>40 000</td>
</tr>
<tr>
<td>Guinea</td>
<td>1 700</td>
<td>5 000</td>
</tr>
<tr>
<td>Guinea Bissau</td>
<td>650</td>
<td>3 000</td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>2 800</td>
<td>10 000</td>
</tr>
<tr>
<td>Liberia</td>
<td>1 020</td>
<td>4 200</td>
</tr>
<tr>
<td>Mauritania</td>
<td>300 (-400)</td>
<td>1 750</td>
</tr>
<tr>
<td>Nigeria</td>
<td>10 000</td>
<td>50 000</td>
</tr>
<tr>
<td>Sao Tome &amp; Principe</td>
<td>1 400</td>
<td>1 500</td>
</tr>
<tr>
<td>Senegal</td>
<td>8 256</td>
<td>40 500</td>
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<tr>
<td>Sierra Leone</td>
<td>7 090</td>
<td>17 955</td>
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<tr>
<td>Togo</td>
<td>462</td>
<td>3 000</td>
</tr>
<tr>
<td>Zaïre</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

**Total:** 61 165

Source: Collart (1986)
LISTE DES RAPPORTS DIPA - LIST OF IDAF REPORTS

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Gulbrandsen, O.A., Preliminary account of attempts to introduce alternative types of small craft into West Africa. Cotonou, IDAF Project, 51p., IDAF/WP/3.


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