CLUB DU SAHEL

PERMANENT INTERSTATE COMMITTEE FOR

DROUGHT CONTROL IN THE SAHEL

(CILSS)

REVIEW OF CILSS FIRST GENERATION FISHERIES PROJECTS

IN THE GAMBIA

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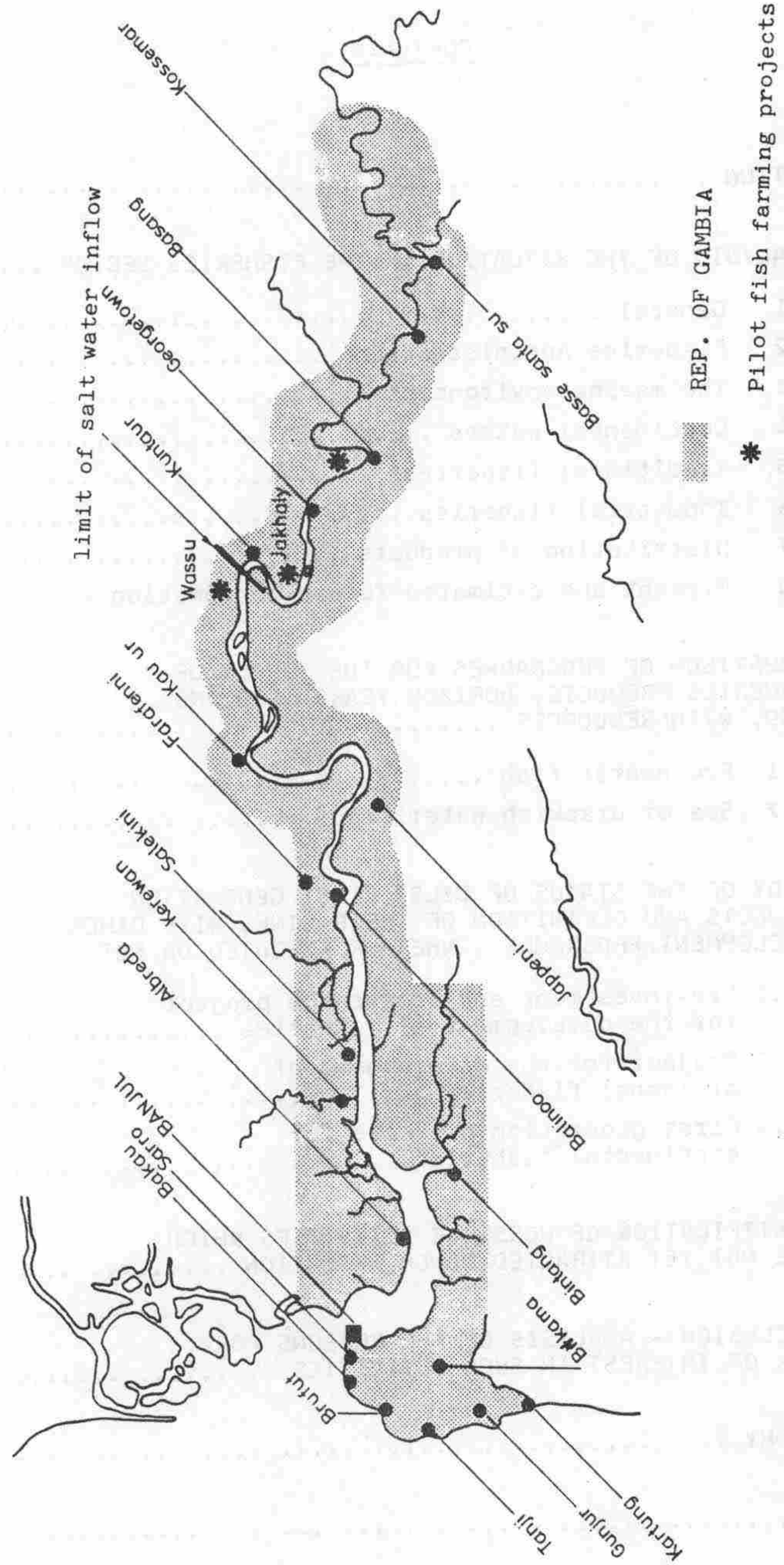

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END-OF-1979 REVIEW OF FIRST GENERATION PROJECTS OF THE PERMANENT INTER-STATE COMMITTEE FOR DROUGHT CONTROL IN THE SAHEL (CILSS) IN THE GAMBIA

INTRODUCTION

The strategy for the development of fisheries in the eight member countries of the CILSS, as defined at the second meeting of the fisheries team, was approved at the second meeting of the Club du Sahel held at Ottawa in May-June 1977(1).

The donors showed varying degrees of interest in the financing of this strategy according to the country concerned; furthermore, the authorities responsible for fishing activities in the different countries did not always have sufficient patience to await the actual introduction of the strategy in face of other financing offers under bilateral or multilateral assistance schemes. It thus seemed useful to review the projects carried out, under way or programmed by the end of 1979 - two years after the Ottawa meeting.

The Republic of Gambia, given that much of it is covered by fresh water, is much less vulnerable to drought than other countries in the area, for example the coastal countries, which are far more dependent on sea fishing to supply their populations with animal protein. That is why the first generation programme for the development of sea and continental fish resources originally contained one single project, later divided into three parts:

(a) Development of continental fisheries (Section I) - Fisheries Department, $576,340 over three years;

(b) Development of continental fisheries (Section IIA and B) - Aquiculture and Fishing Community Centres, $1,463,085 over three years for all the Sahel countries;

(c) Development of continental fisheries (Section III) - Research, $1,045,050 over three years.

The initial project was entitled:

- Pre-investment and assistance project for the development of fisheries: $4,544,000 over three years.

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(1) Model of sectoral fishing programme.

Five activities have so far been initiated since 1977; two others are under study, with some chance of early implementation. Six of them are investment projects, and the seventh a study project.

To assist the Gambian authorities, who have not as yet sufficient administrative personnel to co-ordinate satisfactorily all the activities undertaken, it was clearly necessary to try to harmonize the current efforts, and co-ordinate those likely to give rise to fresh demands.

To this end, Dr. JAMET and Dr. MOAL, respectively Rapporteur of the Fisheries Team attached to the CILSS and Consultant on Maritime Fisheries to the French Ministry of Co-operation, visited Gambia from 24th to 29th January, 1980.

They performed the following tasks:

1. Defining the existing links between the CILSS First Generation programme and programmes drawn up before and after, whether or not under way.

2. Investigating the status of projects under way.

3. Noting any activities which have not so far attracted donor attention.

4. Analysing the reasons for their lack of interest.

5. Drawing up proposals for removing any obstacles to the financing of new projects.

6. Preparing summaries for new projects.

In the course of their investigation, Drs. JAMET and MOAL visited the Banjul fishing port and its various facilities for handling and processing fish and fish products, landing facilities at Gunjur, Tujereng and Brufut, and the fish-farming ponds at Jakhaly and Basang.

They met the following people:

Dr. WALLY N'DOW, Counsellor to the Presidency of the Republic; CILSS correspondent in Gambia.

Mr. S.M. CISSE, Under-Secretary at the Ministry of Agriculture and National Resources.

Mr. ALY CISSE, Executive Secretary of the CILSS.

Mrs. HANNAH KING, Director of the Fisheries Department.

Mr. S.S. FATTY, Director of the Fish Marketing Corporation.

Mr. CHERNO O. JOOF, Administrator at the Department of Fisheries.

Mrs. CECILE DAVIS, UNDP Resident Representative in Gambia.

Mr. KEMAL BEDESTRENCI, FAO Representative in Gambia.

Mr. B.P. CATELLA, E.E.C. Delegate in Gambia.

Mr. OLU TAYLOR THOMAS, Director-General of CIFCO.

We should like to express our gratitude to all of the above for the valuable assistance they invariably extended to the experts in the execution of their task.

I. ANALYSIS OF THE SITUATION IN THE FISHERIES SECTOR

I.1 General

The Gambia is the smallest country in the Sahel region. It covers an area of 10,400 sq.km. consisting of a narrow strip of land on either bank of the Gambia River, stretching for 325 km. as the crow flies from the river mouth to about 325 km. inland (480 km. following the course of the river).

It is a flat country, with vast expanses of marshland and plains subject to flooding.

Rainfall is high for a Sahel country (1,000 mm. per year). There is a short rainy season (June to October) and a longer dry season (November to May).

Evaporation in the dry season reaches a maximum of 7 to 8 mm. per day at Basse and about 6 mm. per day on the coast.

The population numbered about 575,000 in 1979, with an annual growth rate of 2.3 to 2.8 per cent according to source.

It is mainly a rural population. Twenty-five per cent of the people are concentrated in the urban centres: Banjul (40,000 inhabitants) and other smaller towns such as Mansa, Konko, Georgetown, Kaur and Basse.

The Gambian economy is mainly agricultural, with the rural sector representing 56 per cent of the GNP as opposed to under 7 per cent from fishing.

Groundnuts are the main crop, accounting for 94 per cent of the country's exports in value. There are over 300,000 head of cattle, but they do not make a major contribution to the national economy: they are regarded as a capital asset rather than exploited rationally.

Apart from groundnut cultivation, subsistence farming prevails. The Government attaches great importance to the diversification of agricultural production. To this end, it takes the greatest interest in any project, such as fish farming, which is liable to improve the diet of the population in general, and release the rural population from the cultivation of a single crop which is extremely vulnerable in the world market. Other agricultural activities are stimulated as a result.

The economic standard of the population varies appreciably according to its location. Purchasing power is four times higher on the coast than in the hinterland.

I.2 Fisheries Administration

The many studies which have dealt with the Gambian fisheries over the last 30 years or so reveal a striking unanimity among the authors as regards the under-administration of this sector.

The arrangements for the exploitation of the fish resources in Gambia are governed by the new Fisheries Act of 1977 and the Fish Marketing Corporation Act of the same year.

This legislation places under the authority of the Ministry of Agriculture and Natural Resources two decision-making bodies dealing with fisheries:

- The Fisheries Department;
- The Fish Marketing Corporation (FMC).

The Fisheries Department is required to:

- organise the collection of catch statistics;
- supervise the organisation of fishermen;
- improve their socio-economic conditions;
- promote progress in their techniques;
- help them to acquire better equipment;
- help them to exploit new resources;
- assist them to market their products more profitably.

The Department is also responsible for:

- supplying data to the governmental authorities as a basis for a national policy of development of fishery resources;
- ensuring the protection of the national resources by supervising the application of the law;
- policing the fisheries;
- promoting a policy involving fishing licences, and ensuring its application on the lines agreed by the Government.

In these conditions, the Department should exercise full powers. Yet at the same time the FMC (and on this point the Government has merely applied the recommendations of foreign experts) is pursuing a line which is not controlled by the Department, as regards both the traditional fishing fleet and foreign ships, to which the Corporation is in fact empowered to issue fishing licences.

<u>This duality of decision-making powers can only hinder the smooth application of any national policy of fisheries development.</u>

At present the Fisheries Department is constituted as follows:

A - Management

. A (woman) Director

. A Senior Fisheries Officer

. Six Fisheries Officers.

B - Related services

. Mechanics (outboard) 2 senior executives (Fisheries Officers)

. Statistics: 1 senior executive (Fisheries Officer)
1 foreign expert (Canadian from C.U.S.O.)

. Biologist: 1 senior executive

C - External services

. 15 senior staff (Fisheries Assistants)

. 7 inspectors (middle-level executives).

Although this number of staff may seem satisfactory on the whole, in actual fact it is quite the reverse, mainly for the following two reasons:

- Inadequate qualifications of the staff

- Obvious inadequacy of resources as regards:

. scientific equipment;

. technical material;

. infrastructure (no offices on the site);

. means of circulation, general lack of vehicles;

. means of communication: general lack of telephonic or radio linkage.

As a result, there is a very serious break in continuity between the administration and the administered; statistics are incomplete, to say the least; support and assistance activities are still non-existent.

Any progress in the Gambian fisheries sector, whether in river or sea fishing, must be preceded by a radical restructuring of the Fisheries Department, to endow it with:

- real, well-defined powers commensurate with its vocation;

- properly trained staff in sufficient numbers, allotted clearly defined tasks;

- means of circulation, communication and research commensurate with the nature and volume of the work involved.

I.3 The marine environment

It is very hard to define this exactly. While the legislation of 1977 which fixed the limit of the reserved fishing waters at 200 miles offshore (different from the exclusive economic zone) enables Gambian waters to be clearly defined, the position is not the same for the in-shore limits. Indeed:

- the Gambia River is tidal for about 500 km. upstream;

- the salt water inflow is considerable, but varies according to the season. A salinity of 20 per cent is noted at 20 km. from the mouth of the river in September and at 150 km. in the dry season;

- the mouth of the Gambia widens from about 4 km. across at Banjul to 20 km. downstream.

As a result, the length of the coastline varies, according to the authors, from 40 to 85 km., which are low figures in any event. The 200 m depth level is reached about 50 miles from Banjul.

The continental shelf is made up as follows:

- 0 to 10 m.	:	1,100 sq.km.
- 10 to 50 m.	:	2,600 sq.km.
- 50 to 200 m.	:	1,400 sq.km.
		5,100 sq.km.

From July to November the shelf is invaded by warm waters (28°C) of a salinity of 33 to 36 per cent. From December to June the trade winds blow, driving away the warm surface waters near the coast and bringing in cooler waters (16 to 18°C) of higher salinity (36 per cent). A thermal front thus sweeps the shelf twice a year.

Very strong tidal currents are to be felt all the year round in the estuary of the river, and the temperature variations are less marked: 21°C from September to March, up to 27°C from April to August.

The salinity reaches 37 per cent in winter and spring, but only 30 per cent in September-October.

A number of investigations have been undertaken over the last ten years or so to assess the potentialities of the Gambian waters.

It should, however, be noted that it is very hard to estimate the country's own resources in demersal species, still more in pelagic species, for about 50 km. of coastline. A wider range has to be covered, embracing the waters of neighbouring countries.

Our approach can thus give only very approximate results, as the economies of the Gambian and Senegalese fisheries are so closely inter-linked.

The various prospecting, research and analytical operations carried out on local catches have shown that both pelagic and demersal species abound in Gambian waters.

The Soviet investigators put forward a total annual potential catch (MSY) of 260 kg./ha., thus giving for the area considered 150,000 T/year.

In 1977 this potential was adjusted to between 100,000 and 115,000 tons per year.

In actual fact, echo soundings revealed that an exploitable potential of more than 110,000 T/year was hardly to be expected.

I.3.1 Demersal resources

In the light of the experimental fishing operations conducted in Gambian waters from 1968 to 1974, the available quantity per year may be estimated at:

- 4,000 T. of current marketable species;
- 8,000 to 12,000 T. if all fish species are included.

The distribution of stocks is as follows:

- Isobath	0 to 10 m. :	35 per cent
"	10 to 100 m. :	60 per cent
"	100 to 200 m. :	15 per cent

The chief species are:

- Dentex	: 12 per cent
- Pseudotolithus	: 10 per cent
- Pagellus	: 8 per cent
- Arius	: 6 per cent

- Brachydeuterus : 5 per cent
- Trachurur : 4 per cent

Although sharks weighing 50 to 300 kgs. invade the Gambian continental shelf from July to October, nothing is known about their stocks.

Nor is anything known about cephalopods.

In-shore shrimp fishing (P. duorarum) would yield only a few dozen tons, as the shrimps are caught in the river during their annual migration to the sea to spawn. Investigations by the Japanese showed that fishing for Gambian shrimps alone was not an economic proposition in present conditions. Deep-water prawns, however, undoubtedly offer interesting possibilities.

Rock lobster would represent an exploitable stock of 50 to 70 tons per year, which already seems to be greatly over-fished.

Mangrove oysters (Crassostrea gasar), lastly, form large natural beds in most of the creeks.

In conclusion, a total annual exploitable stock of 15,000 tons of demersal species in the wider sense seems to be the maximum.

I.3.2 In-shore pelagic species

With such a short seaboard, there is no point in dealing with the exploitation of deep-sea pelagic species, except as a temporary expedient to make up the quantity.

Apart from some echo-ranging campaigns, there has been no serious prospecting of the actually exploitable potential of coastal species.

It must be admitted that this represents an extremely difficult task, for the following two reasons:

1. Bonga (Ethmalosa fimbriata), which accounts for nearly 40 per cent of the catch in the traditional Gambian fisheries (sea + fresh water), is a river-mouth species which is borne by the tidal flow 200 miles up-river from Banjul in the dry season. This fish is a phytoplanktonophagous species living in waters of 2 to 35 per cent salinity. Its highest concentration occurs in the dry season, from November to April, in no more than 15 m. of water. It reaches maturity at the age of one-and-a-half. Spawning occurs throughout the year, with three peak periods (March, June/July and October/November) in the estuary, and only from January to July in the river.

   In 1976, the potential catch per year was estimated at between 35,000 and 50,000 tons. It seems more reasonable not to exceed 35,000 T, failing the addition

of the other euryhaline pelagic coastal species which are so far little exploited, if at all.

2. The most important of these other species:

- Sardinella aurita
- Sardinella maderensis
- Caranx ronchus
- Trachurus trecae
- Scomber japonicus

effect intricate migrations along the West African coasts, varying according to the hydrological conditions met with year by year, so that it is very hard to allot a specific proportion of the stock of each species to Gambia alone.

In these circumstances, a total figure of 60,000 T/year seems reasonable as the potential catch of pelagic fish.

Furthermore, it must not be forgotten that in accordance with the migratory habits of the species concerned, fishing is seasonal in Gambian waters:

- E. fimbriata: November to April
- S. aurita: February to April
- S. maderensis: mainly April to October
- C. ronchus: December and March/April
- T. trecai: January to March
- S. japonicus: January to April.

1.4 Inland waters

The River Gambia rises in the Fouta Djalon at 1,100 km. from its mouth. A number of tributaries flow into it (the total length with the river itself is 2,500 km.).

The territory of Gambia contains 480 km. of the river bed, and only 14 per cent of the total river basin.

The part of the river which is in Gambia, known as the estuary sub-basin, has a gradient of almost nil (1 in 1,000), which explains its meandering course.

At the frontier between Senegal and Gambia, the depth of the river bed is from 2 to 5 m. At the mouth of the river, it is 25 m.

The tidal effect is felt upstream nearly 500 km. from the mouth of the river. In the dry season, the tidal flow raises the water level by 10 cm. The rise and fall of the tides affects the water level along the whole course of the river every day.

The salt water penetration is considerable, varying according to the season: in the rainy season, a salt content of 1 per 1,000 is to be found at 80 km. from the river mouth; in the dry season, this concentration is to be found at a distance of 240 km.

The water is normally turbid and its composition is naturally affected by the incursion of sea water. The degree of mineralisation must be low by comparison with Senegal, with a lack of sulphates.

The Gambian part of the river may be sub-divided as follows:

- Upper estuary area (km. 480 to 240)
  - . river bed: 100 to 150 m. wide
  - . permanent freshwater
  - . plains never subject to flooding
  - . little tidal movement.
- Middle estuary area (km. 240 to 125)
  - . river bed: 1 km. wide, winding in broad loops
  - . brackish water in the dry season
  - . plains regularly flooded
  - . more marked tidal movements.
- Lower estuary area (km. 125 to river mouth)
  - . river bed nearly 5 km. wide or more
  - . permanent swampland with mangroves
  - . marked tidal movements
  - . almost permanent brackish water.

The natural production potential is unknown. If estimated at 50 kg./ha/year, it could amount to 10,000 T/year from 2,000 sq.km. of inland waters.

High mortality occurs in the dry season. Notwithstanding this fact, a regular output of 5,000 T/year could be obtained without depleting the stock.

A policy of dam construction has been decided upon, both in Senegal and in Gambia.

1. In Senegal, the Sam Bagalou and Kekreti dams will:

   (a) appreciably reduce the volume of water entering Gambia (at present 300 cu.m. at the frontier; the amount may vary from 2,000 cu.m./sec. to 3 cu.m./sec. according to the year concerned). It is accepted that an average reduction of 1 cu.m./sec. in the flow may lead to a salinity advance of 1 km. per month in the dry season;

   (b) cause a decline in the flooding of the river-side plains;

   (c) augment the risks of pollution (from pesticides).

2. The irrigation programmes for Basang and Samu will:

   (a) further reduce the available supply of fresh water;

   (b) also increase pollution.

3. The Jenoï dam 125 km. from Banjul.

This is planned to prevent the land upstream from being invaded by salt water.

Given the fact that little is known about the populations of freshwater species, or even about anadromous species such as Bonga, it is only possible to make certain assumptions.

It is, however, certain that:

(a) above the dam the composition by species will vary;

(b) below the dam salinity will be considerably increased, with the consequences that cannot be foreseen. If, however, experience with the Nile is anything to go by, it may be assumed that:

   - the euryhaline phytoplanktonophagous populations will be greatly affected;

   - the stenohaline phytoplanktonophagous populations will also be depleted.

(c) the mainly artisanal shrimp-fishing activity in the river may also feel some adverse effects.

It is to be hoped that the halieutic potential of the inland waters will be little affected if a rational water policy is jointly conducted by Senegal and Gambia. It seems unlikely to be the case for the halieutic potential of euryhaline species.

It is essential that a thorough study should be made of this subject from every angle.

Obviously the importance of river fishing, which is mainly on a subsistence scale, and even of sea fishing, weighs little in the economic scale by comparison with the expansion in agricultural production looked for from the construction of these dams. Likewise from the social angle, the number of families affected is far higher in the farming sector than in the fishing sector.

I.5 Traditional fisheries

These cover both in-shore fishing and freshwater fishing.

The survey conducted by the Fisheries Department revealed that in 1978 about 800 pirogues were engaged in the traditional fishing activity: some 300 at sea (90 per cent motorised) and 500 (of which 10 per cent motorised) upstream from Banjul.

For sea fishing, there are 11 landing places and 1,800 fishermen. A large proportion are of Senegalese origin, the majority working full time (60 per cent). In addition, a large number of Senegalese fishermen migrate to Gambia for the November to March period. The gear used comprises handlines, cast-nets, lobster-pots, gill nets, shrimping nets, and small purse-seines.

Sea fishing is mainly confined to:

- Bonga and the other pelagic species. About 7,000 T. are caught each year (90 per cent Bonga);
- demersal species, except for the grouper family. The catches amount to about 5,500 T/year, made up as follows:

  . Arius: 20 to 30 per cent
  . Pseudotolithus: 15 to 20 per cent
  . Cynoglossus: 6 to 8 per cent
  . Sharks: 15 to 20 per cent
  . Barracuda: 8 to 10 per cent

- sea perches, chiefly caught by the Senegalese, account for about 500 T/year;
- rock lobsters, which are also mainly fished by the Senegalese, represent an average of 170 to 300 T/year (275 T in 1978). The fishermen now pay an export tax.
- oysters and cockles, the collection of which (yielding 200 T/year and about 150 T respectively) must not be overlooked.

As we have noted, the freshwater fisheries are very difficult to demarcate. For the maritime sector we adopted as

the boundary the line marking the limit of the area in which salinity is always higher than 20 per cent, i.e. up to about 20 km. from the mouth of the river. Nevertheless, this dividing line is very arbitrary and imprecise.

There are about 27 fishing centres along the river, with about 500 pirogues of which 10 per cent are motorised (there are 640 to 760 pirogues in all, but less than 70 per cent are actually used for fishing); there are 1,000 full-time fishermen and at least 5,000 casuals.

The methods chiefly practised are those using gill nets, shrimping nets and various traps and dams. The output, including a very large quantity consumed by the fishermen's families, amounts to about 3,500 T/year, of which 2,000 T consist of genuine freshwater fish, 500 T/year of shrimps and 1,000 T/year of brackish water species (500 T pelagic, largely consisting of bongas).

The percentage of brackish water species varies widely from year to year.

It may be noted that despite the efforts made by the Fisheries Department, the collection of catch statistics is far from satisfactory. Empirical estimates have to be made, which give only a rough indication of the real situation.

This is not merely a question of method, but first and foremost a matter of qualified staff and material resources to be made available to the Fisheries Department. No development project can yield satisfactory results unless the skilled manpower and the necessary means are provided to carry it out.

The numerous studies undertaken in Gambia which have never been concluded, and the absence of follow-up activities, clearly indicate this build-in deficiency.

Despite its obvious shortcomings, we give below an empirical reconstitution of the average annual catches in the traditional sector.

- Consumption by fishermen themselves	: 700 T.	(of which 300 T. of bonga)
- Sea fishing:		
. Coastal pelagic species	: 7,000 T.	
. Demersal species	: 6,000 T.	
. Rock lobster	: 250 T.	
. Molluscs	: 350 T.	
- Freshwater fishing, including consumption by the fishermen:		
. Freshwater species	: 2,000 T.	
. Brackish water species	: 1,000 T.	
. Shrimps	: 500 T.	
	17,800.T	

I.6 Industrial fisheries

Industrial fishing was almost exclusively geared to export up to 1979. Since that date, any fishing firm is legally entitled to market its catch in the home country.

There is a close connection between the traditional and industrial sectors, since the artisanal fishermen habitually deliver their catches or rock lobster and shrimps, and more recently of wet fish, to industrial firms which process and market them.

The industrial sector has experienced many ups-and-downs in the course of its history since 1966. Many companies have been formed which have one-by-one ceased to operate after the lapse of a few years.

Only two companies with onshore processing plants operated between 1975 and 1978. A few representatives of firms whose ships were granted licenses were also based in Banjul.

I.6.1 Gambian Industrial Fisheries Co.

This is an offshoot of Sea Gull Fisheries, a company set up in 1972 by MANKOADZE FISHERIES LTD.

In 1977, the Gambian Government took 49 per cent of the Sea Gull Fisheries' shares, leaving 51 per cent to Mankoadze; the company then split up into two separate enterprises.

I.6.1.1 Sea Gull Cold Stores Ltd., running a cold storage plant which comprised:

- an ice-making unit: 32 T/day;
- a deep-freezing tunnel and contact plate freezer;
- storage at -18°C: 600 T (initially 800 T).

The company has been generating its own electricity (2 CAT groups of 332 h.p. each) since the prolonged breakdown in the national company supply of electricity in 1977/1978 (which lasted one year). The premises are situated on a quay 50 m. long, with an adjacent wharf of about 70 m.

Sea Gull Cold Stores Ltd. is supplied by GIFCO.

I.6.1.2 Gambian Industrial Fisheries Co. (GIFCO). This company operates the following units, hired from Mankoadze Fisheries Ltd.:

- 4 113-ton seiners of 150 h.p., with about 50 cu.m. of ice holds;

- 3 seiners of 145 to 245 tons and 300 h.p., with refrigerated hold capacity able to take from 60 to 100 T of fish;

- 1 stern trawler with refrigerated hold;

- 1 freezer trawler operating as the mother ship if necessary (600 tons).

The purpose is to catch sardinellas to be deep frozen for the Ghana market by Sea Gull Cold Stores Ltd. (FOB price 600 Dal. per ton = 70,000 FCFA).

The total catch transiting through Banjul cannot all be drawn from Gambian waters, having regard to the seasonal nature of the shoals of Sardinella aurita in that area. For the year 1979, we estimated the total catch in the national zone at 6,000 tons of all species of sardinella combined.

In the same year GIFCO landed the following quantities:

January:	1,200 T.
February:	1,200 T.
March:	1,100 T.
April:	2,000 T.
May:	600 T.
June:	1,700 T.
July:	900 T.
August:	1,500 T.
September:	600 T.
October:	1,300 T.
November:	1,400 T.
December:	1,300 T.
	14,800 T.

The company's forecasts for 1985 amount to 33,000 T/year.

I.6.2 Fish Marketing Corporation (FMC)

A new company was formed in 1971 (Gambian Fisheries Ltd. Holdings: 40 per cent NICHIRO, 40 per cent MARUBENI, 20 per cent Government of Gambia). The company set up a cold store with the following capacities:

- deep freeze: 20 T. per day;

- stock frozen at -25°C: 750 T.;

- ice production: 20 T/day.

The firm was obliged to purchase wet fish and shell-fish from the traditional fishermen for deep-freezing and export. Attempts to obtain supplies with its own vessels ended in failure. Its commercial activities, too, led to bankruptcy in 1976, with a loss of about US$1 million.

On the recommendation of FAO/UNDP experts, the Gambian Government took the following steps:

- It took over entirely Gambian Fisheries Ltd., which became the Fish Marketing Corporation in 1977 (FMC Act), run by a board of directors drawn from among the government officials.

- FMC was made responsible for developing the distribution of fresh and frozen fish inside the country, by the following means:

  . purchase from the traditional fishermen;

  . using the fish caught by its own fleet, now consisting of two small seiner-trawlers (13 m., 80 h.p.): the CHALO, ex-prospecting vessel of the Fisheries Department, and the KANFLA belonging to FAO, which is hired for six months. As the cold store is not operating at present, the fish caught by these two ships is being sold fresh for the time being.

  . freezing and cold storage of the fish purchased before releasing it on the home market or exporting it. The FMC does not appear to have any cold storage capacity; if this is the case, it represents a serious handicap.

  The FMC, very regrettably, is empowered to issue fishing licences or enter into contracts with foreign vessels without the Fisheries Department even being informed.

- The FMC is the only body authorised to export the fish caught, unless permission to do so is granted to another company (as in the case of Sea Gull Cold Stores Ltd.). As it has this monopoly, the local firms previously allowed to operate on their own account were required, since 1st January, 1979, to sell their catch to the FMC. In actual fact, this is not practicable, as the FMC

  . only operated intermittently in 1977/78 because of electricity supply difficulties;

  . has not operated at all since December 1979. It is expected to resume activities in June 1980 after the arrival of a team of experts from FAO.

In 1979 about 4,000 tons of fish were handled, and exported to the following destinations:

- rock lobsters: 60 T. to Spain;
- shrimps: 300 T. to Great Britain;
- soles and thiofs: 300 T. to Senegal and Spain.

These exports are carried by truck, ship or plane.

I.6.3 Licensed ships

These vessels are simply required to declare their catches to the Customs officials, and are not obliged to land them at Banjul.

It is useful to know the size of the catches to enable the fish stocks to be maintained at the optimum level.

Between 1975 and 1978, 79 foreign ships were authorised to fish in Gambian waters - mainly Spanish and Japanese vessels.

The breakdown of this number and the estimated catches were as follows:

	1975	1976	1977	1978	
Seiners	7	10	6	11	(1529 GT)
Trawlers, side fishing	5	3	-	-	
Trawlers, stern fishing	4	13	8	12	(13,000 GT)
	16	26	14	23	representing about 10,000 tons of in-shore pelagics and 1,000 tons of demersals.

I.7 Distribution of catches

The chief obstacle to the better distribution of sea fish, which offer the best if not practically the only possibility of markedly improving the Gambian population's intake of animal protein, resides in the shortcomings of the transport system.

There can be no doubt that the asphalting of the trans-Gambian highway would do much more to facilitate the distribution of sea fish than any other project.

The lack of ice and cold storage facilities is a false problem, inasmuch as the problem which it is hoped to reach has a low level of purchasing power, and such new services could not be remunerated at their proper value.

It seems to us much more important to provide proper technical support for the fishermen and processors, so as to supply them with the advice needed to improve the quality of their products. Such a service should be backed by the dissemination of better information for consumers through broadcasts, newspaper articles and so on.

Choice sea fish are generally marketed fresh. They are bought at the landing points in units or in batches by middlemen (or women) of various kinds:

- fishermen's wives, who carry their wares to neighbouring villages on foot, or to Banjul by taxi. They do a flourishing trade at the landing point near Albert Market and at Banjul;

- itinerant salesmen on bicycles, who pay cash and go farther afield to dispose of their goods;

- associations of such mobile vendors, who pool their financial resources to buy a larger quantity, and then apportion its distribution. They all contribute towards the costs, and each receives an equal share of the profits;

- wholesalers who pay in cash and hire vehicles to carry their wares to the selling points in Banjul, Bakau and Brikama;

- wholesalers owning landrovers, who can if necessary carry their produce up to 120 km. from Banjul. Their trade is limited by the lack of ice and the difficulty of keeping the fish fresh and wholesome on the road. They employ agents in the villages who work on commission and handle the retail sales;

- representatives of the firms which purchase for freezing and export;

- foreign wholesalers, mainly Senegalese, who buy the rock lobsters collected by their agents and then export them live, more or less clandestinely.

Curing is practised for the most common fish, e.g. Bongas, Sardinellas, Jacks, Machoirons, which suddenly arrive in large catches greatly exceeding the current demand: some 50 per cent are either drysalted (the larger specimens) or more usually salted and smoked.

All consumers prefer fresh to cured fish. The greater the distance from the sea, the greater the preference for meat over fish products. Again, even in the interior of the country, sea fish is preferred to freshwater fish.

Of all the fish caught, Bonga is the most widely distributed. As it is in plentiful supply, whole fish can be sold at a low price for their size, even including the cost of transport, although the total must obviously not exceed what the consumers are ready to pay. Bonga is also greatly appreciated for its organoleptic qualities.

The distribution area is limited by the transport costs and the distance the fish can travel in good condition while remaining reasonably fresh. To avoid losing the fruit of their labours, the fishermen and purchasers resort either to dry-salting (the weather conditions are unfavourable for this process, but it is the only possible treatment to conserve big fish), or to smoke-curing.

Thus, the dry-salting of skate and sharks, which has been practised for less than ten years past, have averted substantial losses, and has even opened up some export markets.

Smoked Bonga thus regularly arrives at Basang and Basse.

The processing conditions are, however, very unsatisfactory, with scant equipment, and the operations never conducted with the necessary care (resulting in injuries, imperfect gutting, pollution, etc...). So much so that it is estimated that about 30 per cent of the products traditionally processed are unfit for consumption. The poor standard of processing is undoubtedly an obstacle to the wider distribution of the product inland. The processor takes advantage of the perishable nature of the product, and very rarely pays the fisherman cash. Consequently some fishermen cure their fish themselves before selling it to a middleman.

At Bakau, the fishermen's wives smoke machoiron (Arius ssp) for the Banjul market. They supply the fishermen with bait, who in return agree to bring them their catch.

The cured fish are not only marketed in villages in the interior, but are also exported by traditional wholesalers to Sierra Leone and Guinea.

The freshwater fish landed all along the river are sold the same morning on the spot by the fishermen themselves. When there is a big catch, it is taken to the village market.

There is such a high demand for fresh fish that consumers walk or cycle more than 20 km. to buy fish just caught. The unit price for freshwater fish is in fact higher than that for sea fish, but the market is very inelastic.

Despite the growth of population and the relative deficiency of animal protein among the inhabitants in the interior, the local demand is not sufficient to absorb a big increase in the available supplies. Accordingly the CILSS consumption forecasts will certainly have to be substantially revised downwards for 1990 and 2000. Additional refrigerating equipment will not lead to increased consumption.

Nor will the installation of the FMC. This body will remain far too administrative-minded and far too expensive in operation to provide any assistance in the matter of distribution throughout the country.

On the other hand, the FMC is undoubtedly called upon to play a vital part in stepping up production, insofar as it can organise efficient circuits for export. An appreciable improvement in the means of communication and in the available supplies of ice, with increased cold storage capacity, at the point where fish landings are centralised, with a few outlying cold rooms, would be sufficient to enable the traditional wholesalers to play their proper part.

We thought it might be of interest to end this section with a table showing the trend of a few prices noted at the Banjul market (in Dal/kg.).

	1976/77	1980
Fresh bonga	0.3	0.4/1
Cassava/Lady	1.7	3.5/4
Brachydeuterus	-	2.5
Pentanemus	0.4	1.5
Polynemus	-	5
Mullet	-	2.5
Snappers	-	5
Smoked bonga	1.2	1.5
Smoked arius	1.2	1.5/2.5
Dry-salted sciaenides	-	4
Fillet steak	-	4.95
Beef + bone	-	2.75
Mutton/Goatmeat	-	6.60
Pork	-	2.75

Rate of exchange: 1 D = 0.56 US dollar
1 D = 117 F CFA.

It may thus be noted that the prices for fine fish products have increased considerably, and are approaching the price of meat. These products are intended for a salaried clientèle with a certain purchasing power. On the other hand, Bonga prices have changed very little, especially when the catches are abundant. This is a fish for a clientèle with limited financial resources, and it cannot be otherwise.

It is thus no use trying to improve the protein intake of the rural population otherwise than with a widely consumed and low-priced species of fish.

In such circumstances, any effort to increase the supply of demersal sea species or of freshwater fish can only benefit an already well-to-do clientèle.

The function of fish-farming as a means of improving the population's diet can only be of interest to make the country more self-sufficient, not to promote trade exchanges with other countries. This influences the method of fish-farming or aquiculture to be introduced.

Similarly, it should be noted that dry-salting or salting and smoke-curing confers no value added on the goods; it is a last resort. Any improvement in technique should always tend to reduce the production costs, not to increase them by introducing new plant which has to be paid for, or more labour.

I.8 Estimated present and future consumption

In the absence of exact figures, it is only possible to advance a very rough estimate.

In 1979, fish landings were thus calculated, as well as exports and imports (in tons).

The available supplies (fish caught - export + import) amount to 13,400 T., including 700 T. own consumption of sea fish. To assess the actual national consumption, however, the losses must be taken into account (30 per cent of the fish handled rendered unfit by pollution, insects ... - representing 700 T.).

Home consumption in 1979 can thus be put at about 12,700 T., i.e.21.5 kg. per head per year.

If the figure estimated in 1977 for consumption of animal protein from other sources (12 kg. per head per year) is added, we arrive at the figure of 33.5 kg., representing 24.2 kg. per head per year in the equivalent weight of beef. Milk is not taken into account in this calculation, although it represents a quantity to be reckoned with, as Gambia benefited from a substantial volume of food aid provided by various international sources.

	Catch	Export	Import	Theoretical home consumption
Traditional fisheries (sea)				
- Own consumption	700			700
- Bonga	6,000	3,500	-	2,500
- Other pelagics	1,000	-	-	1,000
- Demersals(1)	6,000	1,100(4)	-	4,900
- Rock lobsters	250	200	-	50
- Oysters/Cockles	350	150	-	200
	14,300	4,950	1,300(3)	10,350(6)
Traditional fisheries (freshwater)				
- Genuine freshwater species	2,000	-	-	2,000
- Brackish water species	1,000	-	-	1,000(5)
- Shrimps	500	450	-	50
	3,500	450	-	3,050
Industrial fisheries				
- GIFCO(2): small inshore pelagics	6,000	6,000	-	-
- Licensed ships:				
. Inshore pelagics	10,000	10,000	-	-
. Demersals	1,000	1,000	-	-
	17,000	17,000	-	-
GRAND TOTAL	34,800	22,400	1,000	13,400

(1) of which sharks represent about 850 T.
(2) 6,000 T. out of 14,800 T. caught, thus indicating 8,800 T. in foreign waters.
(3) 1977 figures not verified in 1979 (equivalent weight of fresh fish).
(4) 300 T. choice species and 800 T. fresh equivalent of dry-salted shark.
(5) 500 T. Bonga and other pelagics.
(6) of which 1,000 T. imported.

It must not, however, be overlooked that consumption is unevenly distributed over the country. In the coastal area it amounts to about 50 kg. per head per year of fish, but represents only about 15 kg. per head per year east of a line drawn roughly 120 km. from Banjul.

It is worth noting that by comparison with 1976, there has been no advance in the figures for fish consumption, which at that date was calculated at 23.8 kg. per head per year.

The nutrition tables drawn up by the CILSS experts indicate the following targets for fish consumption per head:

for 1990: 25.4 kg.
for 2000: 30 kg.

To achieve these figures, the following production programmes (in T/m) should be adopted:

	1990	2000
Sea fish	37,000	51,000
Freshwater fish	5,000	5,000
	42,000	56,000
+ Imports	1,000	1,000
- Exports	25,200	30,900
	17,800	26,100

We think it would be of interest to find out whether the figures in this programme are realistic in the light of the available resources, and in particular what poles of development might be introduced, comparing the latter with those proposed by the CILSS experts in 1977.

II. COMPARISON OF THE PROGRAMMES FOR FISH SUPPLIES, HORIZON YEARS 1990 AND 2000, WITH RESOURCES

II.1 Freshwater fish

Against a regular potential supply of 5,000 T/year, it seems unlikely that in 1990 freshwater fisheries can produce an output exceeding that of 1980, viz. 3,050 T/year of species consumed locally, barring some development of fish-farming.

This seems all the more evident as the various agricultural developments planned (dams, irrigation, etc...) will appreciably reduce the available supplies, as is always found to be the case.

Having regard to the populations' low purchasing power, intensive fish-farming projects are out of the question. Such projects should form a sideline to rural activity, involving minimum investments and operating costs (the fish being fed with local residues).

Fish-farming should be associated with other rural activities carried out on a family or, better still, a co-operative basis, for the virtually exclusive supply of the community engaged therein. In any event, the quantities in view will not cover the demand (5,000 T.), and about 1,500 T. of sea fish will have to be obtained to make up the difference.

II.2 Sea or brackish water fish

The catches required will rise to 38,500 T. (37,000 T. + 1,500 T.) in 1990 and 52,500 T. in the year 2000.

With a potential catch of demersal species of 15,000 T/year, about 7,000 T. of the most highly-prized species are already caught. There thus remain about 8,000 T. available in theory, but the majority of these in fact consist of "inferior" species of little organoleptic value which are hardly edible.

According to Soviet studies, there remain from 1,000 to 2,000 T. of really attractive fish, in particular at the edge of the continental shelf, which might be sufficient to support a small fleet of bottom-liners (handliners).

The effort expended to catch 36,500 T. in 1990 and 50,500 T. in the year 1000 can only concern the in-shore pelagic species (Bongas,Sardinellas, horse mackerel, scomber).

Admittedly, 23,800 T. (of which 6,800 T. of Bonga) are already caught by home-based fishermen or by foreign fishermen operating ships for which fishing licences have been granted.

As already stated, the potential catch is as follows:

- Bonga and other euryhalines: 35,000 T.

- In-shore pelagic stenohalines: 60,000 T.

The surplus required for the home market,mainly consisting of Bonga, amounts to:

2,400 for 1990

10,700 T. for the year 2000.

The remaining fishing effort should therefore be directed to the in-shore pelagic stenohalines, to obtain:

+ 2,800 T. in 1990

+ 8,500 T. in the year 2000, intended for export.

According to whether the licensing policy is continued or not, the increase should lie between 2,800 and 13,800 T. in 1990 and between 8,500 and 19,500 T. in 2000. The figure depends on the number of licences held. But having regard to the seasonal nature of the in-shore pelagic fisheries, there should be a marked expansion of the fishing effort, backed by vigorous diplomatic action to secure fishing rights in the neighbouring countries based on reciprocity of catch figures by weight, as fishing is seasonal in their waters, too.

In any event, the main effort will be required in the horizon year 2000, and will remain relatively modest. In the horizon year 1990 it should largely be confined to increasing the productivity of traditional fisheries, and more efficient utilisation of the catch.

Resources are sufficient to stand such a drain on the fish stocks.

It is for the Government to decide on the policy to be followed to achieve this result.

For the home market, the solution still lies in modernisation and rationalisation of the traditional Bonga fisheries, together with the reception facilities for boats and catches.

The development project financed by the E.D.F. (Development of artisanal fisheries) is in line with this objective.

Several measures to ensure higher exports have been put before the authorities, who may adopt one single suggestion or apply them all at once.

1. Increasing the number of licences. Although the catches are not conveyed through Gambia, the income accruing from licences is not to be despised, as it involves no new investments but merely proper supervision of the ships' activities.

2. Allowing GIFCO to expand, or encouraging rival fleets to operate, on condition that the owners either construct refrigerating plants onland, or resort to the services of FMC.

3. Forming a traditional up-to-date national fishing fleet, mainly consisting of small seiners and trawlers to catch pelagic species and deliver supplies to the FMC plants. This coincides with the aims of the project financed by a number of donors and implemented by FAO (Integrated development of fisheries).

The first solution appears to us to be over-simple, and only valid on a short-term basis. We feel it would be desirable to conduct a policy combining the various possibilities put forward in the above three paragraphs.

This would have the merit of vitalising the traditional sector while not depriving Gambia of the valuable services of a private industrial fleet which has proved its worth, nor of the financial resources earned by the licensing system.

As regards shellfish, it seems difficult to undertake any profitable action. Rock lobster are already being overfished. The policy followed over shrimp-fishing favours the traditional fishing-boats in brackish waters, to the detriment of the shrimper trawlers, in a sector where the resources are being exploited to the optimum level.

III. STUDY OF THE STATUS OF CILSS FIRST GENERATION PROJECTS AND DEFINITION OF THEIR LINKS WITH OTHER DEVELOPMENT PROGRAMMES DRAWN UP, WHETHER EXECUTED OR NOT

Following the missions conducted in connection with projects GAM 76/006 and GAM 75/013 in 1976 and 1977, national consumption of fish was estimated at 11/12,000 tons per year. The goal for 1990 was set at 17,800 tons per year, and that for the year 2000 at about 26,000 tons per year (freshwater and sea fish). It was anticipated that if appropriate measures were adopted, an additional 14,000 tons per year could be landed in the early 1980s, of which 70 per cent would be exported to other countries in West Africa.

This target has been exceeded, as the present situation seems to be as follows (I.8):

- Traditional home production:

  Sea fish: 14,300 T.

  Freshwater fish: 3,500 T.

- Industrial home production in Gambian waters: 600 T.

- Foreign production in Gambian waters: 11,000 T.

- Export: 11,400 T. (+ 11,000 T. foreign fleets).

- Consumption, of which 1,000 T. imported: 12,700 T.

However, this has been achieved largely owing to foreign fleets fishing under licence, and with no value added accruing to Gambia, as the fish caught by those fleets do not enter the country. This means that the experts' recommendations regarding a pre-investment and assistance project for the development of fishing involving the sum of US$4,544,000 for 1977/80 have not been implemented.

To attain the targets for 1990 and 2000 (annual production of freshwater + sea fish of 42,000 and 56,000 tons per year, 40 per cent for local consumption and 60 per cent for export), the following measures were recommended for application from the year 1980:

(a) Creation of a fisheries development agency, to be responsible for the operation of shipping, the organisation of processing and the marketing of products locally and outside the country;

(b) Construction of a shipyard with provision for training young Gambians, and building a fleet of ten dragnet trawlers 12 m. long (preliminary testing of one or two units to assess the feasibility and economy of the project);

(c) Improvement of the Banjul wharf, installation of a fish auction market and a retail selling point in the traditional central market;

(d) Provision of experts on marketing, refrigeration and processing of fish, supplied by FAO;

(e) Reinforcement of the Fisheries Department, and allocation of additional resources for field staff recruitment;

(f) Creation of a fund offering loan facilities for fishermen wishing to buy engines and fishing gear.

(g) Standardization of the quality of smoked fish and reduction of losses due to poor processing;

Furthermore, the Government was to undertake the following projects:

(h) Installation of a workshop and spare parts depot for traditional fishing requirements:

(i) Construction of an ice-making plant at Brikama;

(j) Construction of a demonstration centre on fish processing at Gunjur, to train Gambian fishermen in this branch of activity;

(k) Construction of a fish handling and distribution complex at Gunjur;

(l) Provision of transport vehicles to carry various kinds of fish;

(m) Repair of the Gunjur access road;

(n) Repair of the Tanji bridge to simplify the collection and distribution of fish.

Item (a) was carried out by the Government, which helped to finance Gambian Fisheries Ltd. and established the FMC. Item (e) has not, unfortunately, been supported to anything like the same extent.

Items (b) and (d) are at present being implemented with the help of UNDP.

We do not think any steps have been taken towards executing item (c), any more than (e) or (f).

Item (g) is being carried out under the joint sponsorship of UNDP and the EEC.

Items (f) and (h) to (n) are the subject of an EEC project which will be examined later. Some of its aims coincide with those of the UNDP project.

An additional US$13 million was earmarked for the attainment of these new objectives, backed by some reinforcement of the administrative structures and the signing of fishing agreements with the neighbouring countries, having regard to the migratory habits of the in-shore pelagic species. The FAO experts considered that most of these projects would be introduced in the form of specific investment programmes. However, some preparatory measures were marked out for urgent execution, to permit the more efficient and flexible implementation of these specific projects.

They concern in particular:

- organisation of the home and export markets;
- institution of a research programme on the resources of the River Gambia;
- execution of research and experimental projects for developing fish-farming and semi-industrial fisheries.

Some co-ordination was desired with the project for the development of artisanal fisheries financed by the European Development Fund (initial cost $1,900,000), for the creation of a pilot community development centre at Gunjur with all the equipment needed to improve the output and quality of fish.

It can be said that by and large, the Gambian Government's programme of activities now in course of execution practically follows these guidelines.

III.1 Pre-investment and assistance project for the development of fisheries

Duration: 3 years $4,544,000

This project, supervised by a project director, comprised four sections covering the four objectives stated:

1. Development of artisanal fisheries.

2. Pilot plan for the development of a semi-artisanal fishing programme.

3. Study of the resources of the Gambia River.

4. Marketing of fish; creation of an Institution responsible for the study, definition and, if possible, application on a pilot scale of a project for setting up an organisation handling the production and marketing of fish.

A pre-investment study on the development of oyster farming was added.

The artisanal fisheries section should be headed by a master fisherman who would train personnel, assisted by a specialist in fish processing. This section would help the fishermen to mechanise their boats by securing the services of a machine shop. The section would be split up into two units:

- one for diesel engines;

- one for outboard engines.

It will be realised that it is essential for the section to be co-ordinated with the project for the development of artisanal fisheries financed by the European Development Fund.

The pilot section should comprise two ships 10 to 13 m. long under the command of a master fisherman and a mechanic, both international experts. They will be based on the present wharf for the time being, and will have the use of a small workshop and sales room.

The research section should be run by a biologist specialising in continental fisheries, assisted by a team of consultants (to supervise fish stocks, analyse the data, etc...).

An experimental fish farm occupying 200 sq.m. should be operated, to investigate the feasibility and economics of any subsequent expansion of the project on a commercial basis.

The marketing and institutional section would be directly responsible to the project director. It would include a marketing expert, and would have the assistance of consultants to draw up the statutes of the proposed organisation. Pilot marketing experiments would be carried out with a refrigerated truck, storage depots and sales rooms.

In accordance with the stage of development of the fisheries, and the behaviour of investors between 1977 and 1982, the main lines of the project and its immediate targets could be adjusted and/or reoriented.

Technical assistance would merely be required to reproduce the preparatory experimental phase of the project on a wider scale.

The budget for this preparatory phase was drawn up as follows: (see table overleaf)

In actual fact, there exists some confusion at present between the preparatory phase (of technical assistance) and the installation of the project, as the FMC has been created and benefits from the equipment of Gambia Fisheries Ltd., even if it is in poor condition. In this case, the preparatory phase is supplemented by an installation phase.

III.1.1 Preparatory phase: Integrated Fisheries Development UNDP Project GAM/77/002/A/01/12

Duration: 3 years and 3 months (August 1977-December 1980)

Cost: UNDP: US$1,051,365

Execution agency: FAO

Main function: "Institution Building", i.e. assistance with the establishment of FMC Governmental agency concerned: FMC, not Fisheries Department.

The objectives are as follows, by comparison with 1976:

- to increase the traditional output by 4,890 tons;
- to achieve an output from semi-industrial fisheries of 8,250 tons.

Consumption should reach 28.6 kg. per head per year, and export should rise by 8,520 tons.

It should be pointed out that:

1. Traditional fisheries had already reached the present production figure in 1976;
2. Semi-industrial fisheries are hardly likely to exceed 200 to 250 tons per year with the two present units.

Furthermore:

- consumption has fallen to 21.5 kg. per head per yar;
- exports have risen mainly thanks to GIFCO and the licensed ships, and by no means thanks to FMC.

	1st year in hrs. per month	2nd year in hrs. per month	3rd year in hrs. per month	Total in hrs. per month
EXPERTS				
Project director	12	12	12	36
Fleet director	12	12	12	36
Master fisherman	12	12	12	36
Diesel mechanic	12	12	12	36
Outboard mechanic	12	12	12	36
Fishing gear technician	12	12	12	36
Cold storage engineer	12	12	12	36
Expert in fish processing	12	12	12	36
Fisheries biologist(2)	24	24	24	72
Fish-farming expert	12	12	-	24
Commercial expert	12	12	12	36
Consultants	6	12	6	24
	150	156	138	444
in US$	675,000	702,000	621,000	1,998,000
Administrative assistance (Secret. Chauff.)	36,000	36,000	36,000	108,000
Travel	20,000	20,000	20,000	60,000
Training grants(5)	10,000	20,000	10,000	40,000
	741,000	778,000	687,000	2,206,000
EQUIPMENT AND BUILDINGS				
2 ships fitted out	160,000	-	-	160,000
Workshops, cold rooms, fish shops	260,000	-	-	260,000
Housing for experts	300,000	-	-	300,000
Vehicles + refrigerated van	100,000	-	-	100,000
Fish farm	200,000	-	-	200,000
Miscellaneous	50,000	-	-	50,000
Grand total	1,811,000	778,000	687,000	3,276,000
Operational costs	150,000	150,000	150,000	450,000
	1,961,000	928,000	837,000	3,726,000
Inflation 10% 2nd year		93,000		
20% subsequently			167,000	260,000
	1,961,000	1,021,000	1,004,000	3,986,000
Agency costs (14%)	275,000	143,000	140,000	558,000
	2,236,000	1,164,000	1,144,000	4,544,000

The effects of the UNDP project must be entered under the heading of pre-investment, as the development agency was set up (FMC). The relevant sections are:

- Pilot plan for the development of a programme of semi-industrial fisheries;

- Assistance for institutional operation and marketing of the products from the semi-industrial fleet or the traditional fishing boats. Such assistance is afforded for the distribution of both fresh and processed fish;

- Consultations in the matter of:

  . smoking of products

  . construction of artisanal fishing vessels.

Thus in all:

1. The artisanal fisheries section is more restricted than in the original project (no workshops, merely consultations on boatbuilding). On the other hand, some co-operation is proposed in the matter of processing the products.

2. The study of the resources of the Gambia River has been dropped.

3. The plan for the development of semi-industrial fisheries no longer involves the putting into service of 10 units; it is limited to proposals made in the pre-investment project (2 units).

4. Efforts are directed to assistance in the matter of:

  . refrigeration: bringing the plant back into service;

  . processing the catches;

  . marketing the products;

  . management and organisation of the FMC.

Emphasis is naturally laid on training at every level in the course of these activities.

At present FAO is providing 4 experts (instead of the 12 referred to in the original project):

- Project head, distribution expert;

- Expert on fish processing;

- Expert on refrigerating plant;

- Master fisherman;

thus 156 months of expertise are involved (instead of 444) at a cost of US$901,365.

Consultants are also involved; grants are awarded and training courses initiated.

The project now involves the following amounts for the activities planned:

- hire of a semi-industrial vessel:	$125,000
- vehicles	
- office equipment	$ 15,000
	$140,000
- expendable equipment	$ 10,000
	$150,000

instead of the $1,520,000 initially proposed.

III.1.2 Project installation phase

A. Counterpart contribution by the Gambian Government

- Acquisition of Gambia Fisheries Ltd. Site	800,000
- Capital contributions to FMC	973,000
- Jetty	400,000
- New deep-freezing plant	150,000
- Repairing the deep-freezing plant	80,000
- New contact plate freezer	100,000
- Generator	100,000
	2,603,000
- Offices for FAO personnel	79,200
- Office equipment	30,000
- Vehicle maintenance	30,000
- Post office	10,000
	149,000

In addition, the salaries of the counterpart personnel are paid by Gambia:

- Crew: 12 men	82,500
- Administrative staff	51,000
- Technical staff	96,000
	229,500

. Technician specialising in fish marketing: 1
. Technician " " fish processing: 1
. Assistants for refrigerating operations: 4
. Fisheries officer (external services): 1

GRAND TOTAL Dalassis 2,981,500

= US$1,670,000

We cannot say whether these operations have actually been carried out. Two other developments are also planned.

B. Development financed from A.D.B. funds and executed by its own personnel

This involves investments in the port (refrigerating plant, dry-salting and smoke-curing facilities) involving an amount of $8,300,000 out of the $10 million credit provided for. The project is now being drafted.

C. Development financed from ABEDA credit funds to the amount of $238,000 for refrigerating equipment, assistance to the FMC and putting into operation by FAO

These two projects are, in fact, identical and to some extent complementary to the developments planned by the Gambian Government. It is hard to understand how they can be carried out, and above all for what purpose other than over-equipment. Furthermore, at best, some of the equipment will duplicate that provided for in the EEC intervention plan detailed below.

III.2 Artisanal Fisheries Development Project financed by the Commission of the European Communities (project GAM/404/76)

The project is intended to develop traditional sea fisheries by improving fishing gear and marketing infrastructure, as well as by introducing new fishing methods.

There are six main fishing centres:

- Brufut

- Tanji

- Batikunku
- Saniang
- Gunjur
- Kartung

all on the seaboard south of the river, and linked by a track to the centre of Brikama. The landing points are a few kilometers from this centre. Gunjur, the largest settlement, lies 18 km. from Brikama, which is itself less than 60 km. from Banjul, and connected with it by an asphalted road.

The proposed investments are for the following purposes:

A. Creation of a pilot centre at Gunjur for fish processing, handling and marketing:

. 3 cemented areas, covered, for drying plants (300 sq.m.)

. 6 brine tanks

. 4 sets of improved and modernised smoke-drying ovens (10 ovens)

. 4 storage depots for smoke-dried fish

. central block comprising:
  . offices
  . ice storage (25 cu.m.)
  . cold rooms
  . weighing scales

. 2 water tanks

. clean water supply with pumping apparatus

. 610 m. of tarred road.

B. Central ice-making plant at Brikama

. ice-making unit (10 tons per day)

. 5-ton trucks, 3 insulated

. engine maintenance and repair shop.

C. Re-making the tracks serving the landing points - 31 km. not asphalted.

D. Repairing the Tanji Bridge.

E. Increasing the Revolving Fund for Loans.

There already exists a revolving fund for fisheries, which grants loans to fishermen for the purchase of outboard engines and the reconstruction of smoke-houses.

The fund is administered by the Commercial and Development Bank's Development Fund, which grants loans to fishermen whose applications are approved by the Director of Fisheries. The Bank pays the supplier and the fisherman repays the Bank.

It is proposed to inject into the fund additional capital to the amount of 190,400 EUA to pay for at least 30 pirogues, 100 outboard motors, a stock of spare parts and 30 smoking ovens.

F. Technical assistance and training programme supervised by a captain of the fishing fleet, with the help of grants and training courses, for:

. joint project manager: 1

. refrigeration technicians: 2

. processing specialist: 1

. marketing expert: 1

The estimated cost in July 1977, while the project was to be operational in June 1977, was as follows (in EUA):

A - Gunjur pilot centre	376,650
B - Brikama installations	127,570
C - Remaking tracks	292,450
D - Increase in Loan Revolving Fund	190,400
E - Technical assistance	139,000
	1,126,070
Reserve 15%	168,910
	1,294,980

Rounded to 1,295,000 EUA

then increased to 1,485,000 EUA

The project is to be executed by the Fisheries Department of the Ministry of Agriculture and National Resources.

The Gunjur Centre and the Brikama ice-making plant will be managed by the Brikama Council Area, under the technical direction of the Fisheries Department.

The project management will be entrusted to a foreign specialist jointly with a Gambian. Three experts (in management, marketing and processing) needed to train and support Gambians in these branches have been applied for from FAO, to be lent to the Fisheries Department and associated with the execution of the project.

In principle, the building contracts should have been passed nine months after the signing of the financing agreement, i.e. at the beginning of 1978. In fact, the feasibility study should have been completed by 1st May, 1980, which would have enabled calls for tenders to be issued for the building contracts, so that the work could start in November/December 1980. This considerable delay is to be regretted.

At present, thanks to Lomé II, a supplementary budget of 1,150,000 EUA has been granted to allow for inflation and enable additional equipment to be obtained, the building work to be supervised and a second technical assistance contract to be passed.

For the time being only the first technical assistance contract is being executed, with the following expenditure (in EUA):

- Addition to revolving fund	192,000
- Technical assistance	124,000
. 1 Italian expert in training, acting as project manager . 3 FAO experts who have not yet started work	
- Training equipment	17,500
	333,500 EUA

= $482,000 out of $3,812,000 committed.

The project frame seems somewhat ambitious as regards the achievement of an integrated development of fisheries between the industrial and artisanal sectors.

By tradition, fishing in Gambia is essentially artisanal, but its development will involve modernisation, higher productivity and, above all, measures to prevent losses through deterioration from various causes.

At the same time, having regard to the country's configuration, any increase in fish consumption in rural areas will depend, first and foremost, on the improvement of means of communication. The landing points are often isolated from the neighbouring villages, and still more from the arterial roads. There can be no doubt that the tarring of the main road south will very soon have a highly favourable effect on fish consumption in the east of the country.

As regards the substance of the project, some comments are called for from the technical angle:

1. It is curious to note the importance attached to dried fish, given that for nearly six months of the year the humidity conditions prevent proper drying.

2. To build an ice-making plant 20 km. from the sea would prove a costly technical error. It will often remain unused by the fishermen. They will resort to it to conserve their own food, but not fish, the price of which is too low to cover this additional expense.

3. The marketing of fresh fish kept on ice is not a practical possibility if it has to be taken over non-asphalted earth tracks. Only deep-frozen fish retains its qualities in these conditions; fresh fish is soon disintegrated by the jolting.

4. The programme for restoring the earth tracks is inadequate. The routes over which the fish are to be taken should be asphalted.

5. The modern method of smoke-curing in traditional surroundings is far too expensive for a product whose value is never enhanced by the treatment. The cost of fuel, labour, and depreciation of the equipment is never taken into account in fixing the selling price. How, then, can more complicated equipment prove profitable, with the addition of the cost of paid workers?

6. The increase in the Loan Revolving Fund is to be highly recommended.

7. The technical assistance and the training programme are still manifestly inadequate. Yet they hold the key to the success of the project. Admittedly, the plan for training local technicians is a good one, but steps must be taken, as soon as the project is underway, to recruit the following experts in a country where the fishing industry is highly developed:

   . a project leader; but he would find it difficult to train people for sea fishing and for management;

   . a fishing instructor;

   . a cold storage technician;

   . an outboard and diesel mechanic;

   . a salting, drying and smoke-curing specialist.

Each of these should stay for at least two years in Gambia. They will have the dual function of managing the activities and training local staff and fishermen.

We think it will be difficult for the three FAO experts, who will be busy with their own project, to handle both at once.

It is therefore regrettable that there is some overlapping and some confusion as to the dividing line between the two projects.

The results expected from the EEC's activities were:

1. Rise in production: + 8,500 tons per year in five years;
2. Reduction in losses on the processed products: - 700 tons per year;
3. Rise in exports of dried and smoked fish: + 2,000 tons per year;
4. Consumption in Gambia increased from 23.8 kg. per capita per year to 32.8 kg., five years after the inception of the project.

Subject to a few adjustments already mentioned, this project is of vital importance for the Gambian sea fisheries.

It should enable all the landing points to be made easily accessible.

The hoped-for rise in production is not unrealistic; it should allow the national requirements to be covered until about 1992. It should also provide for substantial exports at the level envisaged for the same date.

On the other hand, it is utopian to expect to increase the ration per capita at the rate suggested; the target for the year 2000 advanced by the CILSS experts, viz. 30 kg., is lower than the figure proposed in the project (32.8 kg.) between now and 1985.

Provided that the project staff was reinforced to include a project leader and four foreign specialists, and that asphalting the tracks was on the programme, we believe this project to be of the greatest interest. It is regrettable that so much time has elapsed before it could be implemented.

III.3 The first generation project relating to continental fisheries

In Rome (20th-21st April, 1978) the project was split up into several sections to simplify the financing possibilities.

III.3.1 Development of continental fisheries - Section I - Fisheries Directorate

Duration: 3 years

Cost: $576,340

Objectives:

- to support the Fisheries Department by providing adequate staff;
- to help recruit and train labour;
- to supply equipment;
- to draw up fuller statistics;
- to formulate suitable regulations for the development of fisheries;
- to provide experts in community organisation;
- to carry out feasibility studies of the project.

Budget:	Hrs. per month	US$
- Project Manager	36	235,660
- Consultants	12	56,800
	48	292,460
- Base personnel (9)		89,300
- Travel		6,500
- Training grant (1)		57,300
- Equipment		45,000
- Miscellaneous		15,000
		505,560
- Agency cost (14%)		70,780
		576,340

At present no activity of this type is in progress. It does, however, seem essential for the Fisheries Department to have a specialised inland fisheries section. For this purpose, the personnel required might be as follows:

- 1 head of service
- 3 assistants
- 9 monitors for field work

who would cover three centres:

- Mansa Konko (or Kaur): km. 130 (or 200)

- Georgetown: km. 300

- Basse: km. 400

The staff would be provided with two vehicles and two canoes. The cost of instituting these arrangements would be roughly US$205,000.

It should be pointed out that two members of the Fisheries Department are allocated to assist fishermen along the river. They are based at Jenoi.

III.3.2 Development of continental fisheries
Section II.A. - Community Fisheries Centres (CFC)
Section II.B. - Community Aquiculture Centres (CAC)

Duration: 3 years

Cost: $1,463,085

	Hrs. per month	US$
- Leader of group	36	235,660
- Aquaculturist	24	144,650
- Consultants	30	147,300
	90	527,610
- Base personnel (20)		66,200
- Travel		40,000
- Training grants (2)		114,600
- Equipment		475,000
- Miscellaneous		60,000
		1,283,410
- Agency cost (14%)		179,675
		1,463,085

The first generation project consisted in the formation of groups of community centres.

For fishing, a mobile advisory unit on fishing techniques, occupying a central position, would supply each group of three CFCs with logistic support, in the matter of technique and information. It would consist of a team of experts and their counterparts, and would also ensure liaison between the Fisheries services and the centres.

For aquiculture, satisfactory conditions from the biological, physical and geographical standpoint rarely exist. There are very few suitable sites for making ponds, even in the estuary area, because the topography (flat plains) imposes the following constraints:

. difficulty of supplying the ponds with water by gravity, whence the necessity of pumping; the cost of the equipment renders the process somewhat uneconomic.

. infiltration of salt, which affects the quality of the water and the soil conditions, but too irregularly to envisage resorting to the breeding of brackish water species.

. very sluggish flow of the river in the dry season, which renders the water supply inadequate. The effect of the new dams being constructed has not been clearly defined.

. no permanent tributaries of any importance.

As regards association with irrigated crops (rice, etc.):

. rice and fish farming entails prior research

. as yet there are under 2,000 ha. of irrigated rice fields (8,000 ha. planned), and in these circumstances

- the usable areas are too small to be economic
- the increased pumping capacity required involves the obstacle referred to above
- any modification of the traditional crops might not be welcomed.

. some action might be envisaged when the irrigated areas have been increased.

The exploitation of lakes formed by dams, properly restocked with fish, could only begin when the dams preventing salt water from flowing up the Gambia River, or to be used for irrigation from the tributaries, are actually in place.

There is no regular supply of essential feedstuffs at a low price. Cottonseed cake can easily be exported at interesting prices. Only rice by-products remain. Organic fertilizers are only available in small quantities.

There is a demand for fish in the interior of the country, but the demand is hardly of economic interest, owing to the low purchasing power of the people and the competition from sea fish, for which the cost price is much lower, especially owing to the considerable improvement being effected in the means of communication.

There can thus be little hope of developing fish farming except as an individual or community effort at subsistence level - not as a means of increasing money income.

The project to breed oysters for export seems somewhat premature.

Two other projects have been noted: one is still being worked out, the other is operational.

III.3.2.1 Project for the development of aquiculture (under study): $200,000

III.3.2.2 Pilot project for an extension of aquiculture in Gambia

The object is to use experimental ponds to identify the species which will give the best yield, and establish the most suitable breeding techniques.

This project will yield some valuable information about the sociological impact, the reaction to the environmental project, and the effects of the output achieved on the local market.

Obviously the project staff, whether foreigners or nationals, will work in close liaison with the members of the Fisheries Department assigned to inland fisheries. They will even be able to extend their activities upstream from the Kuntaur district. Furthermore, especially in the Saput and Wassu regions, they will provide assistance to the farmers wishing to take up rice and fish farming. Lastly, they will try to introduce fish farming in appropriate sites in the areas subject to flooding when the waters rise (Tilapia and Carpe), having recourse to earthworks which will make it possible to keep them under water for a longer period.

If such innovations are to be successful, two breeding centres of 4 to 8 ha. will have to be constructed to conserve breeding stock throughout the year, as in the dry season the natural conditions are unfavourable.

At present the project is:

1. financed for two years by the Catholic Relief Service. Cost $19,000, spent on equipment (picks, pickaxes, plastic tubing, nets, as well as 6 motor-cycles, etc..)

2. run by three volunteers from the U.S. Peace Corps.

Three ponds are now being made at Wassu, Jakhaly and Bassang.

III.3.3 Development of continental fisheries
Section III - Research

Very little research has been done on inland fisheries. Priority must be allotted to the assessment of fish stocks.

A three-year programme should be introduced, with two aims in view:

- establishment of the necessary infrastructure: one national research station at Janoi, with several field stations. Staff training;

- application of a programme of evaluation, general studies and feasibility, as a basis for development projects and subsequent investment.

	Hrs. per month	US$
- Biologist (stocks)	36	235,660
- Aquiculturist	12	63,720
- Economist	12	63,720
- Consultants	24	125,760
	84	488,860
- Base personnel (25)		82,750
- Travel		25,000
- Individual training grants (2)		114,600
- Equipment		175,500
- Miscellaneous		30,000
		916,710
- Agency costs (14%)		128,340
		1,045,050

Another project is under consideration: evaluation of the resources of the Gambia River. This would cost something approaching $800,000. It could be carried out under the aegis of the Organisation for the Development of the Gambia River (OMVG).

The following table compares the first generation programme with the other development programmes specified.

The first-generation projects are thus closely linked with the programmes subsequently initiated; this is quite natural, having regard to the very general character of each.

However, the sums committed represent twice the amount of the forecasts. It may therefore be expected that the proportion of investment in infrastructure and equipment will be considerably larger.

TABLE 1

STATUS OF DEVELOPMENT PROJECTS FOR FISHERIES IN GAMBIA (December 1979)

No.	TITLE	COST ESTIMATE ('000 US$)	DONOR INTERESTED		COST ESTIMATE ('000 US$)
			NAME	DEFINITION	
1	Pre-investment and assistance project for the development of fisheries - 4 chapters: - Development of artisanal fisheries; - Pilot programme for the development of semi-artisanal fisheries; - Study of resources in the Gambia River - Marketing of fish (Institution in charge)	4,544,000 of (of which 2,671,295 for continental fisheries: see Nos. 2, 3 and 4)	UNDP	Project GAM/77/002/A/01/12 Integrated development of fisheries Assistance to the creation and operation of the Fish Marketing Corporation	1,051,365
			ADB	Investments for port facilities, refrigerated warehouses (FMC), salting, drying and smoking equipment (being drafted)	8,300,000
			BADEA	Refrigerating equipment for the FMC	238,000
2	Development of continental fisheries - Section I - Fisheries Department - Support to the fisheries administration	576,340	EEC/FED	Project GAM/404/76 for the development of artisanal fisheries 1. Pilot centre at Gunjur 2. Tanji bridge 3. Ice plant at Brikama 4. Tracks 5. Increasing the Revolving Fund 6. Production and processing equipment	3,812,000
3	Development of continental fisheries - Section II - Community fisheries and aquiculture centres - Extension services	1,463,085			
4	Development of continental fisheries - Section III - Implementation of an evaluation programme	1,045,050	(Under study) ?	Project for the development of aquiculture	(200,000)
			Catholic Relief Service	Pilot project for aquiculture (with U.S. Peace Corps Volunteers)	19,000
			(Under study) ?	Evaluation of resources of the Gambia River	(800,000)
	TOTAL	7,628,475			13,420,365

It should also be noted that the implementation of the programmes has been greatly delayed; the projects initiated in 1975 and 1976 did not begin to be executed until 1980.

This dilatory approach may seem surprising, but it appears to arise from the fact that the administration responsible for fisheries finds it technically impossible to get the projects going; the action planned gets bogged down in the quagmire of administrative procedure.

That is why, notwithstanding the obvious interest of launching new operations, we are not for the time being submitting complete specifications of any new projects. We think there is no point in doing so until sufficient progress had been made with those already under way.

We must, however, draw attention to the marked reduction in the amount earmarked for the project financed by UNDP, by comparison with the pre-investment and assistance project submitted by the Fisheries team; all the more so because this reduction affects assistance personnel and training activities, whereas the Fisheries Department suffers from a serious lack of human resources and equipment to carry out the tasks allotted to it.

However, the number of executives and monitors allocated to the Fisheries Department for the period 1975/80 is greatly exceeded: 6 executives in 1980 (12 now employed) and 6 monitors in 1980 (22 on the staff). The numbers planned for the future are:

	Executives	Monitors
1980-1990	10	10
1990-2000	12	12

We have some doubts about the technical capability of most of these, which does not seem to come up to the required standards.

IV. IDENTIFICATION OF POSSIBLE ACTIVITIES WHICH HAVE NOT YET ATTRACTED DONOR ATTENTION

Assuming a potential catch of 115,000 tons per year, of which 5,000 tons of freshwater fish, it can be seen that with:

1. a current catch of 34,800 tons, of which 3,500 freshwater fish

2. a consumption of 13,400 tons, of which 3,050 tons freshwater fish,

it should be possible to obtain from Gambian fish resources alone 42,000 tons in 1990 and 56,000 tons in the year 2000, with exports of 25,200 tons per year and 30,900 tons per year respectively, in accordance with the CILSS self-sufficiency objectives (consumption of fish per head 25.4 kg. in 1990 and 30 kg. in the year 2000).

There is only one drawback: the need to increase the area of irrigated land by the application of a policy of dam construction. This is almost certain to involve an appreciable drop in the potential supply of freshwater fish. We have arbitrarily assumed that the output will be maintained at its present level of 3,500 tons.

The policy of regulating the flow of the Gambia River might also have significant implications for euryhaline sea fish (bonga) and for shrimps. The consequences are obviously impossible to gauge a priori.

This calls for the following project, as a first step:

- Creation of a centre for research into the effects of river dams on the resources of freshwater and sea fish ($1,200,000)

A second project needs to be conducted in concert with the FMC, bearing in mind that with the potential catch of freshwater fish already calculated, we shall need 38,500 tons of sea fish in 1990 and 52,500 tons in the year 2000.

Having regard to the potential catch of pelagic species, and the attraction these have for the Gambian consumer, we reserve for export the additional 2000 tons of demersal species available, especially as these will be mainly choice species living in the depths at the foot of the continental shelf in areas inaccessible to the drag-nets.

This second project will involve:

- Supply of an experimental bottom-liner (13 m., 11 men, 140 h.p.) to serve as the basis for a national fleet operating for the FMC

if it proved profitable. Otherwise, an undecked vessel would have to be used (pirogue, or a craft on similar lines with a fixed engine), having regard to the relatively short distance to be covered to reach the fishing grounds, which are in fact not extensive (US$215,000).

To secure a sufficient catch of the in-shore pelagic species to cover the domestic requirements calculated, the 1980 output would have to be increased as follows:

1990	2000
+ 2,400 T	+ 10.700 T

The introduction of the project financed by the EDF will make it possible to release within a five-year period about 4,000 tons for the home market (out of 8,500 tons). It may be considered that the continuation of the project will satisfy requirements for the year 2000 (mainly of bonga). To secure the in-shore pelagic catch needed to achieve the export target

stated, the following quantities will have to be landed over and above the 1980 figures:

1990	2000
+ 2,800 tons	+ 8,500 tons

For 1990, the EDF project aiming to put on the market another 2,000 tons of smoked fish by 1985 (about the equivalent of 4,500 tons of fresh fish) is theoretically sufficient. Later on, however, several possibilities may arise:

1. The licences are cancelled. An additional 11,000 tons must be landed. In view of the migratory nature of the in-shore pelagic species, there is no guarantee that a national fleet could catch the tonnage needed in Gambian waters.

   The obligation to land the catches at Banjul presupposes that the required reception facilities for frozen products, and the means of repacking them for export, are available. This is not the case at present, but it may be hoped that it will be soon in the future.

2. The licences are maintained. The 4,000 additional tons required for the year 2000 can be caught by an industrial fleet set up for the purpose. This necessarily entails reciprocal agreements with the neighbouring country on pain of a financial setback (temporary presence of shoals of little in-shore pelagics in Gambian waters).

3. The licences are maintained, and a small fleet of seiners is formed, operating under FMC control. These polyvalent craft can trawl during the slack season. This also enables any falling off in the yield of euryhaline species to be offset, should the installation of dams on the Gambia River appreciably reduce primary productivity and recruitment.

4. The third project would involve:

   - supplying the FMC with a drag-net trawler (16/18 m., 300 h.p., 40 cu.m.), liable to form the nucleus of a small fleet of this type of vessel ($360,000/405,000).

In such circumstances, it can be seen that inland halieutic production has a limited part to play. Yet with the development of irrigation, the establishment of an efficient combination of rice and fish farming will be of undoubted interest, both dietetically and economically, for Gambian farmers.

The continuation of the Catholic Relief Service's aquiculture project deserves encouragement through the installation of a hatchery permitting the production of about a million fry to stock 2,000 ha. of rice fields as a first stage, and the establishment of a rice and fish farming system which seems to find favour with the farmers.

The fourth project will thus be called:

- Creation of a breeding centre for the production of fish spawn and of about 5/10 million fry per year ($1 million)

To conclude, we would urge the necessity of reorganising the Fisheries Department, which cannot at present meet all its obligations, not so much because the number of personnel is too small, but rather because they are not properly trained for the work.

The Fisheries Department should comprise two sub-directorates, dealing with sea and river activities.

For maritime activities, the following are lacking:

- 1 fisheries economist
- 1 fisheries technologist (higher level fishing officer)
- 1 senior executive specialising in product technology and quality control
- 5 external staff in the field and three at Banjul to supervise unloading and assist the fishermen
- 1 additional out-board mechanic.

There are at present:

1 statistician

1 biologist

2 outboard mechanics.

For freshwater activities, there are lacking:

- 1 head of service (trained biologist)
- 1 statistician
- 3 heads of regional sections
- 12 advisers/inspectors in the field able to supervise the landing points.

A proportion of this personnel may be drawn from foreign technical assistance until such time as the Gambian counterparts can be trained.

It should be noted that most of these experts were mentioned in the first pre-investment and assistance project for the development of fisheries. It cannot be supposed that when attached to specific projects they would be able to fulfil various functions at the same time.

In addition, this reorganisation could not be brought about without some effort in the matter of:

- scientific equipment
- technical equipment
- premises in the field (fisheries circumscriptions)
- vehicles (the available transport is more than inadequate)
- telephone or, better still, radio links.

The fifth project might be called:

- Assistance for the reorganisation and operation of the Fisheries Department ($1,200,000)

Lastly, as a matter of principle, we think it important that the relations between the Fisheries Department and the FMC should be more clearly defined.

It is up to the Fisheries Department to see that the Gambian Government's policy in the matter of developing and exploiting fish resources is properly applied.

The FMC is only one component of this policy, which, like the others, is answerable to the Director of the Department.

It is, for example, abnormal that the FMC should be able to grant fishing licences.

Furthermore, it seems to us regrettable that the FMC should not deal exclusively with export, but also intervenes in the home market, as

- it has no facilities for handling fresh products;
- its administrative structure is far too cumbersome to operate in a market highly sensitive to cost fluctuations, as the consumers constituting that market have a low level of purchasing power.

V. CONCLUSIONS

The donors' lack of interest in the first generation programme as adopted in 1977 can be explained by a number of very different reasons.

If the landing figures are examined, it will be noted that the quantities of fish landed per inhabitant are relatively large. In these circumstances, it is hard to convince donors that the development of freshwater fishing and fish farming are priority matters. Moreover, it is obvious that a comparison of values added by agriculture and fish production respectively is greatly to the disadvantage of the latter. The long-term development policy is therefore based on extending the irrigated areas by constructing dams, which will further reduce the fishing potentialities. That is a further reason for its lack of attraction.

As regards the supply of a bottom-line fishing vessel and a seiner-trawler, the latter was the subject of a recommendaton in Mr. CAMPLEMAN's mission report. This recommendation wa not incorporated as it stood in the CILSS first generation project; two units were indeed approved and two trawlers were delivered.

The suggestion concerning the bottom-line fishing vessel was not adopted, as the areas where it could profitably operate seem limited in Gambia, and at the time the sharp rise in the price of choice deep-sea fish had not occurred. The advantage of this vessel lies in its simplicity. The African crews get used to operating it very quickly, and it represents a promising attempt to modernise the traditional fisheries.

The donors obviously feel impatient at the delay in implementing projects already financed. There is already a time-lag of three years. This may be interpreted as lack of interest on the part of the authorities responsible for the projects, paradoxical as that may seem, whether national or international.

Having taken part in the compilation of the model sectoral programme for fisheries, drawn up by the Fisheries Team of the Club des Amis du Sahel and submitted to the 2nd meeting of the Club in Ottawa in 1977, we noted at the time the under-equipment in human and material resources of the Gambian Fisheries Department in face of the host of activities it had to handle.

We recommended the accelerated training of local specialists through a grant system, and an institutional section which would enable a number of experts and consultants to be supplied to the Fisheries Department.

These recommendations were not adopted in the project GAM/77/02/A/01/12 financed by UNDP and now being executed, which is mainly geared to the FMC to make it, in theory, more operational.

In such a context, it is quite clear that the Fisheries Department feels left out in the cold, and no longer appears to play an essential role, which is highly regrettable and inadmissible.

That is why we have urged the necessity of reverting to a slightly different conception of the programming and execution of a fisheries development plan. Even in a liberal economy country, such a plan should be initiated, put into operation, and controlled by a body with the defence of the public interest at heart.

Accordingly, we have proposed to reinforce the Fisheries Department considerably in the matter of human and material resources, calling, if necessary, upon foreign technical assistance, accompanied by the training of local counterparts by means of grants and training courses.

We hope that it will thus be possible to make up for lost time, inspire renewed confidence in donors, and finally assist Gambia to develop both inland and sea fisheries production, commensurate with its resources.

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