

## **SECTION 2**

### **Case Studies**

# **Conflicts in Coastal Fisheries in Cameroon**

By

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## **1. Introduction**

Marine fisheries are generally characterised by the co-existence of small-scale, traditional or artisanal fisheries side-by-side with large-scale, commercial or industrial fisheries (Panayotou, 1982). Due to the difference in nature of the two sectors; the commercial fishery being considered as a sector where economic efficiency and export earnings receive high priority, and the artisanal fishery being regarded as a sector where social and economic concern (e. g. food and employment) are important, the study of these fisheries has traditionally been undertaken separately. However, either from real-world- fisheries or from a theoretical view point, these fisheries often interact somehow directly through common fishing grounds or common resources, indirectly through species and interactions. These interactions often result in conflicts, which have been identified as constraints to the development of the sectors. The study of these conflicts (which can also occur within the artisanal fishery sector) is therefore a prerequisite for the formulation of policies on sustained development of these fisheries.

This paper intends to study the socio-economic aspects of the conflicts within the artisanal and between the artisanal and the industrial fisheries of Cameroon, with emphasis on maintaining the biological resources, economic performance and social equity.

## **2. Conflicts within the artisanal fishery**

70% of the total fisheries production in the Eastern Atlantic Fisheries Commission come from the artisanal fisheries. Thus, preventing conflicts within the sector will certainly improve food self-sufficiency and employment. In Cameroon more than 85% of the total fish production (100,000T/year) is from the artisanal fisheries sector.

### **2.1 Constraints within the artisanal fishery sector**

The artisanal fishery in Cameroon is made of indigenous and foreigners. They both contribute to the promotion of animal protein food self-sufficiency in the country. The way these communities interact can determine the present and future being of the social wealth of coastal Cameroonians.

## **Constraints among Cameroonian fishermen**

Artisanal marine fishing is traditionally practised by coastal Cameroonians. The major tribes involved are: Yassa, Batanga, Babimbi, Douala and Bakuerians. These tribes are geographically spread along the coast and characterised by low mobility. Their fishing grounds have remained the same in a way one could think of territoriality fishing rights. There is no report or direct evidence of major conflicts between these ethnic groups. Also within one tribe, traditional rules of conduct govern the community, any offender is judged accordingly. However, Cameroonian fishermen are very individualistic, this seems a hindrance to their development.

## **Co-existence between foreign and indigenous fishermen**

Of the 20,000 traditional fishermen in Cameroon, 80% are foreigners and among these Nigerians, Beninese and Ghanaians form the major components. Nigerians have been established in the coast of Cameroon ever since the early 1930's. They formed communities of homogeneous tribes with a high respect of hierarchy in the group. Most of their catch were smoked and sold in their country. This was a hindrance to the perpetuation of protein food self-sufficiency in Cameroon. The money received was used to buy fishing equipment which was cheaper there. Since 1982, with the devaluation of the Nigerian currency, and the reduction in price of fishing equipment in Cameroon, the situation has changed in a way that Nigerians are now selling their catch and buying fishing equipment on the spot.

Ghanaians and Beninese established themselves early in 1970's. They have good experience in pelagic purse seining, a fishing method introduced by themselves in Cameroon.

## **Socio-economic considerations of the co-existence within the artisanal fishery sector**

The fact that foreign and indigenous fishermen have been living together for so long, clearly demonstrates the non-existence of major conflicts between them. Foreign fishermen always live peacefully with the local communities and are fairly linked into the economic life of the country, though much more rarely are they fully socially and culturally integrated. Thus, they are sometimes victims of the whims of some local officials.

Indeed, the co-existence within the artisanal fishery of people from various origins and various tribes competing for the same resources and same fishing grounds has not yet resulted in serious conflicts in Cameroon. This probably because on one hand, permanent migrant communities are highly organised with strict rules on how to behave in relation to the host community and, on the other hand, african hospitality has been respected by the domestic fishermen. However, the introduction of purse seining by foreign fishermen in the country remain a major concern for the sustained exploitation of the pelagic resources.

## **3. Conflicts between the artisanal and the industrial fishery**

Most of the many problems related to the conflicts between the artisanal and commercial fisheries are due to the competition for the same fishing grounds (physical conflicts) and/or common resources (technological conflicts). In the following, we shall see how conflicts can affect the welfare of the artisanal fishermen.

### **3.1. Analysis of physical conflicts**

Physical conflicts encompass the gear destruction caused by the encroachment on traditional fishing grounds of trawlers owned by the commercial companies. The encroachment itself is a result of competition for the same resources and/or same fishing grounds

#### **Some observations on the encroachment problem**

The destruction of artisanal fishing gear by a trawler transgressing the 2 nm zone limit, which is the area restricted to non-trawling fishing operations by the actual fisheries legislation can occur at any time during daylight or at night. During daylight, it is easy to identify the trawler at a longer distance by registration number as well as the company's name. However, when net destruction happens at dawn, in the evening or at night, the task is more difficult. Nevertheless, the identification of the trawler by the artisanal fisherman is not even important as the actual legislation recognises only the report from a sworn officer either from the Port Authority, the Navy or from the Ministry in-charge of fisheries. And because very often none of them is present when the damage is done, evidence from the artisanal fisherman alone is very difficult to be considered. Moreover, even if the report is done by a sworn officer, there is no provision in the actual fisheries legislation for compensation to be given to the artisanal fisherman rather, the available fine is to the benefit of the public treasury.

#### **Ecological limitations**

The first reason one could advance to explain why the two fisheries go for inshore fishing is inherent to the fact that there is higher fish density in tropical shallow waters (Crosnier, 1964 ; Longhurst, 1969 and Robertson, 1977). The second reason of predilection for inshore fishing comes from the nature of the bottom of the continental shelf. In fact, the existence of a linear fossil coral bank along the coast near the break of the continental shelf slope makes trawling difficult offshore.

#### **Economic constraints**

Another important factor which might determine encroachment, is the one related to the capitalization of the fishing industry. Practically, due to the modest nature of the fisheries resources, investment in large trawlers has proven to be un-economical. In fact, almost all the successful boats have been rather small, up to 20 m and 250 horse power. Larger vessels with more complex machinery and higher operating cost have generally failed and left the fishery.

## **Socio-economic considerations**

From an ecological and economical view point, it appears that encroachment is not deliberately directed against the artisanal fishermen. However, its effects have been detrimental to them, with regard to the destruction and/or losses of their fishing gears. For instance, during the frame surveys carried out in Limbe (1983) and in Kribi (1988), approximately 70 % and 55 % of artisanal fishermen complained about gear destruction by the industrial fishery respectively. The 13 complaints recorded by the administration of fisheries in the main fishing areas from 1986 to 1990, have not received any attention from the authorities responsible of the sector. The overall outcome of the situation is that the commercial fishery has become a hindrance to the development of the artisanal fishery. In fact, the value of a set gillnet of 900 m long is approximately US \$ 614 and a canoe of 7 m is worth US \$ 227-364. This implies that an expected minimum of about US \$ 909 is needed to cover the cost of investment or entry into a non-mechanised artisanal fishery. With a mechanised fishing craft, the amount is almost doubled, to say US \$ 1800. Some cost estimates of losses from the artisanal fishery reveal an approximate amount of US \$ 200,000 per year (Djama et al., 1990). For a sector which is economically depressed, this amount of money is gigantic, thus the social well-being of many fishermen is no more guaranteed. An important feature of the artisanal fishery in Cameroon is that it is a life activity, the life of coastal Cameroonians. No matter whether they catch fish or not, they will still go fishing as part of their life activity. In the absence of fish in the sea, they will just become poorer and poorer. That is the reason why the status of the ocean resources should be improved so that traditional way of life be maintained.

### **Towards the resolution of "encroachment"**

Physical conflicts between the artisanal and the commercial fisheries centre mainly on the occupation of the traditional fishing grounds by the industrial fishery. This raises the problem of territory fishing rights. Indeed, the fundamental topic of property rights or Territoriality Use Rights in Fisheries (TURFs), is a lengthy and expanding issue in resource economics (Furubotn and Pejovich, 1974 ; Scott and Johnson, 1985). The institutionalisation and legal acceptance of TURFs finds its justification in two main points (Christy, 1982) : (1) resource income lost under open-access can be captured, (2) community control over these use rights and the incomes that are generated may provide the means by which the welfare of fishing communities can be improved. Anton (1987) suggested that, since coastal fishermen are generally powerless in the socio-economic sphere, the fishing-rights system primarily protects the coastal fisheries against competition from high technology fisheries.

From the foregoing, it seems ownership of a part of the sea territory where they can practice peacefully their essential activities. As suggested by existing legislation, they should fish within the 2 nm zone. The nursery grounds which are now fished by the commercial fishery will then be protected and so will be the resources.

### **3.2 Analysis of technological interactions**

Conflicts between the artisanal and commercial fisheries are not confined only to the damage caused by trawlers to the gears of the artisanal fishermen. Competition for fish

stocks for which mechanised vessels have superior catching technology is also very important when considering social equity (fair distribution of the resources) between the two sectors.

### **Gear technology and fish exploitation**

Traditionally, the optimum exploitation strategy of a fishery is determined by the age at first capture and the overall level of fish mortality (Beverton and Holt, 1957). This implies that the technology of the gear which determines the age structure of the catch can play a key function in the present and future development of the fishery. The commercial fishery uses trawl nets, which have been proved to be very destructive or juvenile fish (30-40 mm stretched mesh size), whereas the artisanal fishery utilises gillnets with high selectivity on juveniles (4-7 cm stretched mesh size).

### **Effects on a change of the age at first capture**

The commercial fishery catches relative year-classes 1, 2 and, the artisanal fishery relative year-classes 2 and 3. Year-class 1 (23 cm total length) is made by immature fish. The increase of age at first capture of the industrial fishery increases the yield per recruit of the artisanal fishery by 90 % at current fish mortality and the revenue by 79 % (Djama, 1992).

### **Management options applicable to the physical and technological conflicts**

The solution to the problem of physical and technological conflicts will be to allocate an exclusive zone of 2 nm from the shore line to the artisanal fishermen (actual fisheries legislation). There are social, biological and economic advantages resulting from this acquisition. The most important aspect of the social benefit from the right of sole ownership is that artisanal fishermen will enjoy the re-acquisition of what they consider as their traditional heritage. The socio-cultural values involved in the artisanal fishing practice will then be maintained. The biological advantage lies in the reduction of the excessive industrial fishing pressure on nursery grounds, and consequently the reduction of year-class 1 catches as most of these fish are found in shallow waters. Growth over-exploitation will then be avoided. Economically, with the reduction of the capture of year-class 1, the two fisheries will have their rent increased (Djama, 1992).

## **4. Recommendations**

The effective implementation of the territoriality use rights will necessitate a re-organisation of the Administration of Fisheries and an improvement of the actual fisheries legislation. With regard to the Administration of Fisheries, emphasis should be put on the additional role the Navy and the Port Authority have to play in the control at sea of foreign and domestic vessels encroaching the respective boundaries. Concerning the revision of the actual fisheries legislation, there should be a major change on matters related to conflicts. In fact, the actual legislation imposes fines against people transgressing the law, the money paid goes necessarily to the public treasury, but (as discussed earlier) no provision is made for the victim of the offence. One possibility is to have a double penalty charge , one for the offence against the

law, and another for the compensation to the damage caused. The latter is to protect the interest of fishermen. Also, an effort should be made to rigorously monitor the pelagic purse seine fisheries in order to prevent the over-exploitation of the marine resources. At this level, research should play its traditional role of adviser to the Administration of Fisheries.

Within the artisanal fishery sector, artisanal fishermen should be encouraged to form small cooperatives. At this point, the IDAF project is likely to play an important role by helping artisanal fishermen to organise themselves into large unit of production or better called cooperatives. All the profits of such organisations should be put at the benefit of the entire community.

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# Conflicts in Coastal Fisheries in Côte d'Ivoire

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## 1. Introduction

The marine resources of Ivory Coast are limited mainly because of the narrowness of the continental shelf which is 550 kilometres long and 27 kilometres wide, and the weak upwelling.

The Ivory Coast continental shelf stretches 12 miles from the coast up to *Cap des Palmes*, 19 miles to *Sassandra*, 10 miles to *Abidjan* and 15 miles up to the Ghanaian border (map N° 1). It consists of "soft bottom" suitable for trawlers and some more rocky "hard bottom" which are particularly abundant in the Western part.

The main resources exploited by fishery include pelagic species (living in the water column) and demersal species (living in the bottom). The pelagic species comprise sardines (flat and round) *mojarras*, *mackerels*, *anchovies*, *horse mackerels* etc..

There is no particular change in the resources because of the relative stability of the fishing effort. The demersal species of the "soft bottom" comprise roughly of two major groups: the *scianider community drums*, carps, (*thread-fish*) which live in depths between 0 and 50 metres and the *sparidae community* (sea breams), which live in depths between 50 and 120 metres.

The "hard bottom" demersal species also called *lithophilous* include red carps, pits, gilthead and groupers abundant in the West of the continental shelf. Finally, there are the continental embankment and slope species (120 to 1000 metres) including crabs, sharks etc..

The exploitation status of the demersal resources indicated an over-exploitation of the "soft bottom" between 0 and 50 meters whereas the other species between 50 and 120 meters and the lithophilous are under-exploited.

As far as fishing is concerned, the exploitation of the resource is assured by various fishing units spread on the continental shelf and within the E.E.Z. (Exclusive Economic Zone).

The continental shelf is the privileged property of the national fleets. In general fishing units are old and badly equipped to go fishing too far from the shore.

The industrial fishery operates 20 sardine boats with a length between 15 and 30 metres 17 trawlers from 20 to 28 metres and 4 shrimp refrigerator trawlers from 25 to 28 metres. They all contribute about 65% of the total marine catches which is estimated at 50 to 65 000 tons per year.

The artisanal fishery occupies about 10 000 fishers who use techniques and boats on the same resources (pelagic and demersal species) as the industrial fishery.

It comprises about 2 000 canoes (motorized in general), 500 purse seines, 80 beach seines, more than 2 000 lines and more than 7 000 gillnets of different kinds.

The artisanal fishery represents about 35 percent of the total marine production. The foreign fleet operates in the Economic Exclusive Zone on licences (mainly vessels from the European Economic Community). The foreign fleet meet little competition from the artisanal fleet in exploiting resources as tunas, *cephalopods*, crabs.

## 2. Fishing conflicts - nature and causes

### Nature of the conflicts

Conflicts in the continental shelf concern the national fleet. They oppose artisanal fishers to industrial fishery units, particularly trawlers.

From 1988 to 1993, about 15 cases have been registered by fishery authorities, 90% of which were caused by trawlers. There might be more cases than this official figure because of isolated cases about which artisanal fishers hesitate to complain to the administrative authorities because of their own irregular situation.

### Declared conflicts in the fishery

Years	Numbers of conflicts	Origin		Gears
		Trawlers	Trawlers	
1988	5	4	1	Gillnet
1989	3	3	-	Gillnet
1990	3	2	1	Purse seine
1991	3	3	-	Gillnet
1992	1	1	-	Purse seine
1993	2	2	-	Gillnet
Total	17	15	2	

## **The cause of conflicts**

These conflicts are related to the exploitation of the same resources (pelagic and demersal) but are particularly due to the bad fishing practice of trawlers.

In fact, regulations clearly state that:

- trawling is forbidden in the coastal region and in the first mile which is reserved for the artisanal fishery, trespassers will receive fines between FCFA 36,000 and 360,000 and jail sentences ranging from 11 days to 6 months (sections 1 and 3 of decree No. 231/MPA/DPMC of September 16, 1983).
- artisanal fishers who use fixed or floating gear should mark them with perch buoys with flags flying 2 metres above sea level. The other boats or canoes should then stay far away from them; offenders receive fines of about FCFA 36,000 to 360,000 and jail sentences from 11 days to 3 months (sections 1, 3 and 4 of devree No. 30/MPA/DPML of September 16, 1983).

In spite of these regulations, the trawlers still enter secretly the first mile zone and cause damage to the gears of artisanal fisherfolk, thus creating disputes.

The tendency of trawlers to fish in the forbidden zone can be explained by the old age of the boats, the low qualification of the crew and, of course, the lack of means for monitoring and surveillance of fishing areas.

### **Old age of fishing boats**

The Ivorian trawling fleet is composed of many old units: 12 boats out of 17 (65%) are more than 20 years old. The direct consequence is heavy consumption of fuel (estimated at 20% of the exploitation costs of the smaller units and 40% for larger ones) which the fishing masters try to reduce by trawling in shallow waters near the coast. That explains the large quantity of small fish and the occasional conflicts with artisanal fisherfolk.

### **Low average qualification of the crews**

The crews of the boats are not sufficiently qualified to fish in potentially productive but dangerous areas of the western continental shelf, particularly rocky, and the strata 50 to 120 metres deep which involve more difficult manoeuvring. They prefer to stay on the moving and shallow depths (0 to 50 metres) of the continental shelf to fish: that is how they compete with the small artisanal fisherfolk.

### **Lack of means for monitoring and surveillance of the fishing areas.**

The monitoring and surveillance of the fishing areas are not yet really done in Ivory Coast because of the lack of appropriate means and particularly because of the lack of specific government policy. Of course, this situation encourages some boats, including trawlers, to commit punishable acts like fishing in forbidden areas, using small mesh size nets, etc..

### **3 Conflict resolution procedures**

The settlement of conflicts caused by trawlers in the first nautical mile zone is not always easy since the source of conflict (destruction of fishing gear of artisanal fisherfolk) occurs at sea, without any witnesses, except the two involved parties in conflict.

The authority which is called upon to settle the difference is thus confronted with the issue of truthfulness of fact and sincerity of the plaintiffs. It must assess facts on the basis of reports presented by both parties: one report produced by the victim, showing such evidence as a piece of the destroyed net and identification of the offending boat, the place and approximate time the incident occurred; the other presented by the fishing master of the accused boat either admitting or rejecting the facts.

Two ways of settlement could be envisaged:

- the normal legal procedure which could take a long time if sufficient evidence showing the guilt of the boat is not clearly established;
- the amicable settlement procedure which appeals to the common sense of both parties and mainly to the understanding of the owner of the accused boat.

In the Ivory Coast, the Fishery Administration has always preferred the amicable settlement procedure to allow for a rapid compensation of the artisanal fisherman.

Nowadays, this administration is finding it more and more difficult to resolve conflicts because of the lack of cooperation of the owners of offending boats who prefer to stick to the obviously favourable report of their fishing masters.

Thus, new regulations are envisaged by the administration to check the conflicts which are harmful to both artisanal fisherfolk and fishery resources because of the destruction of younger species within the first mile.

### **4. Provisions envisaged to alleviate coastal fishery conflicts**

Various measures are now envisaged in the Ivory Coast by authorities in charge of fisheries, in order to prevent conflicts caused by trawlers in the first mile zone and to ensure a better protection of fishing zones. These include:

1. the strengthening of regulations in force, especially:
  - the extension of the trawling prohibition zone to 2 miles off the coast. This, according to the Centre for Oceanographic Research (CRO) will widen the zone reserved for artisanal fishery while preserving most of the resources of industrial fishery, and reduce the pressure on small fish (major species in this zone which includes depths from 0 to 30 metres). In these conditions, artisanal fishery alone will be less threatening;

- the establishment of dissuasive measures for offenders including the temporary withdrawal of fishing licence or authorization for purchase of tax-exempted fuel until the accused boat repairs the damage it caused.

2. the sensitization of boat owners, fishing masters and crews to the biological and economic interest of the first mile zone for the survival of the fishery;

3. encouraging the modernization of the industrial fleet so that it could reach remote fishing zones (the project of creation of a Fishery Development fund which is now being studied could provide significant support in this regard);

4. promoting effective training of crews in order to permit the exploitation of fishing zones which, so far, are under-exploited, especially strata from 50 to 120 metres and the western part of the continental shelf;

5. strengthening fishery monitoring and surveillance measures thanks to the Coast Guard Unit which will be created as part of a project to be started the next few months with American financial support.

This Coast Guard will have its own adequate and high performance equipment including:

- listening coastal radio stations or "*seraphones*" to facilitate communication along the coastal area of the country, between operations at sea and rescue means available on land;
- patrol boats;
- hovercrafts;
- if possible, a version of a marine plane.

It is obvious that the actual start of this project will promote effective and more regular monitoring of fishing zones and will gradually compel boats to observe current regulations.

## 5. Conclusions and recommendations

Coastal fishery conflicts in the Ivory Coast can be considered as localised conflicts opposing sporadically artisanal fisherfolk and industrial fishery units, especially trawlers in the first mile reserved for artisanal fishery.

This phenomenon seems to be of little importance when we consider available official statistics (about fifteen cases).

However the immediate or medium and long term socio-economic effects remain obvious and include:

- for the fisherfolk: moral and financial prejudices related to the partial or total destruction of their fishing equipment;
- for the fishing activity: threat of gradual destruction and thus disappearance of resources due to excessive trawling in low depths;
- for boat companies: gradual decrease of boat returns and risk of bankruptcy;
- for the State: risk of imbalance of fishery trade balance due to the reduction of national production in favour of imports; increase of unemployment.

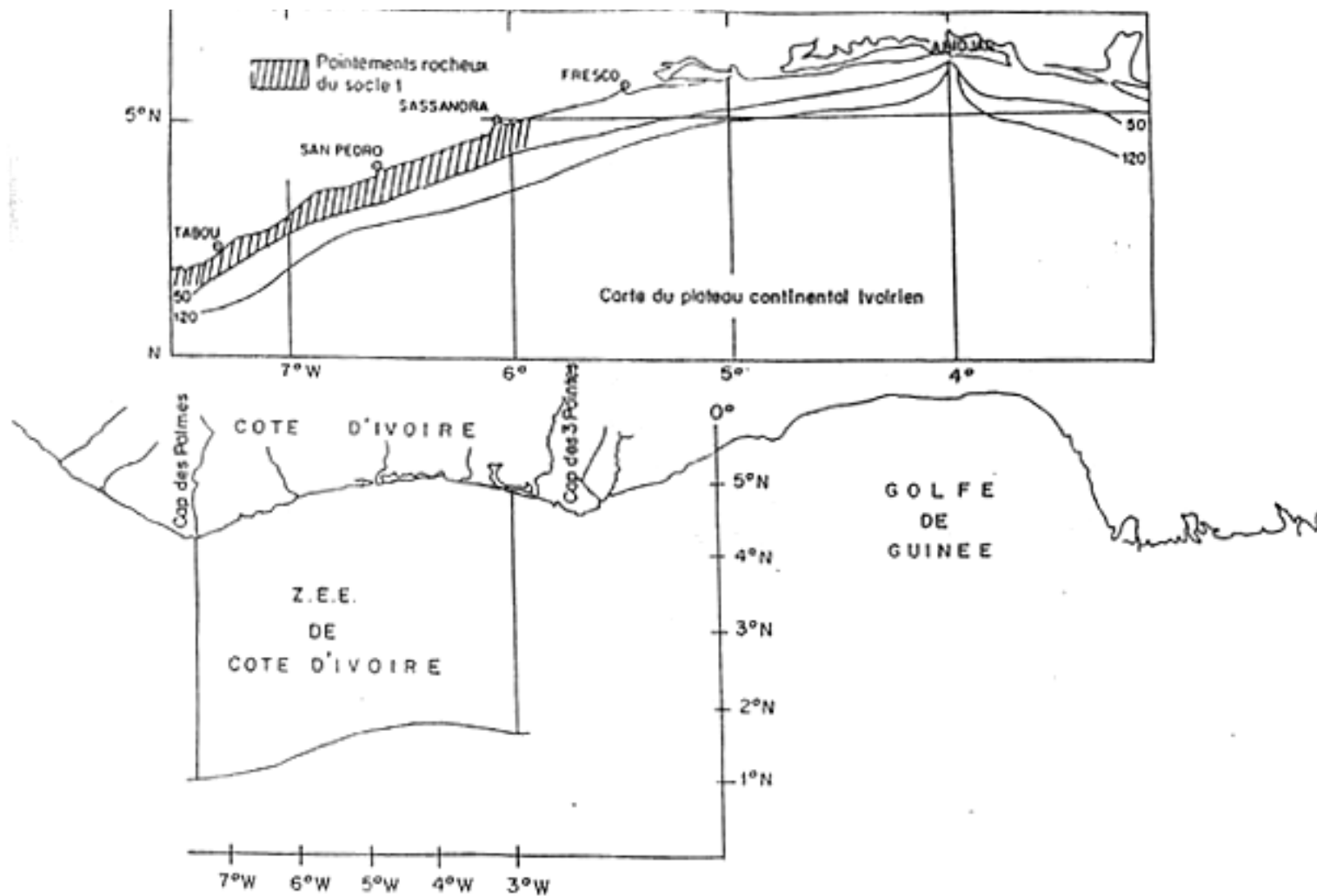
Though coastal fishery conflicts are still limited in the Ivory Coast, the situation calls for action from the fishery authorities and governments.

The implications are that governments should be committed to:

- establishing full and appropriate regulations for fishery which take conflicts into account;
- applying really the provisions of these regulations;
- providing sufficient means for fishery monitoring, control and surveillance;
- finally, involving adequately professionals (fisherfolk, fishing masters, boat owners) in the implementation of policies related to resource management, through training, information and sensitization on fishery matters.

IDAF could contribute to the achievement of some of these actions which fall under the responsibility of governments, by providing support either in form of assistance for the preparation of fishery legal texts or through the organization of specific study tours in countries which have some experience in the resolution of fishery conflicts or in the area of fishery monitoring and surveillance.

**Figure 1.** Situation de la Z.E.E., ivoirienne et du plateau continental ivoirien



# Conflicts in Coastal Fisheries in Senegal

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## 1. Introduction

The last few years, marine fishery has become economically the most important sector in Senegal, taking the lead over groundnuts (hit by the drought) and phosphate (affected by the oil crisis). Thus, 300,000 tons are produced each year, which represents about F CFA 60 billions. This sector has grown considerably during the last decade. It is estimated that its contribution to the Gross Domestic Product of the primary sector was about 11% in 1988, i.e. FCFA 35 billions against 12.7 billions in 1980.

This growth, of course, was made possible by the existence of favourable natural conditions (upwelling phenomenon) but also to a volunteer-based development policy as well as to the proven dynamism of the artisanal sub-sector (Kébé & Samba, 1993).

The senegalese fishery system is characterized by a pronounced complexity. In fact, fisheries are sequential, multispecific enterprises using many different gears and vessels. One can distinguish between five big groups of fish stocks: (i) the coastal pelagics (sardines, horse mackerels, small coastal tuna fish, *Italic Istiophoridae*), (ii) coastal demersals living at the bottom, (fish, shellfish, mollusc), (iii) high sea pelagic, (iv) deep sea demersal and (v) estuary species. Each of these correspond to a well defined geographic or biological unit and are often related to a given exploitation system (artisanal, industrial) which has its own biological, social and economic constraints.

Coastal demersal and pelagic fish resources are exploited by both artisanal fishery units, trawlers and sardine boats. These different fisheries operate in the same area in time and space with different means and strategies and develop among themselves relationships based on competition and cooperation.

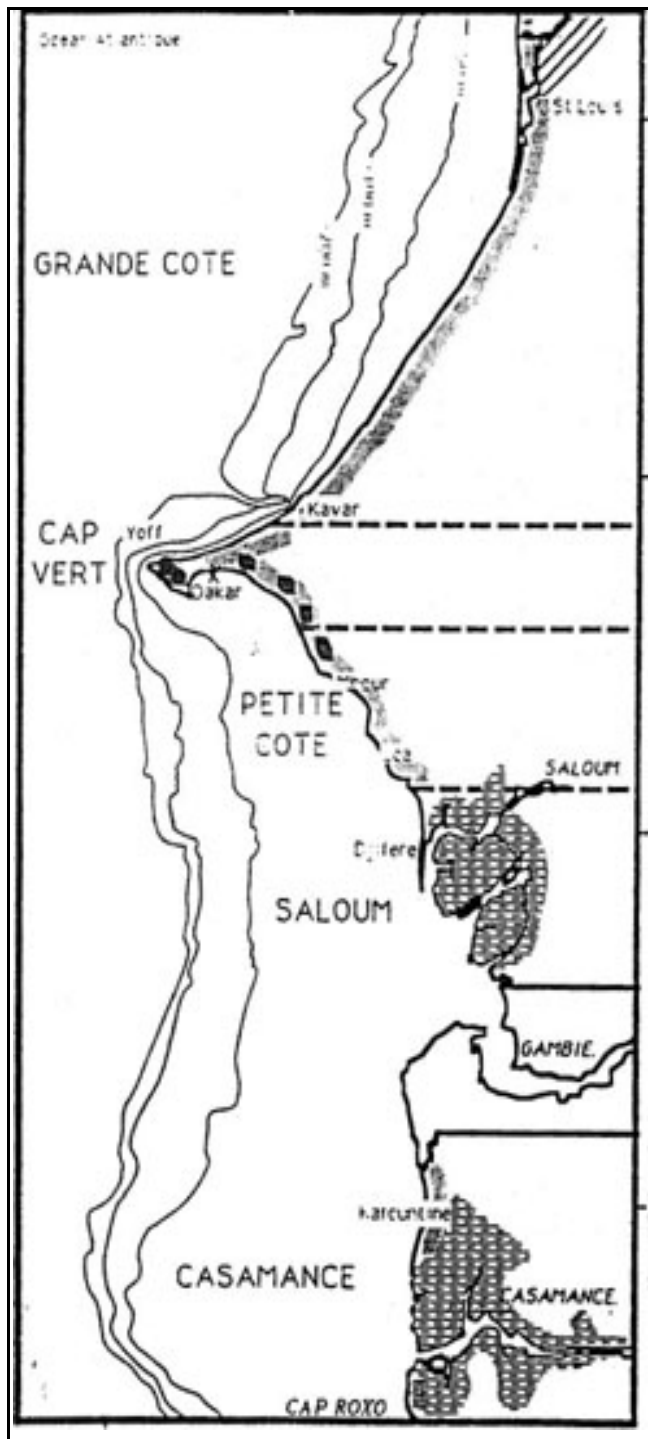


The trawler fleet is composed of boats based in Dakar harbour (132 freezers and icers in 1990) where they land their catches either partly or entirely (47,000 tons), and foreign trawlers.

Sardine fishery in Dakar has been facing a crisis since 1985. Only 9 boats are now operating with a fishing capacity of about 18,000 tons.

With two thirds of total catches (250,000 tons a year), marine artisanal fishery now represents the major subsector. It is an activity carried out by about 35,000 fisherfolk (people traditionally interested in the sea) using 4,500 canoes distributed in more than 700 fishing centers along 700 km of coastline (Fig.1). The fishing communities belong to three major ethnic groups: Lébou of Cape Verde, Sérère-Nyominka of Saloum islands, and Wolof of Guet-Ndar (Saint Louis). One can notice a diversity in the fishing gears and combinations of the means of production used. Thus, more than 20 professions are practised according to strategies which vary on short and long term basis in relation to biological, social and economic factors.

The different technological innovations have caused a rapid progress of artisanal fishery the last few years. The motorization of canoes which started in the 50's had a considerable technical and economic impact, like extension in fishing zones, a diminution of the duration of trips, an increase of the size of canoes to fit the purse seines introduced in 1972 and ice cases (ice canoes) started in 1976. It also generated the development of long distance migrations and a change in the capital used (Kébé, 1993).



**Figure 1.** Main fisheries zones of the Senegalese Continental shelf (Sources CRODT/ISRA)

The dynamism of the subsector is the cause of the frequency and importance of its conflicts with industrial fishery and also within artisanal fishery. These conflicts oppose fishermen using mobile gears to those using fixed ones in the same fishing zone. Conflicts also exist between fisherfolk and other actors of the fishery activity, namely the fishmongers (Kébé, 1985; Chaboud and Kébé, 1989).

## **2. Typology of conflicts**

Conflicts arise when the action of one fishery undermines that of another in such a way as to make it less efficient (Diallo, 1993). Competition is direct when fisheries target the same stocks. If the interaction is not at the level of resources, competition is indirect. In such a case potential origins of the conflicts are related to geographical space, markets and production factors (capital and labour).

### **2.1 Conflicts at the territorial level: violation of regulation**

Fishing units operating in the same sector potentially compete for areas when their activities are carried out at the same time. Conflicts between artisanal and industrial fisherfolk are generally due to the violation of existing regulations by industrial boats.

In Senegal, marine fishery is ruled by regulations and legal provisions of the Marine Fishery Law and its implementation decrees (Law 87.27 of August 18, 1987). A fishing licence is issued to all boat owners authorized to fish in waters within the jurisdiction of Senegal. Except the case of special provisions, industrial fishery is prohibited within the 6 nautical miles limit, protected coastal zone (nurseries and reproduction), whereas artisanal fishery is not liable to any legal territorial limit.

Licensed boats operate regularly in prohibited fishing zones. Some violate existing fishing regulations by using too small mesh size. Encroachment when passing or fishing also causes territorial interactions with artisanal fisheries.

### **2.2 Direct conflicts: shared exploitation of stocks**

Coastal pelagic stocks are exploited by both canoes using purse seines, encircling nets, beach seines, lines and sardine boats. Canoes using encircling nets, lines, cases and trawlers (based in Dakar or elsewhere) are interested in coastal demersal stocks.

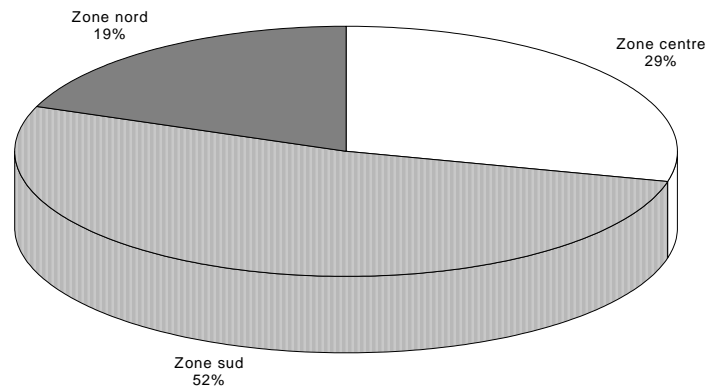
Artisanal fisherfolk who are becoming more autonomous with their powerful engines and canoes equipped with ice boxes can better exploit zones located beyond the reserved zone and which were so far visited by trawlers only.

Conflict situations occur in zones of big concentration of fishery activity. An analysis of the relative importance of artisanal and industrial fishery fleets operating in each zone, gives an idea of the scope of the conflicts.

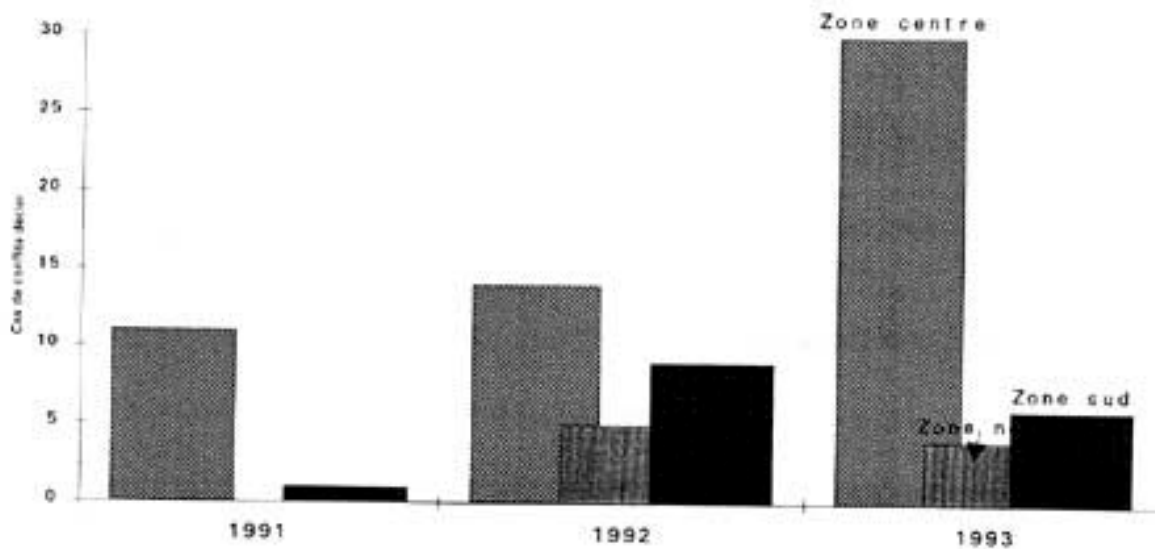
## Northern Zone or Grande Côte

This zone is located between Dakar and the Senegal-Mauritania border. It is used by shrimp and fish trawlers based in Dakar which devote 19% of their fishing effort (in number of tide days) (Fig. 2). Two important landing centres, Kayar and Saint Louis, are used by more than 1,000 artisanal canoes.

Between 1991 and 1993, the number of declared conflicts rose from 12 to 40 (Fig 3).



**Figure 2** Fishing effort expressed as percentage of numbers of fishing days in the different zones



**Figure 3.** Evolution of declared conflicts between trawlers and artisanal boats in the different zones

This represents only 30 to 40% of all conflicts. In 1992, 18% of the conflicts took place in the northern zone, mainly off Lompoul and Fass-Boye. They opposed trawlers and artisanal fishery units using fixed nets.

As a result of fish migrations and of the fact that it is difficult to cross the tidal wave, fishery in this zone is seasonal. Fisherfolk from Saint Louis have made migration an essential component of their way of life. They move along the Senegalese coastline and many can be found in Kayar during the fishing periods, in the cold season (from December to May). In April 1993, CRODT counted 488 Saint Louis units, representing 57% of the boats in activity. Since 1985 there is a serious conflict between the migrant fisherfolk who use fixed nets and sedentary ones using fishing lines (CRODT,1985). The two communities have had difficulties living together for several decades (since 1953 at least as accounted for by various documents). This situation is mostly due to two different conceptions of the access to fishery resources. People from Saint-Louis whose main activity is fishing consider free access to the sea as an inalienable right and a vital condition for survival of their way of organizing the socio-economic aspects of life. Moreover, people from Kayar who are mostly fisher-farmers consider the fishing zone of their village as a continuation of their homeland and consequently as their sole property which they exploit only in a seasonal way.

### **Central Zone or Petite Côte**

The rainy season is permanent in this zone located between Dakar and the northern border of Gambia. This explains the marked presence of trawler and canoe fleets, characterized by diversity and pronounced mobility. Trawlers devote more than 50% of their effort in this zone. Artisanal fishery is also very active with 2,500 to 3,000 units (70% of total boats). Mbour, Joal and Hann are the most important unloading centres.

The scope of conflicts can be assessed through the relative importance of different fisheries. Indeed, the number of declared conflicts between trawlers and canoes in the central zone (mainly Joal) rose from 11 in 1991 to 30 in 1993 (Fig. 3.) Most of the conflicts between fisheries occur in this sector: 92% in 1991; 50% in 1992 and 75% in 1993. These are mostly units targeting mainly demersal species (bottom set, lines, cases and long lines). The fishing units using encircling nets and encircling gillnets which operated in the zone compete indirectly with fish trawlers.

Regular clashes occur between users of bottom set gill nets or cases and fisherfolk using encircling net or purse seines (Bakhayokho of al,1986. Bakhayokho, 1990).

### **Southern Zone of Casamance**

Trawlers spend more than 50% of their fishing effort in this zone which is located between the Gambian border and the southern border of Senegal (Figure 2). outside the shrimp fishing season from July to September, some shrimpers operating in the northern zone move towards the southern shrimp stock. Due to the proximity of the Gambia and Guinea Bissau, regulations are frequently violated by foreign boats. Thus, conflicts between artisanal and industrial fisheries are important even though the number of canoes operating in this zone is limited (between 3 and 6%

of the total number of canoes depending on the period). The nine cases of conflicts opposed shrimp trawlers to canoes using surface gill nets (*félé-félé*).

Artisanal shrimp fishery in Casamance has always been a source of conflict although the nature of conflicts has changed with the passing of years: between 1960 (when the fishery began) and 1984, fisherfolk competed with Ziguinchor industrial fishery. Now, conflicts oppose on the one hand fisherfolk to shrimpers and on the other hand shrimpers who use fixed nets to those using *félé-félé* introduced in 1985. It seems that current conflicts are due to inobservance of shrimp fishery regulation.

### **2.3 Conflicts related to access to production factors**

#### **Availability of labour**

Korean and Spanish factory boats have been recruiting, often secretly, artisanal fisherfolk either as guides to show them favourable fishing areas or embarking them with their production means to fish in waters within the jurisdiction of other countries for which they held a fishing licence. Catches are processed onboard for export. Despite advantages artisanal fisherfolk draw from this situation (job security, learning of new navigation and fishing techniques...) this recruitment is a source of conflicts. The reason is that it takes a long time before the artisanal fisherfolk receive their "salaries" because they had to wait for the catches to be sold after they return to the home country.

#### **Access to capital**

Artisanal fishery which has long been considered by "development workers" as an obsolete form of production which needed to be raised to a higher level (Weber and Fontana, 1993) was being financed as separate from the structured or private financing sector. The recent evolution of fishery policy shows that efforts have been made to alleviate the financing concerns of the artisanal fishery. Credits are granted by fishery development projects on the Petite Côte (PAPEC) and in Ziguinchor region (PAMEZ) through the National Agricultural Credit Bank of Senegal (CNAS). However, as can be seen through the experience of Sea Food Project (Chaboud, 1992), the era of big industrial projects financed by foreign funds with government endorsement, is not over.

Artisanal fisherfolk use their own resources and informal credit to finance their activities. They work with more than 70% of their own funds as opposed to 4 to 5% for industrial fishery which has long benefitted from the support of the State, banks and financing institutions (Kébé, 1992). This inequality in the internal allocation of financial resources gives advantage to the industrial sub-sector over the artisanal one and highlights conflicts between the two components of the system.

### **2.4 Competing for access to the market**

The quality of products landed by artisanal fishery has improved with the use of ice holds and polystyrene cases in the canoes.

The export of pelagic fish to African countries (Guinea Gulf) is very limited as a result of the competition of the fleets of Eastern countries. Consequently, the local market remains the only outlet for sardines which is the main species landed by Dakar sardine fishboats and artisanal units (purse seines). It is at this level that artisanal fishery competes effectively with the industrial sector. The low production costs of purse seine units and the integrated nature of marketing systems is the reason for the low price offered sardine fishers (Chaboud and Dème, 1991).

With the creation of joint ventures, the artisanal exploitation of some species for export only was developed (shrimp, soles, lobsters, cuttlefish, octopus, groupers, seabreams, pagres...). Two systems exist:

- fishmongers or fishwomen send directly to the external market with the fish bought at the beach where it competes with the fish landed by industrial fishery;
- faced with the lack of raw material, fish processing factories regularly get their supplies from artisanal fisherfolk through fishmongers. Artisanal fishery thus contributes more than 40% to the supply of factories (Dème, 1983). This orientation of the production of artisanal fisherfolk towards export is likely to be source of conflicts between traders on landing sites.

### **3. Conflict resolution procedures**

One of the weaknesses of Senegalese legal systems is the lack of provisions about conflicts between different fisheries.

The fishery protection and monitoring project in Senegal (PSPS) has been responsible (since 1991) for managing conflicts and accidents at sea (Ndiaye, 1992). This structure, established in 1983, has a twofold objective: protection of Senegalese territorial waters and rational exploitation of their fish resources. It has five coastal monitoring centers in the most sensitive landing sites (Mbour, Joal, Fass-Boye, Saint Louis and Kayar), thus allowing the involvement of coastal populations.

Conflicts which occur in zones prohibited to boats are called "obvious" offence (zone offence) and are punished by the marine fishery law.

Conflict settlement by PSPS has no legal aspect. It is done on the basis of reports submitted by both parties, seeking mutual agreement, though pressure is placed on industrial fishery to compensate artisanal fisherfolk, the victims.

Industrial boat companies found guilty often oppose the decision and refuse to pay any compensation. The case is then transmitted to the Court through the Merchant Navy, which is at the disadvantage of artisanal fisherfolk, because of the slowness of the court procedures and, mostly lack of evidence. It is not easy to establish responsibility. In general, it is the artisanal fisherfolk themselves who, after noticing damages, identify the boat in the absence of authorized agents based in monitoring centres whose report is sufficient to establish damage evidence.

All 12 conflict cases submitted to PSPS in 1991 were settled. The total amount of F CFA 4,665,000 was paid to the victims of disaster in addition to the compensation they received in kind (equipment repairs...). Only 10 out of the 28 cases registered in 1992 were settled. The remaining cases which could not be settled amicably were sent to court.

The Oceanographic Research Centre of Dakar-Thiaroye (CRODT) is constantly requested by the fishery administration to give scientific opinion necessary to manage conflicts. Due to the magnitude and regularity of internal conflicts in artisanal fishery, a Fishery Council was created in Joal. This liaison structure between research, development and professionals, has a conflicts commission. This commission which is run by elders leans on virtues such as tolerance, open-mindedness generosity and responsibility to settle disputes between the system actors. This way of managing fishery locally was later generalized in the other landing centres of the Senegalese coastline.

#### **4. Socio-economic effects and considerations**

Obviously, artisanal fisherfolk are the main victims of a conflicting cohabitation with industrial fishery. Conflicts result in destruction even disappearance of fishing gear and boats (Fig.4). 71% of losses suffered by artisanal fisherfolk concern nets and drawnets. Material and corporal damages caused by collisions with boats are rather serious. Between 1988 and 1992, PSPS registered for Dakar and Thiès regions material losses worth almost F CFA 42 million (destruction of canoes and fishing tackles, 12 deaths and 7 injured persons).

Cases of technological externalities exist between different artisanal fishery trades. Losses suffered by young fishermen trained and assisted by development projects (PAMEZ and PAPEC) caused serious management difficulties in their fishing units and are mentioned among the reasons for default as far as CNCAS credit reimbursement is concerned (Marot et al, 1991).

From the start of conflicts to their settlement, damaged fishing units could be immobilized for a long time on the quay. Moreover, one can question the legality of recruiting artisanal fisherfolk with all their production means on board industrial boats, since the law is not clear on that matter. These two phenomena cause the reduction of canoe activity and hence, artisanal landings. As a result of this situation, fisherfolk and their families experience income losses and the local populations are partly deprived of fish. It is difficult to manage such scarcity of fishery products in a society where fish is the major source of animal proteins.

Trawlers, which operate in the zones reserved for artisanal fishery, with unauthorized gears reject 40 to 60% of their catches (Cavérivière and Rabarison, 1988). These rejected species are often the ones which are not yet marketable or which have not yet reached the appropriate size. This results in a deterioration of stocks. Aside from the fact that it generates frequent conflicts between artisanal and industrial fisherfolk, this problem is very serious for the preservation of resources, particularly if fishing effort has to be increased.

The destruction of fishing gear occur generally by night when canoe activity is low almost non-existent. Offenses are more and more frequent in less populated landing centres or enclaves. Industrial boats take advantage of these situations to come nearer to the coast, all lights extinguished, and destroy everything on their way. This phenomenon results in a pronounced decrease in the productivity of artisanal fishing units: the resources to which they could have access diminish rapidly and they are compelled to look for fish further and further away in order to find more profitable areas. They face a rise of fuel consumption which is not necessarily reflected in the fish selling price.

Responsibilities are generally shared as far as conflicts beyond the 6 mile zone are concerned. Serious violations of marine safety basic rules are observed (Ndiaye, 1992). Trawlers are blamed for making extensive use of automatic piloting and being reckless. Canoe owners mark their nets poorly (they are not visible by night), and do not observe adequate safety instructions (canoes do not have lights by night nor radar reflectors)

The canoe owners find it difficult to complain in cases of net destruction by trawlers when these occur by night without direct witnesses. Thus the artisanal fishery folk cannot claim the value of the lost equipments. The situation is so serious that some of them who feel wronged, are inclined to take the law into their own hand by boarding the guilty trawlers to confiscate the boat documents and force the captains to join the coast. Even worse, some try to set these boats on fire.

Moreover, there is no formal insurance system for artisanal fishers whereas industrial fishers can insure themselves against losses or destruction of production means. There are different reasons why local insurers are reluctant to cover the risks of artisanal fisherfolk: lack of legal formal recognition of artisanal enterprises, lack of canoe registration, moral risk deemed too high.

## **5. Recommendations**

Conscious of the dangerous implications of the rapid transformation of fishing zones into battlefields between the different actors of the system, PSPS in 1992 held a national seminar on the safety of artisanal fisherfolk at sea. Recommendations which resulted from this seminar highlighted that it is necessary to establish a series of urgent and adequate measures. It was advocated that a national commission be created to take charge of the settlement of sectoral conflicts, and a solidarity fund be established to assist fisherfolk who suffer damages, pending possible compensation.

To reach a global and final solution, these initiatives must be supplemented by actual involvement of concerned populations. Sensitization at all levels, backed by a project for providing radar reflectors, light buoys and VHF radio has become necessary. Besides, initial registration by local oceanographic and marine offices, of all fishing gear procured by fisherfolk, would help assess more accurately losses declared by artisanal fisherfolk. In fact, they tend to overestimate the value of their material damages.

It is mainly through fishery legislation that African authorities in charge of fishery policy, up to now, wish to influence the development of the sector and reduce conflicts. Whereas it has



been demonstrated that interactions can escape the scope of regulations (economic relations), and that the application of legal provisions is not always easy. Thus, it is necessary to reconsider the current context in which regulations and legal provisions must be applied. This will help correct the asymmetry which exists between artisanal and industrial fisherfolk for access to information, both in the area of knowledge of regulations and the appropriate procedures to be used in the case of litigation. Artisanal fisherfolk would have organize themself accordingly in order to have a pressure group capable of changing the power relations.

Solutions which are designed on purpose, tacitly accepted or adequate for different conflicts among artisanal fisherfolk are likely to affect the development of fishery in the long run. Access to resources must be free within the framework of existing regulations. One should move towards establishing regulations for artisanal fishery. These regulations should be as general as possible and stem from wide discussions among different actors.

The search for solutions to the different conflicts which occur in the sector must be part of a global policy of rehabilitation and management of fishery resources. It will be interesting to direct industrial fishery towards the exploitation of stocks located down south, near Casamance. The industrial exploitation of available stock of small pelagic fish off Casamance, could justify the establishment of a secondary port in Lower Casamance in order to avoid the concentration of industrial boats in the Dakar zone; however, there will be a need to conduct a socio-economic study before undertaking such construction.

This policy must take into account not only biological interests but also economic and social ones which are often contradictory. Within this approach, the policy must be founded on baseline studies: evaluation of resources and their capacity for renewal, of costs and incomes at different levels of the system with an accurate analysis of interrelations between these levels. Due to the migratory nature of many species caught in Senegalese waters, and to the fact that Senegal shares the same stocks with neighbouring countries, it is advisable to assess and improve fishery resources jointly. The exploitation of these resources must be viewed regionally.

IDAF could intervene at these two important levels to assist the concerned countries.

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# **Conflicts in Coastal Fisheries in The Gambia**

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## **1. Introduction**

The Gambia's Exclusive Economic Zone lies in the Northern Eastern Central Atlantic Ocean which is one of the richest fishing zones in the world. The Gambia is fortunate in terms of its considerable marine fish resources, which are enhanced by the fresh water flows of the River Gambia whose estuary also attracts marine fish for feeding and spawning .

The maximum sustainable marine yield (MSY) for pelagic fish species is between 60-75000 metric tons; 15-17000 metric tons for demersal species and 1000 tons for crustaceans and molluscs. The MSY for riverine fish stocks have not yet been determined but catch rates can exceed 2500 tons per year.

The fisheries sector of The Gambia is divided into three administrative areas: Atlantic/Marine Coast Stratum; Lower River Stratum and, Upper River Stratum. Activities of the artisanal fisheries are found in all the three strata, while activities of the industrial sub-sector are confined along the Atlantic/Marine Coast Stratum. Total fish production in 1992 was estimated at about 46,000 tons of which the artisanal sub-sector produced 44%, and the rest was produced by the industrial.

According to statistics compiled by the Department of Fisheries in 1992, there were more than 1500 artisanal fishermen, about 500 of whom operated within the marine coastal area and the rest within the river. Also in 1992, there were a total of 87 licensed industrial fishing vessels operating in Gambian waters. These industrial vessels are comprised of trawlers, longliners and purse seiners. Although licensed in The Gambia, the vast majority of industrial vessels are registered elsewhere and land their catch in foreign ports.

Artisanal fishing vessels are comprised of dug-out and planked type canoes with few fiber glass canoes. A large proportion (49%) of the canoes are owned and operated by foreigners, mainly Senegalese but also other nationalities from the sub-region. Considerable motorization has taken place over the years and this has enabled fishermen to exploit further or richer fishing grounds even beyond recognized artisanal fishing grounds. In the marine fisheries sector, artisanal fishermen from different bases (and countries) of operation converge with industrial fishing vessels on common fishing grounds, where they compete for the same resources. This is particularly true in The Gambia where it has been determined (through surveys) that fish are most plentiful around the 20 metre contour which is situated within the established artisanal fishing zone.

Although targeted species may vary between artisanal and industrial fishing operations, the tendency to converge on common fishing grounds is aggravated by the common property nature of fish resources, their relative abundance in certain fishing grounds, the exploratory nature of fishing and the steady increase in fishing crafts which target diminishing fish stocks. All these factors call for increased competition and create an environment which is very prone to conflicts.

In The Gambia, the artisanal and industrial fisheries sectors have co-existed for a long time. Unfortunately the co-existence has also had its drawbacks with conflicts which are not limited to those between the artisanal and industrial sectors alone; fisheries conflicts are also manifested within the artisanal fisheries.

## **2. Typology of conflicts**

Although statistical data is not available for The Gambia, conflicts are known to originate from various sources and are of different nature.

The Government of The Gambia accords high priority to development of the artisanal fisheries for the obvious reasons that: the sub-sector provides virtually all the fish for domestic consumption; creates substantial employment for nationals and produces export fish for foreign exchange earnings. Government has therefore concentrated much effort to assist the development the artisanal fisheries providing infrastructure, credit, training and organizational support. Development of the industrial fisheries is left mainly to private sector, initiative, although Government has provided incentives in the form of duty free fuel, duty free exports and import duty exemption on fishing related equipment. In return Government derives substantial revenue from the sub-sector through sale of licences, foreign exchange earnings from fish exports etc.

In the effort to manage and protect the fisheries resources, Government has enacted legislation regulating activities of both the artisanal and industrial fisheries and delineating boundaries of operation. Fisheries regulations have allocated seven nautical miles from shore reserved exclusively to artisanal fishing operations, and restricts large industrial vessels to beyond twelve nautical miles from shore. However, this seven nautical mile regulation does not include industrial purse seiners which are allowed to fish within the artisanal fishing zone. This is a source of conflict between the artisanal fleet and purse seiners. Also, as fishing activities intensify as a result of increases in the number of both artisanal and industrial fishing vessels, conflicts become more regular.

Inspite of restrictions, industrial fishing vessels, equipped with echosounders and fish finding devices follow fish and encroach on more productive artisanal fishing grounds usually by night, causing considerable damage to artisanal fishing gears and violating fisheries regulations. As can be expected, the losers in such conflicts are the under-privileged fishermen who employ static gears such as set nets, and are poorly equipped in terms of safety gears and equipment. Their often poorly marked fishing gears get trawled away or entangled and destroyed by industrial vessels, resulting in entire loss of gear. Night fishermen (usually driftnet fishermen) who drift by night without safety equipment (torches, lanterns, whistles etc.) are exposed to dangers of being run-over or colliding with encroaching industrial fishing vessels during naps

between hauls. Such accidents can be fatal and result in considerable losses. These losses can be devastating to the artisanal fishermen; at times resulting in the loss of entire investments.

Illicit fishing by industrial vessels following fish during poaching operations also violate fisheries legislation and commit offenses. Such vessels enter the artisanal zone and cause damage to artisanal fishing gears. Worst still is the tendency for such vessels never to be traced again.

Another form of conflict, the most recent in the Gambia, involved a fisherman whose nets were destroyed by an ocean liner. Investigations showed that the fisherman did set his nets along the shipping lane marked by several buoys which guide vessels to port. The fisherman had to lose as he was faulty.

Within the marine artisanal fisheries, fishermen employing different or similar fishing gears and fishing within the same area run into conflicts. Driftnet fishermen often accidentally pass over poorly marked set gears belonging to other fishermen. Nets get entangled and where the owner of the nets is not present drifters may cut through and destroy the gear. Accusations and confrontations ensue from such accidents and can extend to hostilities involving fishermen of different communities, within the same community or involve fishermen of different nationalities. Some of the acts of the driftnet fishermen are seen by set net fishermen as deliberate acts which often furthers tension. Accusations of theft of set gears and catches found in nets have also been reported sources of conflict.

Along the River Gambia and its tributaries, shrimp fishermen often confront with set gillnet fishermen using the same fishing area(s). The set gillnet fishermen complain that shrimpers deliberately cut apart their nets in order to create fishing space for themselves. Also, gillnet fishermen complain that the small size mesh of shrimp fishermen destroy many juvenile fish of high economic importance and which are targeted species of gillnet fishermen. This may involve groups of fishermen from one community against another, and fishermen from the same community, with tensions mounting to near fights.

Sanctuaries and tributaries may traditionally be declared "closed grounds" during certain seasons/years by communities themselves, or by Government as a management action. However certain fishermen who disregard this or are unaware can intrude into such areas giving rise to conflicts or frustrating conservation efforts.

Mangrove areas provide shelter and spawning grounds for certain fish. However oyster harvesters and wood collectors continue to cut down and damage such shelter and expose the area. Attempts by conscious fishermen or other members of society to address the action do give rise to arguments and disputes.

### **3. Socio-Economic effects and considerations**

Incidents of loss of artisanal fishing gears had become more frequent in recent times and fishermen who fall victim of lost gears are always handicapped by such predicament.

Because of the frequent occurrence of such incidents, fishermen have been advised by the Fisheries Department to identify vessels by their registration numbers to facilitate the tracing of such vessels. Fishermen who are lucky to identify offending industrial vessels, lodge their complaints with the Department of Fisheries with whose help fishermen get compensated. However, many of the offending vessels are never traced and as such the artisanal fishermen lose. Since fishermen are generally of a low level of financial status and as fishing materials are relatively costly, such fishermen stay for considerable lengths of time before they can replace the lost gear. Many fishermen cannot fish during this period. Their inability to obtain loans easily, due to unfavourable lending procedures in the formal lending sector, and the inadequacy of credit from the informal sector further aggravates the situation.

As fishing supports them and their families some of such fishermen are often faced with hardship and distress. The situation is even made worse where lost items were part of an unpaid loan, either from government or other sources. They are unable to pay back their loans easily and face risks from further conflicts. Government may intervene at times to assist fishermen to replace their lost gears. However this becomes a problem with increased frequency of lost items and under slow rates of loans recovery.

Where collisions are involved, these could be fatal, resulting in the loss of lives and grief to family members. No compensations are made towards such accidents as offenders may not be traced and fishermen usually do not take insurance covers. As such the situation can only be regretted.

Incidents of gear loss resulting from interactions within the marine sector between artisanal fishermen of the same or different communities, do lead to accusations and hostilities which threaten social order. There could be further damage to fishing gear as certain fishermen attempt to avenge damaged or lost gears. Disheartened fishermen may accuse and arrest or seize gears of suspected colleagues, threatening them with knives and cutlasses. Such arrests create commotions and undesirable tension both within and between fishing communities. Consequently elders have to meet, often in the presence of government representatives to address the situations and settle differences. Certain fishermen may avoid the common fishing grounds to look for other ones. As a result unit productivity can decline and profit margins lowered.

#### **4. Conflict solving procedures**

It is prudent for any government to prevent conflicts from happening within an industry as sensitive as fisheries. Unfortunately prevention is not always the final solution as the dynamic nature of the industry is likely to present new circumstances which manifest their particular problems. An effective approach to solving conflicts will no doubt involve a good understanding of the sources and nature of the conflicts, and the provision of rules and regulations which should be followed to avoid such conflicts. Such rules and regulations will, needless to say, require to be adequately enforced through effective monitoring programs, and through awareness campaigns and education by Government agencies responsible for fisheries. Unfortunately enforcement costs can be high and prevent the continuous presence of enforcement agents at all times on a continuous basis.

The Department of Fisheries and its parent Ministry of Natural Resources and the Environment, are the Government institutions in The Gambia directly charged with the management, development and protection of the fisheries resources within the jurisdiction of Gambian waters. These institutions are also empowered to protect, promote and regulate the local fishing industry, in collaboration with relevant government institutions, including the Ministries of Defence and Justice.

The Fisheries Act and Regulations have been established as instruments for the execution of the management responsibilities bestowed upon these institutions. Provisions under these instruments have taken cognition of potential causes of conflicts within the fisheries sector. The revision of the Fisheries Act and Regulations have also made possible, the inclusion of new provisions to reflect present realities of the fisheries sector. Government has been aware of the incidents of damage to artisanal fishing gears and other potential dangers resulting from the close interaction between artisanal and industrial fishing fleet on fishing grounds. Consequently, delimitations in fishing boundaries of the two sub-sectors have been effected which restrict certain industrial vessels from entering artisanal fishing grounds. These boundaries have been revised over time to minimize intrusion of industrial vessels into artisanal fishing grounds.

The Marine Unit of the Ministry of Defence, which is responsible for surveillance of the territorial waters has been conducting routine patrols which have resulted in the arrest of offending industrial vessels which have been dealt with accordingly. During the past three years, these patrols have been complemented by a spotter aircraft from the Luxemburg Government under a pilot surveillance project. As a result, routine monitoring activities have been established which enabled understanding of the favoured fishing grounds by industrial vessels and provided useful information on fishing operations. These activities have been deterrents which have significantly reduced the frequency of violating offenses, and the number of reported cases of damage to artisanal fishing gears.

The Gambia and neighbouring Senegal have successfully signed and implemented maritime and reciprocal fishing agreements. Negotiations are also well advanced for the establishment of a joint commission on surveillance of the territorial waters by the surveillance units of the two countries. It is hoped that these arrangements will add impetus to the struggle to protect the resources and curb down on conflicts ensuing from fishing grounds in the marine fisheries.

A sub-regional project on monitoring, control and surveillance (MCS), which is an extension of the surveillance pilot project in The Gambia is currently being implemented. It involves The Gambia, Guinea Bissau, Guinea Conakry and Sierra Leone, and it is expected to further enhance protection of the resources and the reduction of conflicts between the industrial and artisanal fisheries.

Within the artisanal fisheries, the main ways to solve conflicts have involved traditional procedures, where elders consult with each other and arrange meetings to resolve differences. Government representatives (Department of Fisheries) who are mandated to promote cooperation between fishermen, are often invited or could be the initiators of such meetings. Through such mediations conflict within the artisanal fisheries is solved. This procedure has proven to be highly successful, However, there are occasions when decisions from such meetings are not



honoured immediately and require follow-up meetings to resolve the situation. It should be noted therefore, that the presence of high level representatives of government, and community leaders have been useful and is an essential ingredient if conflicts are to be resolved within the artisanal fisheries sub-sector.

## **5. Discussion and recommendations**

The increase in surveillance activities achieved during the course of the past three years, when the surveillance pilot project was being implemented, had met with significant reduction in the frequency of reported cases of conflicts involving damage and loss of artisanal fishing materials. Although this may not entirely be attributed to the presence of the spotter aircraft and patrol boats, it is reasonable to state that their presence with occasional arrests of offending industrial vessels, has deterred many unauthorised industrial vessels from entering into the artisanal zone. As a consequence this has effectively minimised the number of reported incidents of conflicts involving the loss of artisanal fishing materials. However, due to the tendency for increased exploitation from both the industrial and artisanal fisheries an increase in conflicts is foreseen, especially if monitoring and surveillance activities are not intensified. It is therefore recommended that government study closely and adopt measures to adequately equip the marine unit to effectively step up monitoring and surveillance activities for protection of the territorial waters and for the reduction of conflicts within the fisheries sector. The Government institutions responsible for fisheries (Fisheries Department) should also endeavour to procure and operate fast speed boats for regular monitoring of the artisanal zone. Such boats can also be used as rescue boats.

As there is the need for collaboration, it is also recommended that Government continue to collaborate with other countries in the sub-region on aspects of monitoring and surveillance activities, as well as on matters relating to the reduction of fisheries conflicts. In this connection the negotiations for the joint commission on surveillance between the Gambia and Senegal should be pursued for implementation with objectives addressing conflicts within the fisheries sectors of the two countries and providing rescue services among others.

Accidents involving serious loss of lives have occurred whose causes remain a mystery, but which could be due to conflicts. For this reason and for those of safety, it is recommended that provisions be made in favour of the safety of fishermen, who generally do not carry safety devices to sea.

As regards artisanal fisheries conflicts, it is recommended that Government (Fisheries Department) should endeavour to conduct awareness campaigns with objectives to provide fisherfolk with general information on the fisheries sector. This should include among others, information on rules and regulations, the nature of the resources and the need for cooperation among fishermen, between fishing communities and with Government. Perhaps this could be achieved through national radio programmes and seminars for fishermen. Nevertheless, it is also important that rules and regulations geared towards prevention of conflicts are carefully prepared, and harmonized in consultation with fishing communities who should also be involved in the enforcement of such rules and regulations.

The IDAF Programme could be instrumental in a concerted effort aiming at a reduction, prevention and solving of conflicts. The programme should undertake study programmes on conflicts; gather information on the nature of the phenomenon, and on strategies and lessons learned from around the region and elsewhere, on solving conflicts. The programme could compile approaches to the prevention of conflicts and assist governments in the sub-region to deal adequately with the phenomenon. These can facilitate exchange of information and experiences and form the basis for IDAF's assistance for national governments to prevent conflicts within the fisheries sector.

# **Conflicts in Coastal Fisheries in Ghana**

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## **1. Introduction**

Ghana has a long tradition of marine fishery in its coastal waters. It started as an artisanal fishery close inshore, using dug-out canoes propelled by oars and sails and applying very simple and inefficient gears for catching the fish. Later, in the late 1950s and early 1960s the canoes began to be mechanised by the introduction of the outboard motor which enabled the canoes to fish far out from the coast and also make bigger catches than before.

About the same time, small trawlers (inboard-engined vessels) and later purse seines were introduced into the coastal fishery. Development of the fishery continued very fast through the importation of large trawlers, local construction of medium-sized purse seiners and lastly the establishment of a commercial tuna fishery. These developments have been associated with installations of facilities of handling and processing the increasing fish catches in order to reduce to the minimum post-harvest losses. Currently, the following fleets operate in the Ghanaian coastal waters: Canoes (dug-out), small-sized inshore fleet, medium-size inshore fleet, large industrial fleet (trawlers), shrimpers and tuna fleet.

All these fishing fleets operate on the narrow continental shelf with an area of 24,300 km<sup>2</sup>. In addition, except for the tuna fleet, these fleets exploit nearly the same species of fish. Furthermore, the upwelling, the basis of fish production in the sea, continues, as ever, to be seasonal - the major upwelling in Ghanaian waters taking place yearly for three months only (July - September) and the minor upwelling occurring for an average of 3 to 4 weeks in January, February or March.

Within the artisanal (canoe) fishery itself, there are no less than six distinct sub-sectors, with different interests. These are: Ali fishery, poli/watsa fishery, drifting gill net fishery, set net fishery, hook and line fishery and beach seine fishery

Thus, the marine fishery is a complex and sophisticated system with several different interests and, as expected, several conflicts.

The inland fishery is dominated by the fishery on the Volta Lake where the several types of fishery (all artisanal) also generate considerable conflicts.

## **2. Typology of Conflicts**

It is generally taken for granted fish resources are inexhaustible and are a common property to the citizens of a coastal state and so every such citizen has the inalienable right to exploit it. This brings the first conflict between the citizens and government fisheries administration, if the latter attempts to control access to fish resources.

### **2.1 Fishery Jurisdiction**

In Ghana, government does not control access to the artisanal and semi-industrial fisheries, but controls entry into the fisheries by the large industrial, shrimping and tuna fleets. This is done by the granting of permits to import vessels, by the Ministry of Food and Agriculture to the individual or company that wishes to enter the fishery and the licensing of these vessels. In the early years, these permits were more easily granted than now and so there were hardly any such conflicts. Now, in view of dwindling fish stock levels, these permits are more difficult to obtain; and in the case of trawlers and shrimpers, further importation is banned. Thus new entrants into the fishery are in conflict with the fisheries administration.

### **2.2 Management Mechanisms Instituted by Government**

It is the area of implementation of management mechanisms instituted by the government that the greatest conflicts between fishers, fishing vessel owners and the government fisheries administrators occur.

The Government has enacted the Fisheries Law, PNDCL 256, 1991 which has detailed the management systems and also made provisions for the establishment of a Monitoring, Control, Surveillance and Enforcement Unit (MCSE) of the Ministry of Food and Agriculture, whose function it is to enforce the fisheries law. In view of the lack of financial resources, this unit has not been established and so these laws are not satisfactorily enforced.

Despite this, partial enforcement of the following management measures has brought the fisheries administration into conflict with the various operators:

#### **Permission to import vessels**

The need to obtain a permit for importing trawlers, shrimpers and tuna fishing vessels is a management mechanism which new entrants are against, as explained above.

#### **Mesh Sizes in the Cod-end of Trawl Nets and in Other Nets**

In the PNDCL 256, no trawl net with codend of meshes less than 60 mm in stretched diagonal length may be used in Ghanaian waters; shrimpers may use 40 mm mesh. In addition no seine net with meshes less than 25 mm may be used for fishing in Ghanaian coastal waters.

This regulation is not complied with and smaller mesh sizes are used. In order to make the illegal mesh size unavailable in the country, government has banned the importation into, or weaving netting of such small mesh sizes in the country. However, fishers continue to smuggle netting materials with such small mesh sizes in the country. Of late, though, it is proving too difficult for them to do so owing to stricter control and vigilance at the country's borders by the Customs Excise and Preventive Service. Consequently, when nets with such small meshes get badly damaged in the course of fishing, the fishers repair them by using pieces from the same net, thus reducing the size of the original net. The principal offending fleets are the trawler, poli, and the beach seine fleets.

### **Excessive Exploitation of Juvenile Fin-fishes by Shrimp Vessels**

Though by law, shrimpers are restricted to specific areas of operation where research results have shown that the gears may encounter less immature fin-fish and the operation would be more profitable, the operators very often fish outside these prescribed areas resulting in the catching of too many immature fin-fishes. The operators do so because the stocks of shrimps in Ghanaian waters are quite low and they therefore, make sufficient money only from sales of the fin-fishes that they catch - whether juvenile or adult.

### **Use of Illegal Nets in Volta Lake Fisheries**

There is an extremely grave conflict between the Fisheries Administration and a section of the fishers on the Volta Lake who are determined to use an illegal seine net on the lake, which the fisheries law has banned. They catch more immature fish with the seine net than with the prescribed stationary set net.

### **Limited Entry to the 30 m Depth Zone**

Strictly there are no delineated zones within which each fishing fleet must operate. However, the fisheries law forbids the use of towing gear in coastal waters the depth of which is less than 30 meters. In addition, fishing vessels of 50 gross registered tonnage or more, are forbidden to use a bottom trawl in coastal water the depth of which is less than 30 metres. This is both a management measure and an attempt to avoid physical conflicts between artisanal fishers and other users of the sea. In addition, such coastal areas constitute the nursery grounds for immature fish which need to be protected. The fishing power of the trawlers especially those using undersized mesh is such that if allowed to fish in the 0-30 m zone, even immature fish in these areas would be overfished. Canoes are allowed to fish in this zone since they do not trawl. Furthermore, the canoe fishing power in set netting, ring-netting or purse seining (poli) is not as effective as that of the trawlers, to cause significant damage to the stocks of juvenile fishes. Moreover, keeping the trawlers away from such coastal areas will reduce the incidence of moving vessels running through nets laid by the canoe fleet. This law has generated conflicts between the fisheries administration and the trawler fleet operators, and between the trawler/purse seine fleet and canoe fleet. Trawlers wishing to catch cephalopods ostensibly flout this law.

## **The Use of Poisonous Chemicals, Explosives and Herbs in Fishing**

The use of poisonous chemicals, explosives and herbs has brought a very tense conflict between the Fisheries Administration and those fishers who practise these dangerous methods of fishing in the sea, rivers and on the Volta Lake. These chemicals and herbs as well as explosives kill not only the adult fish targeted but also non-targeted juveniles and other living organisms including plankton. The ecosystem is thus damaged. The members of the community who should know such offenders, are not helping enough with information that would lead to their arrest. Such fishers do not appear to understand the harm they are doing to their own means of livelihood. Education of fishers on the use of these dangerous methods of fishing as well as other illegal methods of fishing is being rigorously pursued by the Fisheries Administration.

### **2.3 Internal and External Allocations**

In view of the narrow continental shelf of Ghana the width of which ranges from as low as 15 km to a maximum of about 80 km from the shoreline, all the different fleets fish in about the same area.

The artisanal hook and line fishery operates as deep as, and beyond the large trawler fleet. The canoe set net fishery exploits the same area as the medium-sized inshore (semi-industrial) vessels. The ali and poli/watsa fleets fish alongside the inshore purse seiners and trawlers. Even the tuna bait-boats catch the anchovy bait very close inshore among and in competition with the poli operators.

This situation has raised considerable conflicts between the different gear fleets. These conflicts include motor fishing vessels running through the laid nets of the canoe fleet and sometimes hitting the canoes in the night. There is a provision in the fisheries law that at night the submerged or drifting gear must carry lighted markers at intervals of 25 metres along the full length of the net. Quite often, this law is not adhered to because the light markers are not locally available and the make-shifts that the fishers provide are neither suitable nor adequate.

An unfortunate development in this type of conflict is that some artisanal fishers are said to lay unserviceable nets in the paths of trawlers and other vessels where they would be easily damaged by these vessels. They then bring charges against the vessels with the hope of claiming compensation from the operators.

The conflicts may also involve a motor fishing vessel and a canoe, or two motor fishing vessel and a canoe, or two motor fishing vessels or canoes struggling to shoot their purse seine nets around the same school of fish.

Ghana does not practise the quota allocation system, thus the determination of each fishing craft to catch as much fish as possible in order to be financially, has given rise to such conflicts. This is reflected in the landings of the different sub-sectors of the fishing industry. Figures 1-3 illustrate fishing fleet dynamics over the last decade and Figure 4a-4d show the trend in the contribution of each marine fishing sub-sector to the fish requirements of Ghana. These depict the extent of competition among the different sub-sectors.

It is clear from Figures 1-3 that whereas the canoe fleet appears to have stabilised around 8,000 crafts, the number of operational inshore vessels has been reducing, especially since 1988, whilst the number of industrial vessels has been increasing.

One consequence of these changes is an increase in the quantity of fish caught by the industrial vessels, obviously at the expense of the inshore vessels and canoes. For example the increasing volume of cuttlefish landed, mainly by the industrial vessels (Figure 5) depicts the degree of violation of the regulation on minimum depths for trawling. The trawlers prefer to exploit the cuttlefish on very shallow grounds thereby interfering with the activities of canoes. Also looking at the trends in total landings of pelagic and demersal fishes, the downward trend in landings of the latter since 1987 is noticeable. Considering the fact that the trawlers are constantly increasing their share of landings, then it is not hard to see that this is done at the expense of the other fleets that exploit demersal fishes. Since presently, demersal stocks in Ghanaian water are being exploited close to or probably beyond levels that will ensure maximum sustainable yields.

Further evidence of the conflict among the various fishing fleets is shown in Figures 7-9. Whereas the catch per unit of effort (cpue) of the setnets, lines, beach seines and inshore vessels have virtually declined, the industrial vessels have steadily increased their cpue.

### **The Fisheries Administration**

The Fisheries Administration gets into conflict very often with the operators of the industrial trawlers, shrimpers and the tuna fleet because of their chronic default in submitting their catch returns to the Fisheries Administration, which they are required to do. In many cases these are made available only on the threat of suspending or cancelling their fishing licenses. Concerning catch data of the artisanal and the semi-industrial fleets, the fisheries administration collects the data itself by sampling the catches on these fleets. In the discharge of their duties, the fisheries field officers are always in conflict with fishers who often are unwilling to have their landings weighed by the officers.

### **Volta Lake**

There is considerable internal migration of fishers within the fishing regions in the country in both marine and Volta Lake fisheries. The fishermen follow the migration of the fish seasonally along both the marine and the lacustrine coasts. Traditionally, the migrant fishing gangs pay some dues to the Chief Fishermen of the fishing village they migrate to. This is to ensure among others, that the migrant fisher will be accorded some assistance in time of need. This tradition is well understood and accepted by fishers along the marine coast. Some migrant fishers, however, fail to pay their dues resulting in conflict between them and the head of the host fishing community. Along the Volta Lake where migration, especially of fishers is a recent activity, some of the local chiefs who are not really fishers charge exorbitant fees from these migrant fishers many of whom may have migrated from coastal areas. This has resulted in quite frequent conflicts between the migrant fishers and the traditional authorities.

## **Migration**

Migration of foreign fishers is practically non-existent. Rather, Ghanaian fishers migrate to fish in other countries in the West African sub-region. There is no law banning foreign artisanal fishers from coming to fish in Ghana. However, foreign industrial fishing companies are not allowed to fish in Ghana; they may do so only if they form joint-venture Ghanaian companies to fish tunas only.

Whether at sea or on the lake the normal conflicts, as already explained, do occur but it is important to note that such conflicts arise not because one opponent or the other is a gang of migrant fishers although sometimes this is a motivating factor.

## **Sport Fishing**

So far, both marine and inland fisheries have not had any conflict with tourism or oil exploration. Recreational or sport fishing is practically non-existent. Oil exploration at sea has been going on for some years now, this has not had any noticeable conflict with the fishing industry. There are a few instances where fishers, especially those operating artisanal gears are said to have gone too close to the exploratory area, the installations constitute fish aggregating devices for the fishers to make good catches.

## **Conflict with Forestry**

As a result of the creation of the Volta Lake, some forest and grassland areas have been covered with water. Inhabitants of these areas and owners of the forests, having been adequately compensated by Government, cannot demand money from people fishing in their areas.

The continued use of the 'wawa' (*Triplochiton soleroxylon*) tree for carving the traditional canoe is contributing to deforestation. Though this is not to the liking of environmentalists and the Forestry Administration, there is no legislation yet against its use. It has, however, become more difficult now to find large wawa trees in the forests and canoe carvers have to move deeper into the forest areas to find suitable trees for carving the canoes. The furniture, wood-working and construction industries and timber exporters are in conflict with the canoe carvers for the wawa trees. Meanwhile, there is a project for reforestation by planting seedlings of the wawa tree.

The use of fuel wood in fish processing also generates conflicts between fishers and Forestry Administration. However, the fuel wood problem is not peculiar only to fish processing.



## **Coastal Erosion, Artisanal Fishing and Fishing Communities.**

The present problem of coastal erosion occasionally results in conflict with coastal zone management. With the erosion of beaches artisanal landing places are lost and some fishing communities have had to move to different locations. The real source of conflict is the attempt by coastal zone managers to stop or control the erosion through the construction of various sea defence structures. This exercise aggravates the problem of loss of landing places and the most affected fishers are the beach seine operators.

### **3. Conflict Solving Procedure**

There are four main methods of solving conflicts among fishers and between fishers and government authorities.

#### **3.1 Traditional Methods**

Traditionally, conflicts between artisanal fishers are solved by the Chief Fisherman. In every fishing village there is a Chief Fisherman, whose main function is to ensure that peace reigns among the fishers. The fishers respect settlements by Chief Fishermen.

#### **3.2 Outside Arbiter**

With the coming into being of semi-industrial and industrial fisheries, the settlement of disputes between artisanal fishers and the industrial fishers has been modified from the purely traditional system. This has become necessary because semi-industrial and industrial fishers do not owe allegiance to the Chief Fishermen. In this case, the fisheries administration take on the function of an arbiter assisted by a Chief Fisherman in setting the conflicts. This arbitration is not legally binding on the two disputants. However, usually, the arbitration holds, especially where the conflict is between a gang of artisanal fishers and the crew of semi-industrial fishers.

#### **3.3 Settlement in Courts**

In very few instances, the arbitration does not hold and resort is made to the courts, especially where one of the disputants is an industrial fishing company or a large ocean going vessel. Where those artisanal fishers consider that they cannot waste their working time at the law courts coupled with high expenditure in obtaining legal aid, they just drop the case. This situation arises quite often where the offender is an ocean going liner.

#### **3.4 Where the Conflicts are Between the Fisheries Administration and the Fishers**

The Fisheries Law (PNDC Law 256) 1991, prescribes penalties for different offences committed by fishers. These penalties range from pecuniary fines to seizures of the catch and the gear used in committing the offence and suspension or cancellation of the vessel's fishing licence. The law courts are not resorted to. All pecuniary penalties imposed under this Law are subject to the approval in writing of the Minister for Food and Agriculture. The Minister may

mitigate such penalties but shall not impose a penalty lesser than the minimum penalty prescribed in relation to the contravention in respect of which the penalty was imposed. The Minister may also order the restoration of any licence or certificate cancelled or suspended, or release of any catch, fishing gear or other apparatus forfeited as a result of any contravention of this Law.

However, it must be made clear that this conflict solving procedure between the Fisheries Administration and the fishing community is not adequately enforced in the marine fisheries sub-sector. This is essentially due to the non-establishment of the Monitoring, Control, Surveillance and Enforcement Unit (MCSE) that is supposed to play a leading role in such matters. The enforcement is currently more adequately carried out in the Volta Lake fisheries where the Government has deployed four surveillance boats.

It should also be pointed out that the Fisheries Administration of Ghana mounted an educational campaign to explain to the fishing communities the provisions of the Fisheries Law. This is done in the belief that, if the fishers are aware of the provisions in the Fisheries Law, they may not intentionally flout the Law and thereby reducing the number of conflicts with the fisheries administration as much as possible.

Furthermore, fisheries of various categories according to gear types have formed various associations; for example Inshore Boat Owners Association. They use these associations to settle disputes or conflicts among themselves, in addition to pressing for their needs from the Government.

There are no known procedures by which disputes between fishers, canoe carvers and other users of the resource base are settled except through the usual associations, by traditional elders or in court.

#### **4 Consideration of Socio-economic Effects**

The first important negative effect is the difficulty in managing the fisheries. Marine fishery in Ghana has reached its zenith of development. The fishing power exerted on all the stocks, except tunas is higher than necessary. Despite this high fishing effort, fishers especially industrial fishing vessel owners wishing to enter the fishery, continue to request to be allowed to import trawlers and shrimpers. In addition, fishers continue to use illegal fishing gears and methods to the detriment of the fish stocks. The insistence of the Fisheries Administration to halt further expansion in the fleet size, supported by official policy, has intensified friction between the Fisheries Administration and a section of the fishers. This is also true with the use of illegal gears and methods. However, concerning the use of illegal gears and methods, some fishing communities, especially on the Volta Lake, whole-heartedly support the Fisheries Administration and assist in arresting such offenders. Government resources are grossly inadequate to mount effective monitoring, control and surveillance over the various fleets. Thus, maintaining the developed marine fishery of Ghana has proved very difficult.

The other impact resulting from these conflicts has adversely affected the socio-economic status of the fishers. Though total annual national catches fluctuate with an underlying increasing trend, the yield per canoe or vessel is becoming less making the fisheries less economical. With the general increase in the cost of living, fishers are becoming poorer. Most fishers cannot buy their inputs at the economic or commercial prices. Government has been assisting them in the following ways:

- a) There is a waiver of customs duty and sales tax on all fishing inputs imported. This is intended to reduce the cost of these inputs to the fishers.
- b) Whenever Government obtain's grants from friendly nations for the purchase of fishing inputs, these inputs are sold at cost to the fishers. Usually though inputs from such a source are not enough to satisfy the needs of the fishers.
- c) Government has recently instituted the sale of pre-mix fuel to the artisanal fishers who use outboard motors at a lower level than the commercial price of such fuel oil. The pre-mix fuel is a mixture of gasoline and petrol in the right proportions for efficient performance of the outboard motors.

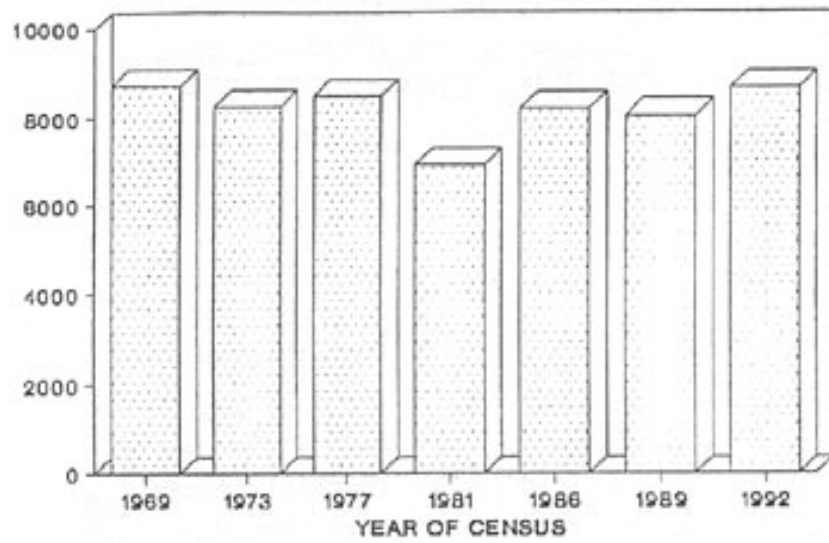
## **5. Recommendations:**

The following recommendations are proposed:

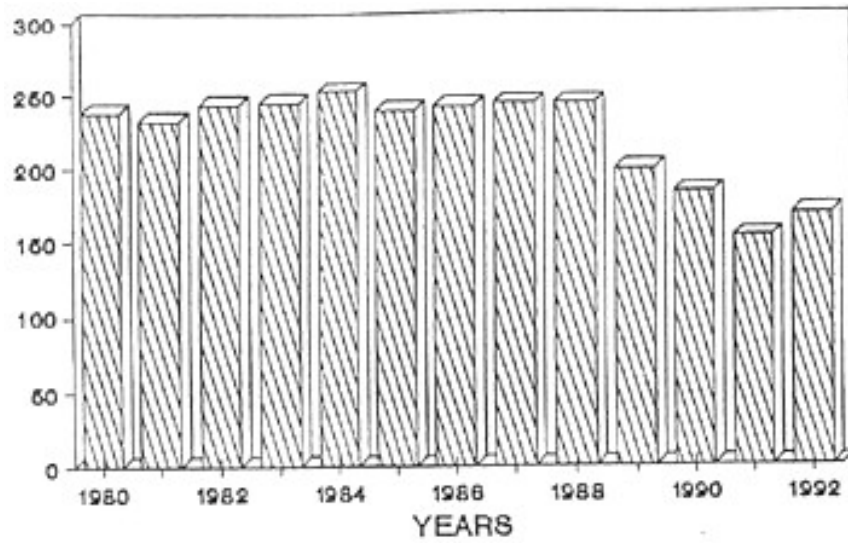
- a) The Government should continue to enforce the fisheries management measures currently in place and modify them whenever necessary but in line with the results of continuing fisheries research.
- b) The Government should continue to make efforts to establish the Monitoring, Control, Surveillance and Enforcement Unit to oversee the operations of the various fishing fleets. In this exercise, serious efforts should continue to be made to educate the fishers to know that management measures are in their own interest and as means of ensuring the livelihood of present and future generations. There is the need therefore that they become watch-dogs over their own colleagues to effect responsible fishing. In this way certain conflicts shall be drastically reduced. In others words, the fishers should become partners in the operations of the MCSE Unit.
- c) The Government should continue to grant waivers of customs duty and sales tax on imported fishing materials, and institute such mechanisms that ensure that the relief is passed on to the fishers. Selling of fishing inputs bought from grants at cost, selling of pre-mix fuel to artisanal fishers at the reduced price, and reforestation for the dug-out canoes must also be continued. In this way, conflicts with fisheries and forestry administrations, with customs excise and preventive service and other users of wawa trees will be minimised.
- d) The Fisheries Law (PNDCL 256) of 1991 should continue to be implemented.

- e) Education of trainees to train others in processing of fish to reduce post-harvest losses should continue. This will increase the income from fishing. Fishers and fish traders will be financially more comfortable and so it will reduce those conflicts resulting from the desire to increase catches.
- f) IDAF can help in the area of solving conflicts with migrant Ghanaian fishers in other IDAF countries. It is generally known that Ghanaian fishers who migrate to fish in other IDAF countries very often come into conflict with the local authorities. IDAF can act as a catalyst in encouraging diplomatic demarche to settle some of these disputes so that the migrant fishers would live and work in reasonable peace in the foreign countries.

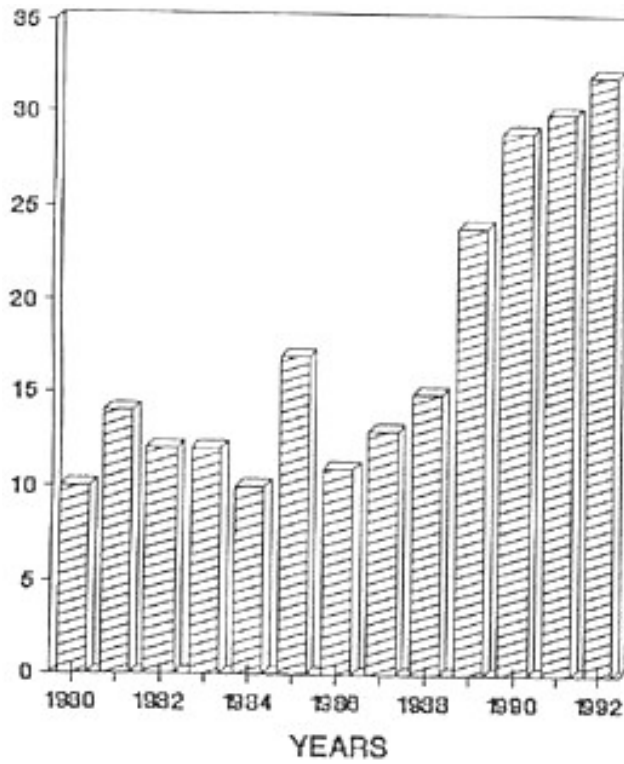
**Figure 1.** Number of canoes in seven canoe censuses in Ghana



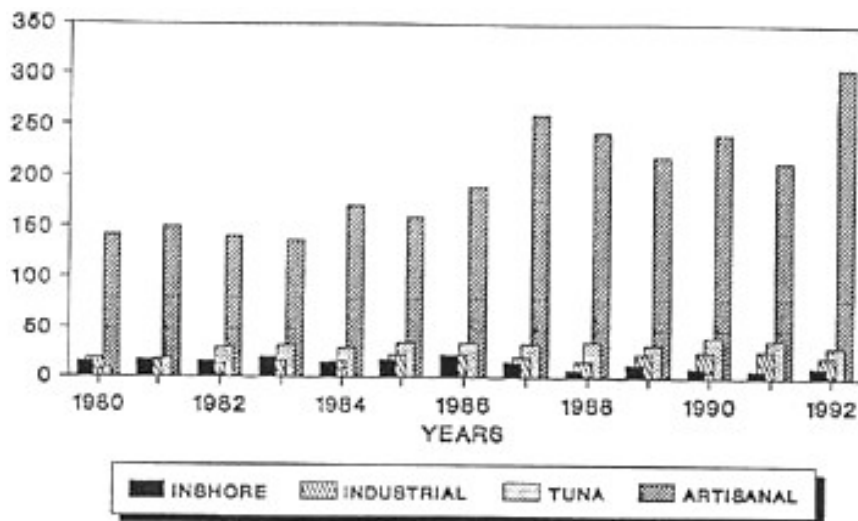
**Figure 2.** Number of operational inshore vessels, 1980-1992



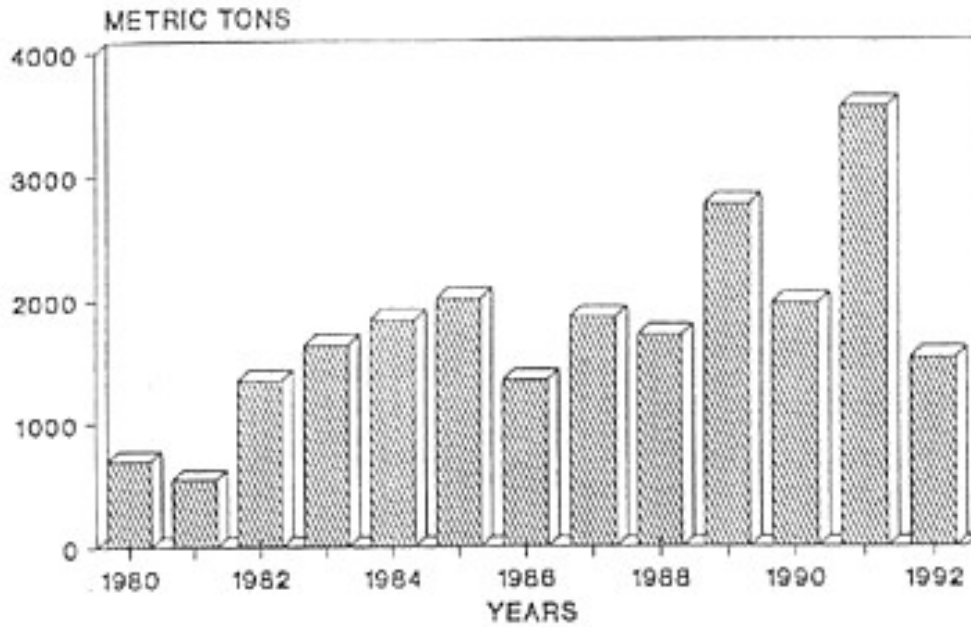
**Figure 3.** Number of operational industrial vessels, 1980-1992



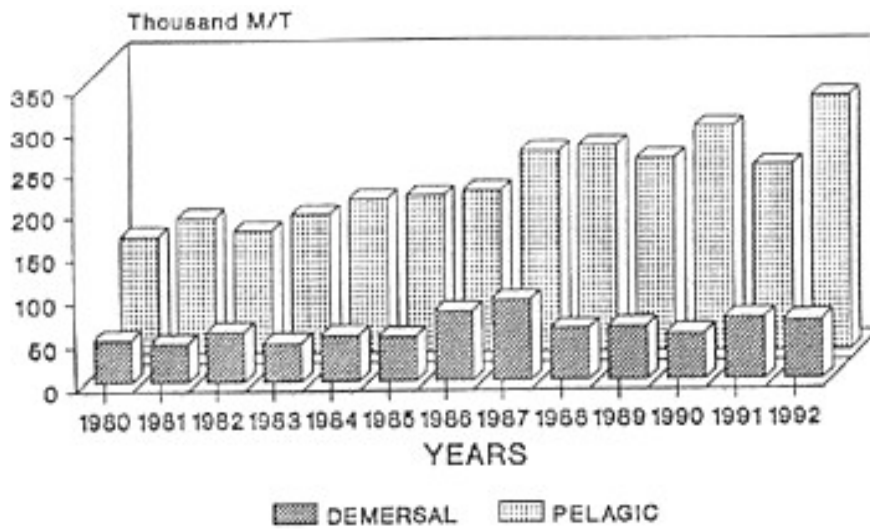
**Figure 4.** Annual marine fish production ,  
by the various sectors, 1980-1992



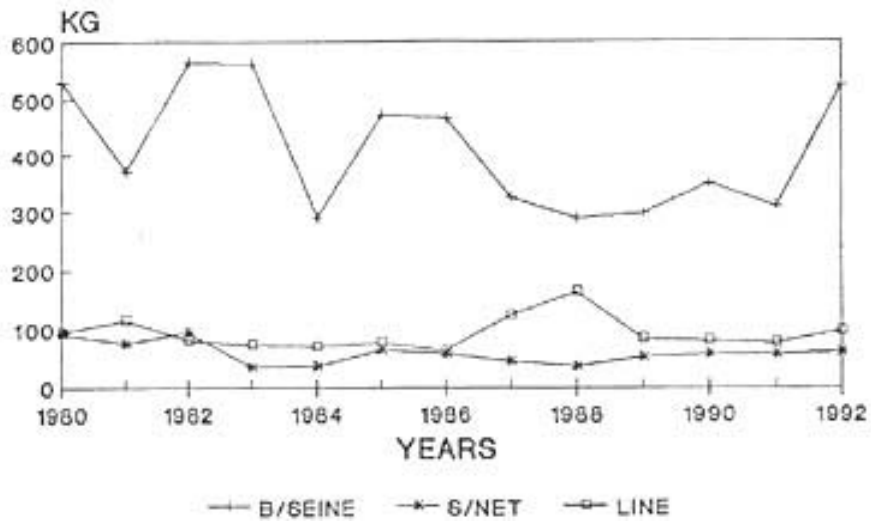
**Figure 5.** Cuttlefish produced by ghanaiian vessels , 1980-1992



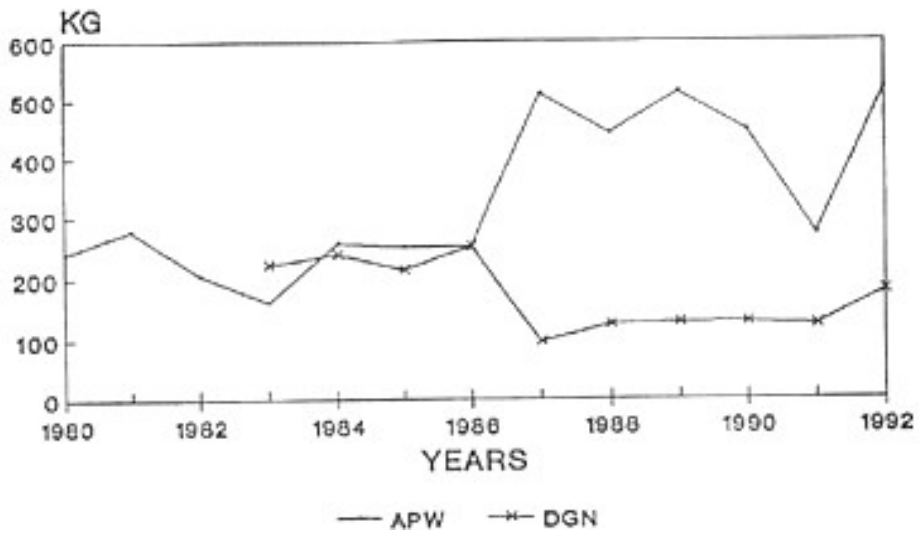
**Figure 6.** Production of demersal and pelagic fish, 1980-1992



**Figure 7A.** Catch per trip of artisanal Fishing gears, 1980-1992

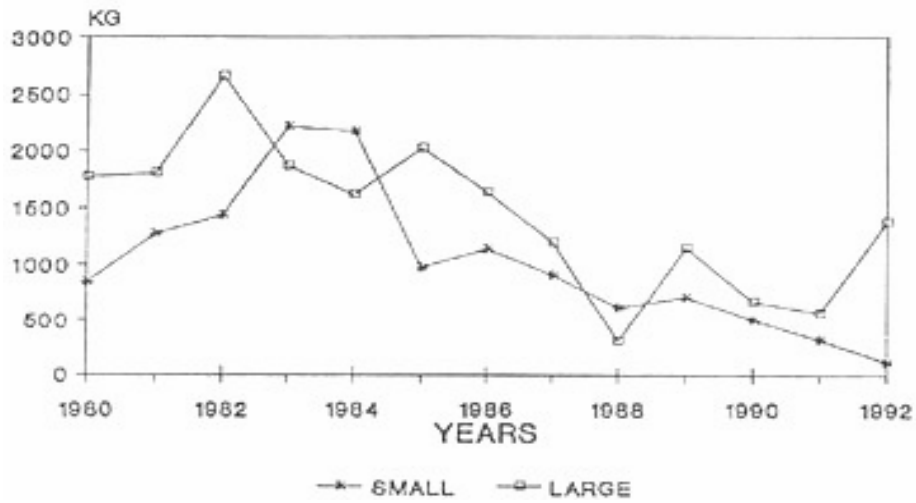


**Figure 7B.** Catch per trip of artisanal Fishing gears, 1980-1992

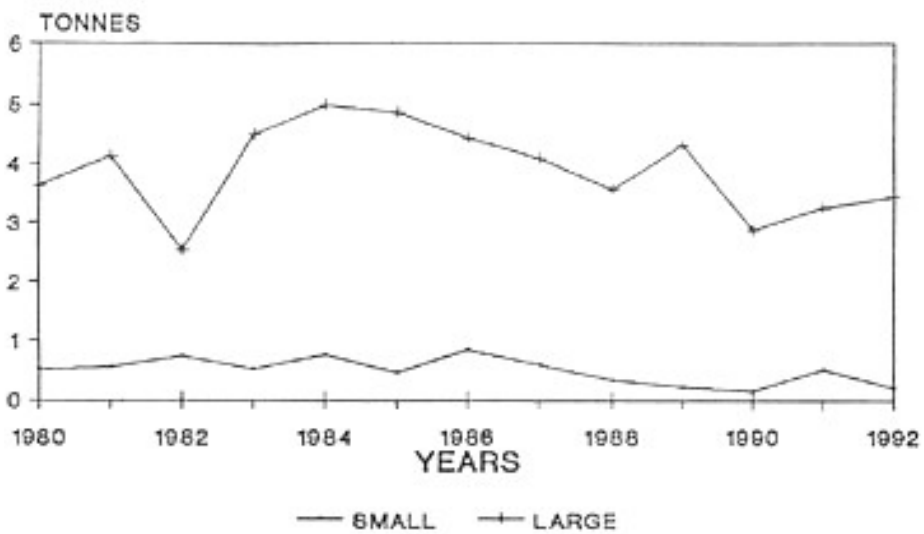




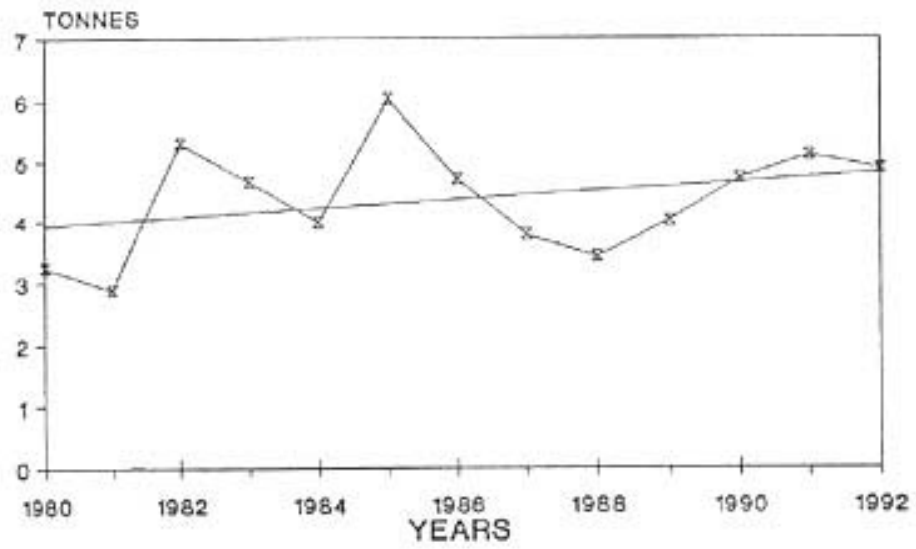
**Figure 8A.** Catch per trip of inshore purse seiners  
Fishing gears, 1980-1992



**Figure 8B.** Catch per trip of inshore trawlers  
Fishing gears, 1980-1992



**Figure 9.** Catch per trip of industrial trawlers, 1980-1992



# Conflicts in Coastal Fisheries in Gabon

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## 1. Introduction

Gabon has a 800 km coastline, a continental shelf of 40,000 km<sup>2</sup> and an exclusive economic zone of 200 nautical miles. For administrative purposes the fisheries sector includes:

- 1) marine fishery includes an industrial fishery and an artisanal fishery in the Atlantic Ocean, in lagoons, river and estuaries in brackish water;
- 2) continental fishery in inland fresh waters of streams, lakes, rivers and lagoons.

### 1.1 Artisanal fishery

The fact that different villages belong to a given ethnic group is the major factor to be considered when dealing with artisanal fishery in Gabon. The choice of techniques, the use of the product, the availability of labour depend on this factor. Ninety per cent of the artisanal fisherfolk are foreigners.

Fishing technique varies with type of fish and the customs of fisherfolk. The most commonly used devices are:

- gillnets (fixed or drifting);
- encircling nets;
- trammel nets;
- bottom lines;
- cast nets;
- beach seines.

### The boats

Artisanal fisherfolk in Gabon use various types of canoes: the Gabonese rowing canoe, the Beninese, Nigerian, Togolese, Ghanaian canoes and the plastic canoe. The power of the engines varies between 6 and 40 horse powers.

The artisanal fishery counts 2597 fisherfolk with 757 canoes. The artisanal fishery is taking place in the following 18 fishing villages:

**Estuary:** (Beninese, Togolese, Nigerians, Gabonese and Ghanaians) Aviation, Bambouchine, Pont-Nomba, Poubelle, Petit Village, Grand Village, Cocobeach, Donguila, Nende Island, Lalal.

**Maritime Ogooué:** (Gabonese, Togolese, Beninese and Nigerians) Port Gentil, Cap Lopez, Matanda, Omboué.

**Nyanga:** (Gabonese, Beninese, Togolese, Senegalese, Zaireans and Angolan) Mayumba, SNBG, Ndindi, Mangali.

### Species caught

Target species in artisanal fishery remain: seabass, "bossus", treadfins, red fish, soles, seabreams, fresh water catfish, sardines, etc...

## 1.2 Industrial fishery

Industrial fishery is carried out by boats exploiting the stocks of pink shrimps and rock fish. A number of boats also conduct bottom trawling. Most of these boats have icing facilities or are fresh water fishing boats.

There are three types of industrial fishery:

- Line fishing: exploit *Sparidae*, snappers and *Serranidae*, the by-catch consists of *Carangidae* and tunas.
- Shrimp fishery: the target species is the pink shrimp, the so-called estuary shrimp, the related species lobsters, crabs, other *Penaeidae*, *Penaeus notialis*, the squids and some demersal species.
- Trawl fishery: the target species are demersal and estuary including seabass, treadfins, "bossus", grey seabreams, catfish, *Carangidae*, soles and groupers.

Industrial fishery fleet consists of 9 trawlers, 13 shrimp boats and 5 line boats. The main ports of landing are Libreville and Port-Gentil.

## 2. Typology of conflicts

For the waters under national jurisdiction, four zones have been determined in which fishery follows specific conditions.

The First Zone includes all continental waters of streams, lakes as well as rivers and lagoons up to the ocean mouths. Applicable provisions: this zone is reserved for fisherfolk of Gabonese nationality conducting only professional or customary artisanal fishery.

The Second Zone extends from the limits of the first zone to the distance of three (3) nautical miles off the Atlantic Ocean. Applicable provisions: access to the second zone is exclusively reserved for: artisanal fisherfolk with Gabonese nationality and artisanal fishery joint ventures. Prohibitions in the second zone: trawl fishing, fishing by foreign fisherfolk outside joint ventures and the use of single fibre nets.

The Third Zone includes sea waters between three (3) and six (6) nautical miles. Applicable provisions: access to the third zone is exclusively reserved for: Gabonese fishermen, artisanal fishery, Gabonese industrial fishery enterprises and joint industrial fishery ventures. All boats fishing in this zone must have Gabonese flag and at most 50 tons tonnage.

The Fourth Zone includes sea waters beyond six (6) nautical miles up to the outer limit of the exclusive economic zone. Applicable provisions: the fourth zone is open for industrial fishery, for fisherfolk and boats of all nationalities with industrial fishery licences and other appropriate authorization documents issued by the Fishery Department.

## **Conflicts**

Inobservance of these fishery zones is source of conflicts between: the administration and industrial fishery, administration and artisanal fishery, industrial fishery and artisanal fishery and within artisanal fishery.

Industrial fishery - administration: non-payment of fishing licence or expired licence, catches not in conformity with the licence and lack of crew list.

Artisanal fishery and industrial fishery: Sometimes, industrial fishery boats trawl in the zone reserved for artisanal fishery, dragging on their way nets and trammels.

Among artisanal fisherfolk: the problem stems from the fact that local fisherfolk do not accept that foreign fisherfolk have access to the streams which they consider as part of their customary rights (Kango and Nfoulezem).

## **3. Monitoring and protection of fishery resources fishing zones**

To manage and preserve fish resources and fishing zones located in the Gabonese waters, a system has been established to monitor fishing boats and other sea vehicles. The conditions and modalities of this system are defined by the following provisions:

### **Boarding of boats or sea vehicles**

During controls at sea within the framework of the current provisions, the following offenses automatically cause the boarding of the concerned ship or sea vehicle which is directed towards the nearest port:

- fishing without licence or with an expired licence;
- fishing with prohibited techniques and tools;
- fishing in a prohibited zone;
- polluting the fishing zone.

### **Conflict resolution procedure**

In industrial fishery, the authority in charge of the area to which the offence is related is responsible for the investigation procedure and settlement of the litigation. It decides on the applicable sanctions according to the regulation in force, and can, if necessary, initiate a lawsuit. The authorities in charge of monitoring in Gabon are: Water and Forestry, National Defence and Merchant Navy.

### **Conflicts which occurred in the artisanal fishery**

Port Gentil:

First conflict in 1977: The Gabonese fishing community blamed the Togolese-Beninese communities for the use of purse seine. Following various fights between the two communities the Government prohibited the use of purse seines in Gabonese waters throughout the country.

Second conflict in 1985: between the Oroungou communities and the Togolese-Beninese. Beninese fisherfolk were blamed for fishing in streams where they blocked waters with nets; Beninese fisherfolk were also fishing in some streams avoided by Gabonese for religious reasons (in a zone full of fish). In general, the techniques used by Beninese fisherfolk were considered destructive, and local communities requested that foreign fisherfolk are sent to sea and not be allowed to fish in inland waters which have more fish. The government has not yet found an official solution to this conflict. However, both communities still live together.

Omboue, 1991: Gabonese fisherfolk asked Senegalese fisherfolk to leave the Fernand-Vaz lagoon and go fishing in the Atlantic Ocean.

Third conflict: Fishing zones conflict (between industrial and artisanal fishery).

#### **4. Recommendations**

The Republic of Gabon wishes to benefit from other countries experiences in the fishery sector. Because this sector has been neglected in our country.