THE FISHERIES SECTOR IN SENEGAL

Introduction

The socio-economic importance of fishing: a multipurpose

Fish is a major source of protein for the Senegalese population. Fishing plays a dominant role in the Government's policy towards generating employment. It currently generates about 100,000 direct jobs (fishermen) for nationals, of which more than 90 per cent are in small-scale fishing. The fishing industry also contributes to Government revenue through different agreements. In addition to associated dues, fishing agreements imply a series of economic, trade and technical counterparts. Under the latest fishing agreement concluded by Senegal and the European Union (1997-2001), direct financial compensation amounts to about CFAF 32 billion.

Despite its economic and social importance, the sector has to face serious disequilibria both in resource exploitation and market supply: the coastal demersal (deep lying fish) stocks with high market value (mostly exported) are fully and even over-exploited, with a serious risk of local market supply shortages looming ahead as the fishing effort shifts from locally consumed species to export-oriented ones.

The main trade policies identified as contributing to the over-exploitation of resources are the following:

- non-reciprocal advantages under the Lomé Agreements, authorizing Senegalese piscatorial products to enter the European market with the exemption of custom duties;
- an export subsidy of 15 per cent, later raised to 25 per cent, first applied to canned tuna and later extended to all piscatorial products;
- fishing agreements concluded with a number of foreign fleets.

This report proposes solutions to over-fishing, taking into account the multipurpose nature of fishing activities.

The trade policies possibly responsible for over fishing

The Lomé Agreement, subsidies, devaluation and fishing agreements encouraged fishing for export markets, which explains some of the current disequilibria in fishery
resources. These policies have also had serious economic consequences on fishing companies.

**Lomé Agreement**

It is estimated that the European market absorbs up to 80 per cent of Africa’s exports of sea products (66 per cent of Senegal’s exports of piscatorial products). Senegalese piscatorial exports also benefited from a customs duties exemption regime in the European market under the Lomé Agreement.

**European market dependence and devaluation**

The system of trade preferences has reinforced the significance of the European market in the distribution of Senegalese piscatorial exports. The Asian market is marginal, although exports of octopuses to Japan reached 13,000 tonnes in 1999. However, the position of Senegalese products in this market improved following devaluation. Since devaluation, African frozen exports have increased steadily, as the export prices of small pelagic fish were more attractive than those offered on the domestic market. Every year, the European market absorbs about two thirds of fish exports. Following devaluation, the exports of frozen products to Europe increased significantly from 21,000 tonnes in 1993 to 58,000 tonnes in 1999. As is clear, exports to Europe represent the biggest share of overall exports. The products of ACP countries enter the European market with neither tariff (customs duties) nor non-tariff (quotas) barriers imposed on other supplying countries.

**The diminishing importance of ACP regimes**

Out of an estimated global fall of 35,000 tonnes, the share of exports of frozen products to Europe represented 22,000 tonnes. Given this weight of the European market in terms of overall export volume, difficulties in accessing this market are likely to affect the situation of exports as a whole.

ACP countries hold a smaller position in the market for non-processed products than other developing countries, even though they have made some market gains. With regard to their exports of frozen shrimps, ACP countries have lost market shares to their rivals from developing countries.

**Direct and indirect export subsidies**

**Industrial modernization projects in support of small-scale fishing**

This policy failed mainly because, despite relatively weak support from the Government, small-scale fishing continued to grow and to remain competitive, which hindered the development of the industrial sub-sector. The free point and free exporting enterprise status and an export subsidy greatly contributed to increased exports from the small-scale sector. Aid made available for pirogue motorization and incorporation of new fishing gear (purse seines) fell in this context. These measures contributed to the expansion of small-scale fishing, the landings of which have recorded a spectacular
increase over the past twenty years. Many fishermen indeed chose to fish for high market value species thus accounting for about 60 per cent of raw material supply to export units.

**Subsidies that directly or indirectly favour exports**

This included the following:

- reduced tax on fishing gear (motorization), subsidized fuel, and institution of fishing sector financing bodies;
- export subsidy and institution of free exporting enterprises for enhanced competitiveness and deeper penetration of external markets by Senegalese piscatorial exports.

**Subsidies through reduced tax on pirogue motors and fishing gear**

Motorization considerably expanded the fishing areas for small-scale fishing by increasing access to more remote fishing zones. It simultaneously reduced travel time and extended fishing time, leading to an unprecedented increase in fish landings and consequently boosting trade of fresh products.

Policies of reduced taxes on motors and fishing gear were introduced in response to the crucial role played by small-scale fishing in the development of the sector.

**Fuel subsidy**

Subsidized fishing fuel made it possible to use more powerful motors, to build bigger pirogues, and to extend the duration of sea trips in order to exploit new fishing areas. It reduced considerably the operating charges of fishing units, which in theory, was expected to maintain the prices of fish landings by small-scale fishing units at a level compatible with the purchasing power of the Senegalese population. However, the fact that small-scale fishing units tend to export their catches raises questions as to who finally benefits from the Government’s financial assistance other than foreign industrialists and consumers. From less than CFAF 2 billion in 1986, fuel subsidy in favour of small-scale fishing alone, rose to CFAF 6 billion in 1998.

**Free point and free exporting enterprise status**

The free point and free exporting enterprise status granted significant advantages to export-oriented processing units. In 1995, this law was extended to cover agricultural enterprises (including fishing companies) exporting 80 per cent of their production.

**Export subsidy**

Export subsidy is part of a national trade policy aimed at facilitating the penetration of external markets by local products. Initially, export subsidy was not meant for the fishery sector. Its institution resulted in an ever-increasing pressure being brought to bear on the main stocks of exported species and thus contributed to
threatening the supply to the domestic market and the regeneration of coastal demersal species to equilibrium level.

**Structural adjustment and devaluation**

The development of fishing activities was mainly underpinned by the small-scale fishing sub-sector, which had long been neglected by government regulation.

With structural adjustment policies, the Government gradually withdrew from the fishing sector. It withdrew from input and fishing gear distribution in 1985 and was replaced by the private sector, but it maintained a reduced tax on motors, fishing gear and fuel. By reducing investment costs, this policy made units profitable as it was possible to maintain the prices of small-scale fish catches at a level compatible with the populations' purchasing power, and to enhance the competitiveness of industrial fishing production.

With regard to marketing, the profession of fish and seafood wholesaler was regulated through the CAPAS project (*Centre d'Assistance de la Pêche au Sénégal*). While its objective was to market fish through cooperative unions, fish marketing was liberalized and wholesalers were no longer governed by presidential decree.

**Devaluation**

In this policy, donors are accorded special attention to fishing, as it seemed to reconcile food security and export requirements. While exports dropped considerably in 1991 and 1993, especially exports of frozen products to Europe, devaluation immediately enhanced their competitiveness.

In the years that followed devaluation, exported volumes did not increase significantly. However, statistics on exports of molluscs clearly indicated that it was the increase in their production that inflated exported volumes. Export prices thus increased by up to 200 per cent. There was also a 30 per cent increase in trawler fishing effort between 1996 and 1997, and a redeployment of pirogue fishing effort towards export-oriented species.

Devaluation benefited both the capture and industrial processing components. However, small-scale processing continued to cater for local markets, and of late, African markets. In so far as catches are concerned, both small-scale and industrial fishing units specialized in the capture of export species benefited from a constant increase in external demand and hence in prices. Marketing channels developed in a specialized way, with local fish and seafood wholesalers selling an increasing share of small-scale production to export-oriented packaging and processing units. Although demersal, small-scale and industrial fishing units saw their operating accounts improve, more as a result of a price effect rather than a volume effect, industrial packaging and processing units on the contrary, had to face severe financial difficulties.
This situation turned out to be favourable to fresh or frozen exports, which required lower investment hence lower charges than processed products. The exports of fresh products to Europe increased in the aftermath of devaluation, from 21,000 tonnes in 1993 to 58,000 tonnes in 1999.

The share of whole, fresh or frozen products in export markets kept growing. While government incentives stimulated exports, an increasing number of operators specialized in the capture of domestic market species, notably small pelagics, turned to coastal demersal fishing. Devaluation not only encouraged shifts in fishing effort to export-oriented species, but also to the export of species previously meant for the domestic market. Small-scale units now process very little fish for the domestic market, essentially only that which cannot be exported as fresh products. Food security is now threatened by supply shortages of locally processed products. Some of the species processed by the women are more directed towards the industrial sub-sector, instead of being consumed locally.

**Pressure on resources**

The consequences of devaluation visibly influenced the regeneration conditions of export species.

**EU/Senegal fishing agreements under the test of time**

Fishing ships flying foreign flags were authorized to fish in Senegalese waters either under fishing agreements concluded between Senegal and the state or organization of the flown flag, or when chartered by Senegalese nationals.

Actually, these agreements increased the fishing possibilities for its flotilla and attest to the declining stock of certain species – especially the coastal demersal species – at the national level. Senegal and Japan also concluded a fishing agreement authorizing Japanese professionals to fish in Senegalese waters under certain conditions.

**UN Convention on the Law of the Sea and fishing agreements**

This Convention was relevant for Senegal as it:

- assessed stock levels per targeted species;
- determined, by subtraction, the balance that is likely to be attributed to foreign fishing boats in the form of licences or fishing rights on specified quantities of targeted species.
Overcapacity and fishing agreements

Certain agreements provided for granting reciprocal fishing rights, but those concluded between powerful fishing nations and developing countries tend to focus on issuing licences or fishing rights in exchange for financial compensation. These powerful fishing nations are criticized for encouraging overfishing, slowing down development, and competing with small-scale fishing. Firstly, the development of Senegal/EU fishing agreements coincided with the increase in small-scale fishing in the 1980s. From this point of time, the landings of small-scale fishing sharply increased from about 150,000 tonnes in the early 1980s, to 250,000 in 1990, and reached 350,000 tonnes today. While coastal pelagic resources were not fully exploited through small-scale fishing, this had nothing to do with productivity or capacity problems but rather with higher capital costs and the attractiveness of export species – especially since devaluation. However, it is necessary to examine whether foreign industrial fishing is crowding out national industrial fishing.

There are two sorts of competition: the first one concerns competition between national and foreign industrial fishing for coastal demersals, crustaceans and cephalopods; the second one takes place between small-scale fishing and industrial fishing (both national and foreign). In fact, there have been long standing conflicts between these two types of fishing, but they have tended to worsen since small-scale fishing has been in the position to compete successfully with industrial fishing boats. The fact is that the development of small-scale fishing has increased the risk of conflict with industrial fishing concerns, whether national or foreign, and the possibility of extending the limits of the reserved zone may even have to be considered.

The question of conflict has a critical role to play in the elaboration of an international legislation for preservation of marine resources. Small-scale fishing has the advantage of being geographically dispersed along the fishing areas, while industrial fishing encourages the concentration of fishing and processing units in certain geographical areas - hence rural migration. Concerning the management of fishing operations, regulations cover not only the conduct of coastal states, but also that of distant waters fishing nations.

Access to markets in exchange for access to resources

Fishing agreements deserve to reconsidered from the viewpoint of whether developing countries can negotiate access to developed country’s markets in exchange for access to their resources.

In the framework of current agreements, Europe acquired ‘fishing capacities’ in terms of volume of the products fished. According to an FAO evaluation report in 1995, rejections represented 25 per cent of total maritime fish catches. If access to resources were linked to access to markets, the rate of rejection could be reduced substantially, thus encouraging conservation. The high rate of rejection could also lead to conflicts between fishing agreements and new legal instruments on resource conservation being developed by the FAO.
Compliance with WTO rules: trade agreements or disguised subsidies?

Most discussions devoted to fishing at the WTO Committee on Trade and Environment have dealt with subsidies. The Common Fishing Policy is threatened by the rules of international trade. Implemented by the Fisheries Department, this policy covers 4 areas: the preservation and the management of sea resources, relations and agreements with non-member countries and international organizations, structural measures, and organization of the common market for sea products. If stocks preservation do not, a priori, pose any problem, structural measures are considered as subsidies to the sea sector, and fishing agreements tend to be considered as disguised subsidies that favour over fishing.

Economic and social impacts of export support mechanisms:
trends in the operating accounts of small-scale fishing units

The following is a brief description of the kinds of fishing units used by small-scale fisheries in Senegal.

Fishing units

Many small-scale fishing gear targets coastal demersals. Besides, due to the species scarcity problems, blend-fishing gear has replaced standard ones in each unit. Blend-fishing combines mainly three types of fishing: angling, dormant net and pot fishing (ADNP).

Purse seines

The FAO introduced purse seines in Senegal in 1972 in an effort to put at the disposal of small-scale fishermen, more efficient fishing gear to tap small coastal pelagics.

Surrounding gill nets

Two types of nets are used depending on the hunted species. Big-stitch nets capture ethmaloses while the small-stitch net is more adapted to fishing flat sardinella. The ethmalose net is mainly used between June and October, a period when the hunted species is present in the fishing areas.

Icebox pirogue

The unit icebox pirogue can carry along several types of fishing lines at each tide: scad (Decapterus sp, Trachurus sp), wreck fish (Epinephelus sp, Serranidae) and sparidae (Sparus caeruleostictus sp, Sparidae) hand lines. The ground lines used for demersals fish from a anchored pirogue. Hook size depends on species size.

Dormant nets

There are different types of nets:

\[ \text{Decapterus sp, Trachurus sp, Epinephelus sp, Serranidae, Sparus caeruleostictus sp, Sparidae} \]
• fish dormant nets, some of which are of surface type and target sardinella or grey mullets as well as other demersal species (soles, rays);

• lobster dormant nets.

Depending on fishing type, investments in small-scale fishing consist mainly of purchases of pirogues, motors, fishing gear and accessories. The prices of fishing gear vary according to fishing type.

Operating costs

The cost of food, like fuel, is normally born by the fishing unit, it is not a salary component. Bait mainly consists of sardinella bought from purse seine fishermen or fish and seafood wholesalers.

In small-scale fishing, crewmembers share the economic risks of going out to sea. Between 1993 and 1996, the profits of small coastal pelagics meant for the domestic market increased slightly (from 26 per cent to 45 per cent on average) compared to export-oriented demersals (200 per cent on average) targeted at the export market (European or Asian) where substantial gains were achieved.

In the case of surrounding gill net units, devaluation almost nullified the boat owner's net income, which dropped from CFAF 448,000 to CFAF 47,000. The profitability rate also clearly rose among dormant net and/or angling and/or pot fishing pirogues, from 4 per cent to 29 per cent.

Unlike the fishing units disposing of the bulk of their catches on the domestic market, the financial ratios of icebox pirogues and ADNP clearly improved. The fishermen are the first to profit from this new fish landings price structure.

Impact of subsidized fuel on the profitability of fishing units

A sensitivity analysis shows that the financial profitability of fishing units could be affected if fuel subsidies were to go. Trends in the profitability rates of the different small-scale fishing units have encouraged small-scale fishermen to develop new strategies in the last few years. Fishing effort was noted to have shifted from capture of domestic market oriented species to export species. In Kayar, fishermen preferred to fish for red mullet. Cheap fish became increasingly rare as fishing pressure shifted onto priority export species (soles, lobsters, shrimps, pageots, sea breams and wreck fish).

The partial redeployment of purse seines and surrounding gill nets' fishing effort towards these priority species disturbed domestic market supply, raising fears about protein deficits, already the case in the countryside. The heavy pressure weighing on the fish trade prevented any significant increase in the landing prices of small coastal pelagics. The costs of fish marketing across the country was relatively high. Instead of immobilising their fishing units, fishermen rather reacted to higher pirogue fuel prices by adopting new strategies:
• purse seine pirogues fished in closer areas or went out to sea with a single pirogue instead of two. In *kayar*, pirogues limited their fishing trips to once a day;
• icebox pirogues clearly extended the fish trip duration, which was likely to impact on the quality of products put on ice;
• some fishing units took exclusively to picking up gastropods and other fish captured by industrial fishing thereby encouraging the latter to operate into the 6 miles area reserved for pirogue fishing. This violation of existing regulations often translated into conflicts resulting in equipment loss or at times, human casualties;
• fishermen organized themselves such that they could make maximum gains from their captures despite the high costs of fishing equipment, by restricting the supply of piscatorial products.

Environmental impact of export support mechanisms:
density indicator paths of coastal demersals

Results
The increase in global fishing effort has significantly affected the various species tapped. The fact that the entire flotilla increased their fishing efforts in 1994 was indicative of the strategic adjustment of fishermen with boat ownership, following devaluation. The increase in fishing pressure on export species is in fact a reaction to revived external demand entailed by monetary devaluation, and as a consequence of the different kinds of fishing subsidies outlined earlier.

Trends in density indicators of species captured by deep-sea trawls reflect for all species a sharp decline during the period studied by this report, i.e. 1971 to 1998. Almost all fish species were affected. At period end, *catch per unit effort* was lower than 10 kg/hour for all species. Lower abundance was caused by the strong fishing pressure exerted on the species, especially those with a high market value.

Relative densities as determined from fishing statistics (main marketed species)
The observed paths of mono-specific relative densities reflects progress in trawler fishing in Senegal. In Senegal, trawler fishing for coastal demersal species of the continental shelf started around 1950. The multi-specificity of West African demersal fishing captures led to increased exploitation of a great number of secondary species which, in the case of freezer trawlers, are often thrown back into the sea after capture sorting. The specialization of flotillas tapping demersal resources therefore has an impact on non-targeted species.
Destroying habitats and ‘replacing’ Sparidae (wreck fish) by Cephalopods

The majority of coastal stocks tapped offshore by industrial fishing are fished by small-scale fishing units. Uncontrolled exploitation of these fragile resources by small-scale fishermen through non-selective fishing jeopardizes regeneration of adult stocks and reduces the stock of progenitors expected to supply coastal breeding grounds with juveniles. The decline in relative abundance is therefore not the consequence of industrial fishing units alone.

The Senegalese small-scale fishing now has free access and exploits intensively the coastal band often through irresponsible fishing. It has often been observed that regulatory provisions are not applied to small-scale fishing operators, notably in terms of the mesh size used. Resource scarcity is behind the conflicting competition between the two types of fishing. These conflicts range from sometimes dramatic incursions of industrial fishing units into areas reserved for small-scale fishing, to demand for catches of small-scale fishing by exporting factory owners.

In view of the fact that the level of global effort is largely higher than the sustainable rate of exploitation, and efforts of fishing units to break even by increasing fish captures, fishermen are compelled to develop compensatory adjustable reactions. Small-scale fishermen go fishing in increasingly distant zones and associations with industrial fishing trawlers have surfaced. Due to the scarcity of hunted shrimp species, most shrimpers take advantage of their smaller mesh size (40 mm instead of 70 mm) to compete unfairly with fishing boats. Many of them exploit only fish and land very few shrimps on their return from sea trips. The use of shrimp trawls for catching fish entails rejection of great quantities back into the sea, thus contributing to stock depletion. In 1998, the monitoring of the specific composition of landings by shrimpers led the Fisheries Department to ‘downgrade’ many boats that had been issued shrimp fishing licenses, because of the very limited quantities of shrimps landed over a period of several sea trips.

The ultimate measure taken by the authorities in charge of fisheries was to freeze industrial fishing effort.

Main conclusions of the study

Resource scarcity and competition have exacerbated conflicts both within small-scale fishing and between industrial fishing and small-scale fishing.

All those involved in the sector have acknowledged that the increase in global fishing effort and processing capacities have unavoidably led to over exploitation of sea resources as a whole. The following reasons were identified for this phenomenon:

- insufficient measures for planning small-scale fishing which accounts for two-thirds of the total catch and benefits from free access to the fisheries;
- difficult to control industrial fishing;
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- the absence of planning for the conservation of sea resources while at the same time fishing effort and processing capacities kept expanding.

The Senegalese piscatorial sector has stumbled over internal contradictions that arise in most natural resource exporting industries. In a structural adjustment context with poorly performing traditional exports, government interventions encouraged exports of fisheries.

While export-oriented fishing units benefited from high producer prices, lower productivity, however, raised fears that they might also experience operating deficits. Intensified fishing for export breeds raised fears of stock depletion and irreversible biodiversity losses. Despite these dangers, the small-scale sub-sector continued to shun fishing for domestic market breeds and fished export breeds instead. Thus, stocks of pelagic fishing units immediately deteriorated, while critical limits of coastal demersal fishing have yet to be reached.

The liberalization of the international market of sea products took place against this background. Between regulation and market mechanisms, solutions to current constraints should be mindful of resource preservation and product development. This observation applies both to exporting industries and pelagic fishing units or small-scale processing units. As a result of pressures exerted on resources, efforts should focus on increasing product value-added without volume expansion, at least for exports.

**Policy recommendations**

Irrespective of the role played by external demand, free access to resources implies that export-oriented fishing units were able to exploit the stocks of coastal demersal resources beyond its maximum sustainable yield. This question touches notably on the problematic question of quotas, fishing agreements and capture component support mechanisms.

Small-scale fishing is much less specialized than industrial fishing, which increases the possibilities of rejections, should a quota system be introduced. The issue on the price of access to resources calls into question the fishing agreements concluded with foreign fleets, starting with those binding Senegal and the European Union. Many facilities for the acquisition of fishing units (reduced interest rates, reduced tax on motors and equipment, and subsidized pirogue fuel price) were instituted. While pelagic fishing units should always benefit from these measures in view of their deteriorating operating accounts and their contribution to the country’s food security policy, maintaining them for coastal demersal fishing needs to be discussed. Concerning the new regulations, exports of endangered species as whole products might be banned or surtaxed. A freeze on global fishing (small-scale and industrial) effort on coastal demersals also seems to be desirable. As far as small-scale fishing units are concerned, licences might also be required.
All these should be complemented by a programme on the creation of parking areas for fish and seafood wholesalers, as well as organized sites for fish processing. Such a measure would make it possible to improve the working conditions of fish processing women, increase profitability, sanitary standards and product quality. As for support to some fisheries, the revival of semi-industrial sardine fishing would provide more raw materials to high value-added industrial processing (canning, freezing...) without competing with small-scale fishing (products of smaller size). It would extend the range of products exported to Africa. Organizing a system for collecting rejections of industrial fishing with the use of pirogues assembled in secondary coastal surveillance centres, would contribute to increasing the quantities available for domestic markets and small-scale processing. An ice subsidy would reduce the costs of the fish trade considerably and contribute to improving product quality, notably for the rural populations. Market-based mechanisms and economic measures are also likely to increase the value of production.