

## THE MARINE FISHERIES OF MOROCCO

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The waters off Morocco contain rich resources of sardines and other fishes. In 1968, landings totaled 212,920 metric tons--sardines comprised 167,623 tons. Most fish is canned or reduced into meal and oil for export; 1968 exports were 104,000 metric tons worth about \$34,200,000. The need for upgrading and expanding the industry is generally recognized. The task has been assigned to the Office National des Pêches created in February 1969. Recent improvement in world market for canned sardines and fish meal augurs well for the near future.

## THE RESOURCES

The waters off Morocco's Atlantic Coast from Cape Spartel to Cape Juby are rich in fishery resources. Strong upwellings and oceanic currents favorably influence the fisheries. Sardines (*Sardina pilchardus*) are the most important stock. Mackerels, anchovies, tuna and tunalike species, horse mackerels, and hake are abundant. Limited but fairly valuable resources of shrimp and lobsters are also present.



The Harbor of Agadir.

(FAO/A. Defever)

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The Mediterranean waters off the northern coast have limited resources and supply less than 5% of landings.

Official nomenclature divides fishes into two groups: "poisson industriel," or industrial fish, and "poisson marée," fresh fish.

### I. INDUSTRIAL FISH

In 1968, 188,780 metric tons of industrial fish were landed--89% of total landings. Industrial fish primarily are canned or reduced. They are sardines, anchovy (Engraulis encrasicolus), mackerel (Scomber scombrus), bluefintuna (Thunnus tynnus), skipjack (Katsuwonus pelamis), frigate mackerel (Auxis thazard), black skipjack (Euthynnus alleteratus), bonito (Sarda sarda) and 'espadons' (Xiphidies). Much industrial fish is sold fresh: 17,961 tons in 1968, equal to about three-fourths the landings of fresh fish. Also, small quantities are salted.

#### Tuna and Tunalike Fishes

Landings have fallen slightly in recent years; in 1967, they were 6,447 metric tons. Tunas are taken mainly by sardine vessels and by "madragues" (fishtraps). Sardine fishermen fish seasonally for bluefin, which appear in autumn off Safi-Agadir area; catches are limited by inadequate gear, short vessel range, and fishing technique. The number of madragues and their catches have declined. Occasionally, some tuna are taken by artisanal fishermen. Expansion of tuna industry has been considered in development plans over the years, but actual accomplishments have been minor.

An expensive research effort in 1964/65 involving a French vessel proved inconclusive. Attempts to use present vessels in Senegalese area showed their inadequacies for distant-water fishing. Nevertheless, expansion of tuna fishery is integral part of future plans; it includes fishing the resources of the Gulf of Guinea. The task, though not impossible, will be formidable. It will require high capital investment, considerable experience in tuna fishing, competing with foreign fishermen, and selling in highly competitive world market.

#### Mackerel

The 7,753 tons landed in 1968 were nearly 20% below 1967 figure. The decline was re-

flected too in figures of the Office de Commercialization et d'Exploration (OCE); these showed 1968-69 exports of 3,808 tons worth about \$1,180,000, down 22% and 17% respectively from previous period. On the whole, however, mackerel offers potential for greater exploitation. Development waits better vessels, exploratory fishing, additional export markets, and diverting more of catch to reduction.

### "POISSON MARÉE" (FRESH FISH)

"Poisson marée" are sold on fresh fish market; also, considerable quantities are frozen for local consumption and export. Horse mackerel, hake, sea bream, and blue fish are principal species; gurnard, mullet, sole, and shark are also landed in important quantities.

In 1968, Casablanca and Agadir accounted for 14,942 tons of the 23,827-ton catch. Tangier, Kenitra, Safi, and Larache also had annual landings of over 1,000 tons. Trawlers and line-fishing and gill-net craft, motorized and nonmotorized, participated.

The two main markets for "poisson marée" are the large urban centers, especially their foreign population, and France. Casablanca is the most important single market; besides its own trawler catch, it receives fish trucked from Agadir and other ports.

Efforts to promote greater domestic consumption of fish have had mixed success. Low purchasing power and the traditional preference for meat are reasons given for low consumption. The rapidly growing tourist trade is expected to absorb greater quantities of fish. With ample resources available, expansion of the fishing industry depends on expansion of the domestic and export markets.

### CRUSTACEANS

Crustaceans follow sardines in potential for expansion. Shrimp, primarily Parapenaeus longirostris, are most important. Annual landings, however, have fluctuated during past 5 years from 250 to over 1,000 tons. Information on catches seems inadequate to plan growth. More information will be needed on areas fished, techniques, catches by foreign vessels, and requirements for Moroccan investors.

Lobster, spiny and northern, are another fishery where local fishermen might be diverted from sardine fishery. Official statistics show only a modest catch of 40 to 50 tons annually; some landings are unreported. Also, catches by foreign vessels off the coast are excluded.

## THE SARDINE INDUSTRY

By far the dominant sector of the Moroccan fisheries is the sardine industry. During 1963-68, sardines accounted for 70 to 85% by weight of total landings. The 1968 landings were 167,623 metric tons; the record year was 1966 with 251,876 tons. More than half the catch goes to reduction plants; the remainder, the better-quality fish, goes primarily for canning and, to lesser extent, to fresh-fish market.

Over 90% of all sardine landings are made at Safi, Agadir, and Essaouira, centrally situated on Morocco's Atlantic coast.

### Port of Safi

Because a larger proportion of its landings is canned, Safi leads the other two ports in income from catch. In 1968, nearly 33,000 metric tons of sardines (raw-fish weight) were canned in Safi. It has 38 canneries and 6 fish-meal plants.

Most cannery workers are hired on part-time basis. Women on canning lines receive about 14 U.S. cents per hour. Salaries for men are higher and depend on type of work and condition of employment. A social security tax of 15% is assessed; employe and employer each contribute half.

There are 117 sardine vessels working out of Safi: most are wood, 15 to 18 meters long, 20 to 40 GRT, and have 120 to 149 h.p. In Safi, vessels are contracted to fish for specific plants. Also, some plants have their own vessels. Many fishermen augment earnings by farm work during off season.

### Agadir

The lead for volume of sardines landed alternates between Agadir and Safi. Agadir received 114,000 tons (of 251,876) in 1966's record catch.

The number of sardine vessels based at Agadir varies around 95 annually. The av-

erage vessel is about 16 to 17 meters long, nearly 5 meters wide, 29 to 30 GRT, and has a 160 to 170 h.p. engine. The vessels usually fish near port. Unlike the situation at Safi and Essaouira, vessels are all independently owned.

Sales are arranged through local fishery office. During peak season, when potential landings are higher than demand, each buyer submits his maximum daily need; the buyer must be ready to take this amount every day. During peak periods, sailings are rotated so landings do not exceed total orders. When landings are low, the available sardines are allocated among buyers in proportion to quantity taken during peak season. There are 18 canners and 8 fish-meal plants.

As in other ports, sardines are off-loaded at dock by the tedious technique of shoveling fish into small wicker baskets, which are hand-passed up to the dock. If slated for canning, the fish are salted and boxed before loading on trucks for transport to cannery several miles away. Reduction fish are dumped directly into open trucks; at weighing station, a dye is put on reduction fish.

### Essaouira

Less important than Safi or Agadir, Essaouira (Mogador) is easily the most picturesque. The port has 7 canneries, 2 fish-meal plants, and one freezing plant. Only 10 vessels are permanently based here; however, up to 60 arrive from other areas during height of sardine run. Vessels fish under contract with the plants. In 1968, nearly 30,000 tons of sardines were landed.

### Other Ports

Casablanca, Al Hoceima, and El Jadida account for major share of sardines landed at other ports. All but a limited quantity are sold on fresh-fish market.

### Sardine Prices

Prices generally are set annually after discussions among processors, vessel owners, fishermen, and government officials; the prices are published in a government decree. In 1969, prices fixed for sale of sardines destined for canning, freezing, salting, and export were in 2 categories:

1) Quality fish for industrial use, 50 count per kg. or less: Agadir--US\$76 per metric

ton; Essaouira and Safi--\$80 per ton. Vessel owners received \$8 per ton of purchase price to amortize cost of nets. Balance is shared 60-40 by crew and vessel owner.

2) Low-quality fish or fish not fit for human consumption: Agadir--\$20 per ton; Essaouira--\$12 per ton; Safi--\$13 per ton. No net bonus paid out of purchase price for such fish.

At each port, there is a government fishery office. Each lot of sardines going to canners is sampled. The sample is sorted by an official who separates canning-quality fish from noncanning quality. Size, freshness, and appearance are criteria. Proportion between the two in sample is basis for payment of entire lot.

For sardines higher than 50 count per kg., prices are negotiated in each community.

Sardines for reduction were: Agadir--\$14.50 per ton; Essaouira, \$17; and Safi, \$18. A net bonus of \$1 per ton is paid out of purchase price at Agadir and Essaouira.

#### Some Observations

The strength and viability of the Moroccan fishing industry appears related to sardine industry. By far the greatest amount of capital investment is in sardine canneries, fishmeal and oil plants, and vessels: 75 canneries, 18 meal plants, and around 250 vessels (mostly wood, small, and overmanned). The industry also accounts for major part of fishery earnings.

At the same time, it is generally recognized that the sardine industry could benefit greatly from more efficient equipment and improved techniques. The government can

help because it sets price for fish, level of wages, cost of cans and other canning needs, and has roles in marketing, and in licensing vessels and plants. A solution is being sought to problem of how to introduce new and more efficient equipment in fishing and canning without displacing workers. This and other problems including shortage of capital and credit are being faced.

Consolidating canneries and diversifying and upgrading sardine products are other measures being pursued. OCE and the canners are working harder to find more export markets.

#### Fishing Changes Slower

In fishing, change has been slower. The question debated is how to innovate without harming owners and reducing jobs. One suggestion is licensing reduction plants around Ifni and to the south and drawing off excess vessels, fishermen, and plant workers from Agadir-Safi area. This probably would be effective if properly executed. Another suggestion would permit introduction of improved vessels to replace one or more old vessels, with possibly some type of work or earning guarantee to crews of replaced vessels.

Foreign investment in sardine and other fisheries is being encouraged by the government and could be helpful. Fiscal measures as an aid and incentive to modernize are another possibility being mentioned.

Considerable improvement is possible in the Moroccan sardine industry--but will require the cooperation of government agencies and the industry. Concerted effort is needed in sales, processing, production (vessel owners and fishermen), and in research to determine stocks and location of sardines.

