

CHAPTER SEVEN

TUNA FISHERIES IN NEIGHBOURING NATIONS

In order to place the future development of the tuna fisheries in Malaysia into context, it is necessary to examine the tuna fisheries in adjacent areas. There are three countries which have established tuna fisheries and share borders with Malaysia. They are Thailand, Philippines and Indonesia.

7.1 THAILAND

We have seen earlier how Thailand imports large quantities of fresh and frozen tuna to support its position as the World's leading canned tuna exporter. Looking into the background might give us a better understanding of how tuna has become such an important industry in its economy.

The purse seine was introduced into Thailand in 1925. It was used to catch small pelagic fish such as mackerals and scads for domestic consumption. The recent increase in demand for tuna by the domestic canning industry has turned the attention of the purse seiners to tuna. In 1973 the landings of tuna in Thailand were 7,914 tonnes. The rapid increase in demand began in 1982 when the purse seiners were used to fish for tuna.

There are three species of tuna landed in Thailand that are of commercial importance. They are Longtail tuna, Kawakawa and Frigate tuna. Between 85% and 90% of the tuna landed in Thailand are caught in the Gulf of Thailand and of these, more than 70% are caught by purse seiners.

The imports of frozen whole tuna exceed the domestic catch. The demand for tuna arises from the domestic canning industry.

7.1.1 FISHING GROUNDS

The Gulf of Thailand is divided into three main regions. Areas 1 and 2 cover the east coast down to the northern border of Peninsular Malaysia. Area 3 lies to the east of the head of the Gulf of Thailand. Areas 1 and 2 account for 80%

of the landings of Longtail tuna with Area 2 alone accounting for over half of the catch of this species by Thai purse seiners operating in the Gulf of Thailand.

7.1.2 CANNING INDUSTRY

The expansion of the Thai tuna canning industry has been the outstanding event during the last five years. This industry started to develop during in the late 1970's processing mainly *tonggol* and other local species. Catches of these species suddenly increased from 9,000 MT in 1980 to 57,000 MT in 1983. Other tuna species also showed an impressive increase from 5,000 MT to 32,000 MT during the same period. When in 1984/85 the domestic resources showed signs of overfishing, Thailand had to look for additional supplies for its tuna canneries. The country started to import mainly Skipjack.

Thai canneries imported some 450,000 MT of raw material in 1995. Thailand continues to rely on imported frozen fish but purchases from more varied sources. It will not develop its own fishing fleet.

Taiwan, South Korea and Japan are among the biggest sources of frozen raw material, supplying half of the Thai industry's needs. Skipjack remains

the most important species (at 80 percent utilisation), followed by Yellowfin and Albacore.

During the last three or four years the list of fish suppliers for Thailand has grown longer to include countries such as Ghana, Madagascar, Kenya, Senegal, Belize, Micronesia, Kiribati, to mention a few of the more exotic ones. These new sources have supplemented rather than replaced the secondary traditional supplies from Spain, France, the Maldives, Seychelles, Russia, Indonesia, the Philippines, China and Vietnam. It is not clear how much of this diversification is due to the impact of the International Law of the Sea or prohibitions of Trans-shipment on the high seas, but Thailand currently trades with over 50 fishing nations scattered all over the world.

Catching of domestic tunas, in contrast, has not expanded significantly. It appears unlikely that the industry will invest in fishing vessels to catch these tuna species. Most processors would rather negotiate fishing agreements with neighboring countries who have the capabilities.

Thailand exports all that is produced, with US as the main market. In 1985, two-thirds of Thai canned tuna were exported to the US. For over a

decade, the US took in more than half of Thailand's total production of canned tuna. In 1990 however, the percentage exported to the US dipped below 50 percent for the first time. This downward trend continued to 42 percent in 1992, 32 percent in 1993, 28 percent in 1994 and a projected 25 percent in 1995.

During the same time frame, exports to the UK, Germany, Canada, Netherlands and Egypt remained constant and gradually increased. The Japanese market, helped by a strong Yen, registered remarkable increases between 30 percent and 160 percent.

In the case of frozen loins, US imports from Thailand have been decreasing steadily from 26,543 MT in 1991 to 6,665 MT in 1995. Exports to Japan, Italy and Israel, on the other hand, have shown an upward trend with Japan expected to replace the US this year as the number one export market for this product.

The industry structure has changed very little since 1989. In spite of tax incentives from the Board of Investment to promote Southern Thailand, there have been relatively few players in the business. Investors hesitate to build new canneries due to higher property prices, considerable initial investment and a lower

profit margin. At latest count 34 registered sea food processors include tuna canning in their operations. Among these, 15 have facilities solely for tuna canning, processing anywhere from 20 MT to 500 MT of fresh or frozen tuna per shift per day. Current total industry capacity is estimated between 450,000 MT to 500,000 MT of imported frozen fish and 50,000 MT to 100,000 MT of local fish annually. Not all of the canneries are active and only two major ones have been covering 70 to 80 percent of processing for export.

The main product form is tuna in brine for the US market and some packed in oil and dressed for the European market. Chunks are mainly processed. While the main can size is 6 1/2 oz., some bigger cans (425 gr and 66 1/6 oz) are also produced. Two-piece can is generally used for chunk, three-piece can for solid pack, and ring-pull for the Japanese market. About 80 percent of the Thai canned tuna pack is for retail with packers preferring retail packs due to higher profits.

Over the last five years, the Thai industry has developed a variety of canned tuna products other than the traditional tuna in oil, brine or vegetable broth. New products were introduced, eg Tuna salad with garden vegetables, Tuna in Italian sauce, and various other sauces, Tuna as a spread and even Tuna in satay

sauce. Similar products, developed to suit the local palate and cuisine, are available in many countries in the Asia-Pacific.

The phenomenal growth of the Thai canning industry was motivated by several factors:

- 1) cheap labour
- 2) hard working and skillful labour
- 3) problems experienced by the tuna canning industry in the Philippines
- 4) increase in costs for US canners

7.1.3 PROSPECTS

The Thai industry is carefully watching developments in Indonesia. The expansion of the Indonesian tuna catch is welcomed as a nearby source of raw material. Moreover, many Thai canneries seem to have expressed interest in investing in the Indonesian fishing industry. On the other hand, the expansion of the Indonesian canning industry is seen as a possible source of competition, especially for the US market. Low labour costs and the vertical integration of the Indonesian industry seem to provide the competitive edge for this country. But Thailand has more experience in canning and enjoys a good name in the

international market. It is likely that in the medium term, Thailand will lose some ground to Indonesia and the Philippines, even while remaining the world's major exporter of canned tuna. In the short term, that is for the 1990s, the Thai canning industry outlook is upbeat and is expected to experience a 20 percent annual growth in export earnings.

7.2 PHILIPPINES

The Philippines archipelago straddling the Western Central Pacific is endowed with some of the richest tuna resources in the vicinity. Of all the fishing that is done, tuna is the most lucrative. The total amount of tuna caught in 1995 was around 315,000 MT. Skipjack accounted for 35 percent, Frigate tuna 28 percent, Yellowfin and Bigeye 20 percent and Eastern Little tuna 17 percent.

7.2.1 TUNA FISHING INDUSTRY

The fishery comprises of two sectors. They are based on the size of the vessels used. Boats below 3 GRT (Gross Tonnage) fall under municipal fishery. Those above this tonnage come under the commercial fishery sector. Each sector accounts for one half of the total tuna landings. Commercial tuna fishery had

its origins in the 1970s when purse seining with fish aggregating devices (payaws) led to substantial increase in landings. Subsequently, the importation of purse seiners and conversion of sardine purse seiners for tuna seining during the tuna season added to the existing fleet. This resulted in their numbers increasing to some eighty such boats by 1980. Introduction of better equipped vessels also helped improved the quality of the catch. Thus, substantial quantities of frozen tuna were exported to the US and Japan, especially through joint-venture arrangements with the US firms. These operations were seriously hampered by the glut in the world tuna market during the early eighties. Consequently, most of the purse seiners were left idle. There were only around twenty-five purse seiners in operation. As the situation started to improve additional vessels were brought in. Currently there are 87 purse seiners and 22 longliners in operation. Purse seiner: using payaws are mostly small to medium in sizes, ranging from 110 to 250 GRT. Many of these are run down vessels, purchased or leased from the retired fleets of US, Japan and Taiwan. They have been “re-rigged” for tuna fishing. Though such vessels are suitable for fishing in waters adjacent to the islands, they are not safe and fit for operation in off-shore waters. Thus, the Philippine boats harvest only less than 18 per cent of the catches from the Western Central Pacific Ocean from which half the world’s Skipjack and nearly one-third the Yellowfin catches are taken.

A major share of the Yellowfin and Skipjack utilized for canning are caught from the coastal waters off Mindanao island where there is a serious problem of overfishing. The fall in catch per unit of effort (CPUE) in territorial waters has led the larger vessels to operate in the EEZ of some neighboring countries. As of 1988, there were 17 catchers and carrier vessels ranging from 139 to 995 GRT owned by three companies fishing under license in Papua New Guinea and Micronesia waters. However license fees have to be paid to fish in their waters. Despite the increase in catches, the growing domestic demand for tuna has outpaced supply. Thus, imports of frozen tuna in substantial quantities have become necessary.

7.2.2 CANNING INDUSTRY

The first tuna cannery was established in 1977 near Manila. Several new canneries followed shortly. By the end of 1980, there were eight canneries with a total installed capacity of more than 100,000 MT of raw material. Currently there are more than ten canneries in operation requiring some 150,000 MT of raw material per annum to operate with full capacity. While in 1987, only 73 percent of raw material needs were met by domestic production, it is now estimated that altogether, some 45,000 MT of tuna will have to be imported.

Imports of tuna were in effect banned until 1986 to protect the interest of the local fishermen and fishing companies. However, changes in the political system and the revival of the world tuna market led to the relaxation of restrictions in 1986. Consequently, the import duty on frozen tuna was fixed only at 10 percent for the period from August to February and 30 percent for the peak landing season from March to July. In 1989 and 1990, frozen tuna was imported from Papua New Guinea, Indonesia, US, Hongkong, Guam, Japan and Singapore.

The tuna industry has lately been showing signs of a healthy growth. The canning industry continued to expand in 1989 and processing capacity increased by 20 percent to reach 120,000 MT in 1990.

7.2.3 EXPORTS

The Philippines is the world's second largest exporter of canned tuna, after Thailand. Lower catches in 1995 and reduced imports of tuna raw material threatened this position to a certain extent. Exports of canned tuna in January to September 1995 fell by 6% to 4.35 million cartons (48x6.5-oz) compared to 4.62 million cartons in the same period in 1994. The United States

regained its position as the leading buyer, with a purchase of 1.22 million cartons, a 37% increase from 887,600 cartons in 1994. Exports to Europe declined. Sales to Germany fell by 18% to 746,900 cartons in January-September 1995, as compared to 910,900 cartons in 1994. During the same period, shipments to the United Kingdom dropped by 8% to 621,200 cartons (673,100 cartons in 1994) and those to the Netherlands were 194,700 cartons compared to 285,000 cartons in 1994. Exports to Japan also declined by 18% to 336,200 cartons. Canadian purchases rose by 57% from 400,900 cartons in January-September 1994 to 629,700 cartons in 1995. (INFOFISH Trade News, February 15, 1996)

7.2.4 RECENT DEVELOPMENTS

A recent development aimed at increasing tuna production is the Governmental move to acquire six new tuna vessels of 1,200 GRT class to strengthen the aging tuna fleet. The total cost of US\$60 million, at US\$10 million per vessel, is to be funded based on an agreement with Italy. Earlier, the Government, at the insistence of the fishing companies, had engaged AGRODEV Canada Inc., to make a detailed study for strengthening the fleet. It had the specific objective of better exploitation of tuna resources in the Western Central Pacific (FAO Area 17). The final recommendation pinpointing the number and type of

vessels was arrived at on the basis of a comparative cost study carried out for the operation of a 1,200 GRT vessel and a smaller 350-450 GRT vessel fishing with payaws.

With these measures, the Philippine tuna industry can look forward to a brighter future. Philippine canned tuna has already cornered the second largest share in several European and North American markets. In these markets, it is second only to Thailand. There is ample scope for expanding the canning capacity without considerable difficulty. There is cheap labour readily available.

During the past several years, more and more of the fishing companies have ventured out of Philippine waters. To legally access foreign fishing grounds, many fishing companies have resorted to:

- a) fish in the high seas
- b) acquire licenses to fish in foreign waters; and
- c) enter into partnerships with foreign fishing companies to fish in their waters.

In addition, some fishing companies have gone to the extent of setting up business operations in tuna-rich countries as a strategy to access the host

countries' territorial waters. The move towards fishing grounds outside Philippine waters presents new challenges to the industry which require joint attention by both private commercial fishing companies and the government as well. Properly managed, these challenges will lead to opportunities that are much needed to sustain the industry's growth.

7.2.5 GOVERNMENT SUPPORT

With the introduction of bigger fishing vessels, the government has initiated several infrastructure projects to support and strengthen the competitive position of the Philippine fishing industry.

To mention a few :

- i) General Santos City in Southern Mindanao is the site of ongoing massive infrastructure developments. A wharf that can accommodate fishing boats as large as 2000 GRT is being built as part of an integrated fishery port project. The port has cold storage, ice plants and fish processing facilities. In addition, an international airport is built, which should effectively make General Santos an

ideal focal point for Western Pacific operations because of its proximity to the South Pacific and Indonesia.

- ii) There is also the development of a tuna canning industry in General Santos. This is strategically located to attract tuna catches from both local and international sources. Similar improvements, although less massive, are in the pipeline for Iloilo and Davao.
- iii) The Navotas Fishery Port located in Metro Manila is undergoing improvements and much-needed expansion.
- iv) There are plans to provide the necessary infrastructures that will promote fishing activities in the North Eastern waters of the country.

The Philippines government is also actively involved in strategies to manage the tuna resources. There are regular studies carried out to explore the availability of tuna in the Northern areas of the Philippine Sea and South China Sea. The industry encourages participation in the Tuna Tagging Project of the Philippine Bureau of Fisheries and Aquatic Resources.

7.3 INDONESIA

7.3.1 TUNA FISHING INDUSTRY

Tuna as a commodity plays an important role in the Indonesian economy. Besides shrimp, tuna is a traditional source of export earnings. Among agricultural commodities, tuna and shrimp are being heavily promoted to further enhance their contribution to the country's exports. Nevertheless, while the value and volume of shrimp export tend to stabilise or somewhat decrease due to various problems in aquaculture production/export, the value and volume of tuna exports has steadily been increasing lately. This trend is expected to continue.

Fishing and canning of tuna provide job opportunities for those living in remote islands. Especially, in the eastern part of the country, tuna fishing is one of the main occupations for many villagers. Traditionally women were also involved in the marketing and processing of tuna, bringing smoked or salted fish to sell in nearby cities. For other villagers, although they have their vocation on land, fishing is another source of income. Owing to the gradual depreciation in prices of agricultural commodities, the present trend is for some farmers to turn to the sea for

their livelihood. In this context, tuna fishing with traditional small wooden boat has been growing.

In addition to small scale fishermen, there are also big enterprises both state and private owned, engaged in industrial tuna fishery. Four state owned enterprises involved in tuna fishing are PT Usaha Mina, PN Perikani Sulawesi, Perum Perikani Maluku and PT Perikanan Samudera Besar. These four companies concentrate in the eastern part of the country, including the EEZ of North Sulawesi and other fishing grounds in the Indian Ocean. Also, there are private enterprises, both national and joint-ventures, carrying out tuna fishing.

However, compared with the state owned companies, production capacity of the private enterprises is relatively small.

Collaboration between big enterprises and small-scale fishermen is a unique phenomenon found in tuna fishing in Indonesia. In this set-up, the big enterprises act as a center of the total activities whose tasks are to help small-scale fishermen.

Establishment of the Nucleus Estate Small holder (NES) system has brought about a new production environment. The small-scale fishermen undertake market oriented activities. Their catch is guaranteed to be sold. Their income is more certain, stable and predictable. On the other hand, the big enterprises can optimally use its production capacity. Marketing and bargaining position in international trade could be strengthened as there are enough products of good quality. Processing activities of the big enterprises could be varied according to market demand since the supply of raw materials is plentiful.

The total fishing effort expended today is more concentrated in the territorial waters. In contrast the EEZ is believed to be under exploited. Since tuna is a migratory species which moves across oceans and beyond the borders and jurisdiction of any particular country, further development of tuna fishing cannot be undertaken by enterprises with small-scale set-up.

7.3.1.1 RESOURCE AVAILABILITY

The potential of marine resources in Indonesia waters including its EEZ is estimated to be about 6.6 million tons per year. The exploitation rate is about 33 percent in 1993, leaving approximately two third of the resources

unutilised. However, it should be mentioned that the rate of exploitation varied among the regions or provinces. In the Java Sea, the strait of Malaka and South Coast of Sulawesi, the fisheries resources are heavily exploited. This situation could be attributed to the fact that these waters are bordered by densely polluted islands (provinces). In the eastern part of the country, South Coast of Java and waters around Nusa Tenggara Islands, the resources are underutilised. The eastern part of Indonesia and the Indian Ocean are the main fishing grounds for tuna.

A very wide variety of the tuna species can be found in the Indonesian waters. The big tunas that can be found consist of Yellowfin, Bigeye, Albacore and Southern Bluefin. The small tunas that can also be found comprises of Skipjack, Eastern little tuna, Frigate and Bullet tuna. Even though one could claim that the aforesaid tuna could be found in Indonesian waters, the fact that they are oceanic fish cannot be ignored. From tagging programs, it was found that Skipjack and Yellowfin from Eastern Indonesia could migrate to the Western Pacific, Philippines waters and vice versa. The tagging studies also disclosed that the Western Pacific and Indian Ocean stocks are different.

The standing stock of Skipjack was estimated at about 590,000 MT while that of Yellowfin and Bigeye at 357,000 MT. By region, waters off North

Irian Jaya have the biggest potential for harvesting Skipjack, whereas waters off North Maluku and Irian Jaya have good potential for harvesting other species. *Skipjack and tuna are more abundant in the Eastern Indonesian waters.*

Fishing for tuna can be undertaken throughout the year. However, seasonal effects are sustainable. The peak season fall in April and May as well as September, October and November. The other months are the slack season. January and December are the months when catch could reach the lowest point. Current production level is at about 100,000 MT for tuna and 170,000 MT for Skipjack.

7.3.2 FISHING GROUNDS

The fishing grounds for tuna and tuna like species can be subdivided into three main areas : Western Indonesian Waters (WIW), Eastern Indonesian Waters (EIW) and the Indian Ocean.

The catch of tuna in the WIW is incidental (<5 percent of the total catch), consisting mostly of the eastern little tuna (>80 percent). It is taken mostly

by gill-net and purse-seine. The landing sites are auction markets along the North Coast of Java, Banjarmasin in Kalimantan, and Bagan Siapi-api in Sumatera.

The tuna catch along the Indian Ocean is about 50 percent of the total. They consist mostly of the Eastern little tuna. The landing sites are Pelabuhan Ratu (West Java), Prigi (East Java), Benoa (Bali), and Padang (West Sumatera). The fishing gears employed are gill-net in Java and Sumatra and long-line in Bali. Small purse-seine and trolling line are also used but their numbers are insignificant.

Gill-net, purse-seine and trolling line are basically used by small-scale to medium-scale sectors. They are privately owned by domestic investors. Fishing is the only business, meaning that there is other value-added activity. For this kind of fishermen, marketing is very crucial as it effects their income substantially. The NES system does not exist in tuna fishing in the WIW and Indian Ocean.

The long-line tuna fishing based in Bali is carried out by PT Perikanan Samudera Besar. As it is a big company, fishing is linked with processing and marketing. Foreign market is the main target. Beside PT Perikanan

Samudera Besar, tuna resources of the Indian Ocean are also exploited by domestic and joint-venture companies as well as foreign registered vessels.

Usually in a joint-venture with foreign partners the domestic company has shares up to 51 percent of the capital. The rest of the capital could come from the foreign partner. The domestic share can be 80 percent of the capital which, according to the Foreign Capital Investment law, may be reduced gradually up to to 51 percent in 10 years.

Tuna fishing in the EIW accounts for 80 percent of the Indonesian tuna catch and traditionally it supplied 80-95 percent of tuna exports. Fishing by pole-and-line in a small wooden boat is significant as the gear can yield relatively bigger tuna. The boats are equipped with refrigerated fishhold and are provided with cube ice. The quality and freshness of the catch can be maintained.

During the period 1987-1992, tuna production increased substantially. Catch of pole-and-line also increased by about 15 percent per year. The territorial waters are estimated to contribute about 80 percent of tuna landings. Tuna fishing in the EEZ waters is being developed. Part of the fishing fleet in the

EEZ waters is small-scale to medium-scale long-liners. The number of long-liners has increased over the years.

7.3.3 MARKETING

Like other fishes, tuna is sold in domestic and international markets. In the remote islands where transportation and distribution facilities are lacking, tuna is sold locally. When landings are plenty, it is processed traditionally into smoked and salted forms. The interinsular trade for salted products is well developed. Smoked tuna, one of the favourite dishes is trans-shipped by sailing boats to provincial cities. As a result, even though there is demand for fresh tuna, smoked tuna is constantly made to meet the growing demand for the product. Although prices in the domestic market, especially in urban areas in the eastern part of Indonesia, are high it does not guarantee enough income for producers. Fishermen as producers rely heavily on traders or middlemen who profit from a relatively high profit margin.

Another market outlet for small-scale fishermen is fishing companies. The small-scale fishermen who join the NES system can sell their catch

anytime to the big company at predetermined prices. The prices vary by size and quality of the fish. Exportable size and quality are valued at higher prices.

Export of tuna from Indonesia has developed since 1975. It coincided with the establishment of four state-owned tuna fishing companies. The main market is Japan followed by the USA and Western European countries. Export to Thailand used to be important to meet the needs of canneries there. Tuna products are exported as fresh, *sashimi* block, frozen, loin, canned and *katsuobushi*.. The *sashimi* block and *katsuobushi* exports were started recently. Export of loin is only done by state enterprises while most companies sell frozen products.

Development of export markets is characterised by a shift towards higher value products such as fresh tuna and sashimi block. In 1987 export of frozen tuna to Japan was 40,505 MT valued at about US\$15 million. Value of fresh tuna exported to Japan increased by more than 20 times.

Tuna export can be done from almost all provincial cities. This can be traced to the availability of trans-shipment points. For fresh tuna export, however, ports of origin are those having international air connections. The

airports that can facilitate fresh tuna exports are Ujung Pandang in Sulawesi and Denpasar in Bali, Jakarta and Medan in Sumatera. Nevertheless, exports from other airports are also possible since there are connecting flights to international destinations. Frozen tuna is also procured from big and small harbours located in isolated islands by international carrier boats.

Jakarta as the capital, plays an important role as a port of origin. Although there are not many fishermen as compared to its population, Jakarta is a check-point for fishing vessels operating in the EEZ. The biggest fishing port in the country is located in Jakarta. Various processing facilities are available here.

Bali with Denpasar international airport is the main port for fresh tuna export. This is because Bali has connections to different parts of the world. Moreover, Benoa, a sea port in Bali serves as another check point for vessels operating in the EEZ. East Indonesia (Sulawesi, Maluku and Irian Jaya) dominate export of fresh and frozen tuna.

7.3.4. GOVERNMENT POLICIES

The government of Indonesia pays much attention to development of tuna fisheries in the country. The government has initiated policy measures in order to promote tuna fisheries and to cope with the problems encountered. Action taken by the government include the following :

- i) Development of fisheries infrastructure, particularly offshore fishing ports in Jakarta and Kendari and coastal fishing ports in Ambon, Pekalongan. To facilitate operation of small-scale fishing fleet, landing places are established in almost all fishing villagers. Infrastructure facilities in airports are also developed so as to increase the export of high quality products.
- ii) Provide training and educational programs so as to increase the level of skills and knowledge of their fishermen.
- iii) Encourage the development of research in the industry. The research in fisheries is also carried out by the Universities, the National

Institute of Science and the Agency of Assessment and Application of Technologies.

iv) Establishment of state - owned enterprises which also function as agents of development for offshore fisheries. PT Usaha Mina and Perum Perikanan Maluku develop pole-and-line fishing with the NES concept and PT Perikanan Samudera Besar develop long-line fishing.

v) Promotion of collaboration with foreign companies in the form of joint-ventures, licensed vessels and chartered vessels.

All the above government measures are constantly evaluated and improved in a bid to promote the fisheries sector.

7.3.5 FUTURE PROSPECTS

Prospects for developing Indonesian tuna fisheries are apparently bright. From the resource point of view, there are still resources to be fully exploited. The fishing grounds are not only in the territorial or inshore waters but

also cover the EEZ of Indonesia. Input factors like clean water, provisions, maintenance and fuel are exceptionally cheap. Skilled labour is also cheap and readily available. According to the Japan Tuna Association (JTA), in 1989 only 38 percent of the crew for total EEZ fishing boat were Indonesians. In 1994, this figure has increased to 83 percent. Currently there are more than 2 500 Indonesian skilled workers in this sector. This is expected to increase as there are continuous supporting local training programs.

Local procurement of certain types of boats for operations in the EEZ waters has been tried out. In some areas in Indonesia like South Sulawesi, Central Java and Bagan Siapi-api - North Sumatera, traditional dockyards have existed for a long time. Capability of these traditional industries are slowly improving to enable the building of bigger boats that can be used for tuna fishing in offshore waters.

Problems pertinent to the industry are related to marketing and pricing of their products.