

FISH RESOURCES OF VIETNAMESE SEA WATERS AND RECOMMENDATIONS FOR RATIONAL UTILIZATION

by

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Abstract

Sea and continental shelf belonging to Vietnamese EEZ has an estimated areas of more than 1 mil.km², this is three times greater than land. Sea and continental shelf is becoming an important part in fishery aspect, this is where many marine products are existed. Vietnam is situated in the West Pacific Ocean and classified into four regions. The North Part, Center Part, South East and South West of Vietnam. The pelagic and demersal fish comprise of 80-90% of the total yield, in addition there are valuable resources such as shrimp, lobster and squids, all are important export items. Two major climatic seasons occur in these areas depending on the winds: the North-East (November to March) and the South-West monsoon (May to September), April and October, those are transferred months. Typhoons move from the East to the West or North-West are frequent in Summer and greatly affect the meteorological conditions of the sea waters. The fish species composition in the Vietnamese Sea waters is typical for tropical fish fauna (Approx. 2000 fish species, in addition there are 105 Shrimp species and 53 Squid and Cuttle fish species have been found). Resources Standing Stock of both pelagic and demersal fish in the Vietnamese Sea Waters are about 3.0-3.5 million tons, the exploitation potential amounting to 1.2-1.4 million tons. In the inshore areas the resources are being overexploited, while offshore resources remain underexploited. Resources protection and fishery policies are the main tasks of the Vietnamese fisheries. Fishing ordinance and regulations have become an important role in the Vietnamese Sea Water.

1. INTRODUCTION

Sea and continental shelf belonging to Vietnamese EEZ has an estimated area of more than 1 mil.km², this is three times greater than the land. Sea and continental shelf is becoming an important part in fishery aspect.

Vietnam has a coast line of 3260 km and stretches more than 15 latitudes from North to South, the areas of continental shelf are opened wide in both ends of North and South, the topography is complicated.

In coast areas, there are many lagoons, estuaries, bays and this is estimated of approx. 600 thousand hectares, being favorable for marine culture. The estuary in river

mouths of Red river and Mekong delta influence to the natural condition as well as marine stock in adjacent areas.

Vietnamese Government is very interested in marine fisheries, applying relevant methods of resources management and rational exploitation of the resources in order to meet the population's demand for animal protein.

2. NATURAL ENVIRONMENT OF SEA WATERS VIETNAMESE

Relief and hydrology

With a long coastline, the marine environment of Vietnam is characterized by a wide range of geomorphological, climatic, hydrological, economic and geopolitical conditions.

Vietnam sea water is in tropical region having North-East monsoon, low latitude, close to equator, in western Pacific, with two main wind seasons around the year and there is an certain difference in between North and South areas.

The meteorological and hydrological characteristics of the coastal zone show three shallow-water regions in the Vietnamese sea water: The Gulf of Tonkin, South-Eastern region and South West region, the sea bed is suitable for bottom trawling (Figure 1).

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Annually there are about 4-5 typhoons or tropical low pressures formed in the Eastern Sea. The distribution of the number of typhoons and tropical low pressures formed in the Eastern Sea is show in table 1.

Table 1. Number of typhoons in the Eastern Sea according to month (1950-1975)

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Plumber of typhoons	0	1	0	2	6	19	16	34	24	15	9	3	128
Frequency (%)	0	0.8	0	1.6	4.7	14.7	12.4	26.3	18.6	11.6	7.0	2.3	100

2.1 The Red river delta (North Vietnam)

The Red river delta area belongs to the South-East Asian tropical monsoon region and is affected by two main monsoon systems:

- the North-East monsoon from November to March, which is a cold, dry and foggy season; and
- the South-West monsoon from May to September, which is a wet and hot typhoon season.

2.2 The Central region

In this area the topography is complicated, narrow and skewed from West to East. The slope of the land is high.

According to long-term statistics, typhoons and tropical low pressures come directly to the central region and annually there are on average 4.4 typhoons and tropical low pressures, typhoons also cause raised seawater levels that flood onto land and into river mouths causing serious floods.

2.3 The Mekong delta (South Vietnam)

The Mekong delta is a focal economic region for fisheries and is rich in resources. The influence of the North-East monsoon is less in this area, but the South-West monsoon is a major influence.

Activities of oil exploration surveys and exploitation will exert an influence on the development of fisheries resources if no measures taken to prevent pollution.

3. FISHERIES RESOURCE

For a long time, the development of Vietnamese fisheries sector has been deft with pelagic and demersal species in the coastal water areas. These two kinds of fish comprise of 80-90% of the total yield.

In addition to pelagic and demersal fishes there are valuable resources such as shrimp, crab, lobsters, cuttle fish and squids, all are of important export items. (Figure 2)

Vietnamese fish fauna is very diversal, fish schools are seldom in big shoals but are mostly scattered and their yields are low.

The total number of marine fish recorded approx. 2000 species, around 70% of which are demersal species.

Fish species show typical characteristics for the tropical ichthiofauna, their portion spawning takes place throughout the year. Individual fecundity is high. Food is diversified, no particular feeding selectivity being observed. Fish feeding intensity does not show great fluctuations.

Demersal fish stock calculated from bottom catches of the Vietnamese waters is about 1,840,000 MT.

According to the most recent assessments, the pelagic fish stock in the Vietnamese waters are about 3,570,000 MT, the exploitation potential amounting to 1.2-1.3 million MT. (Table 2)

In 1996, Vietnam produced 1,373,500 MT. (Aquaculture production consists of 411,000 MT and the capture from the sea obtained 962,500 MT (Figure 3). The export value of fisheries production reached around 670.000 million USD, put in third position after oil and rice. The top provinces in fisheries income are Kien Giang, Minh Hai, Binh Thuan and Ba Ria - Vung Tau. (Figure 4)

The fishing grounds in the nearshore region and offshore sea banks are currently being exploited. Shrimp catching ground are mostly concentrated along the coast of Tonkin Gulf and around Mekong Delta. Total fisheries landing from the South and Centre Southern regions contribute to over 80% of the National landing whereas catches from the North (above 20°N) and North of Center part (North of Da Nang) amount merely around 20%.

It is generally recognized that inshore and near shore fish stocks are exploited at, or most likely well above, their potential sustainable yields. There is thus little or no scope for further expanding coastal fisheries. The catch per unit of effort is sharply declining in some of the more intensively fished areas, and it is recognized that it is necessary to find alternative employment opportunities for coastal fishermen to reduce fishing pressure.

The financial and economic viability of coastal fisheries is likely to be threatened unless some corrective actions are taken. Consideration need to be given to ways of reducing and rationalizing the coastal fishing fleet, rather than supporting further expansion of coastal fisheries.

Great aspirations are attached by many people to the desire of developing and offshore fishery in Vietnam. It is already anticipated that an additional 100,000 to 150,000 Ton annually will be generated from offshore resources by year 2000. A major part of this increasable production would be different tuna and pelagic fishes of relatively high commercial value.

Table 2. Estimation of fishery stock in Vietnamese sea waters
(Source: Pham Thuoc, 1985)

Areas	Fishery Group	Standing stock (ton)	Exploitation potential (ton)	Authors	Year
Tonkin Gulf	Pelagic fish (1)	390,000	156,000	Bui Dinh Chung	1981
	Demersal fish (2)	504,839	166,596	Pham Thuoc	1977
Central areas	(1)	500,000	200,000	Nguyen Van Boi	1976
	(2)	118,125	389,810	Pham Thuoc	1985
South - East areas	(1)	524,000	210,000	Bui Dinh Chung	1981
	(2)	676,230	223,156	Pham Thuoc	1985
South - West areas	(1)	316,000	126,000	Menavesta	1973
	(2)	541,425	178,670	Pham Thuoc	1985
Total	Pelagic Fish	1,730,000	692,000		
	Demersal Fish	1,840,619	607,404		

4. FISHERMEN, FISHING GEARS AND FISHING FLEET CAPACITY

The labour force of Vietnam's fisheries in 1995 was estimated at 420,000 persons. These included fishermen at sea and workers involved in fisheries processing and other subsidiary activities. The majority (92%) of the fisheries labour is engaged in small-scale, private fishery sector. Of all full-time workers above the age of sixteen, 77% belongs to the private sector, 19% are employed in collectives, 3% in the Government.

The Vietnamese fishermen have been using various gears: bottom trawl, purse seine, liftnet, Drift net, longline ect... (Figure 5)

The fishing fleet has strengthened considerable in the past years in both number of boats and engine capacity. Number of boats owned 47,604 species in 1991 with total engine -813,737 CV and average engine of artisanal boat -16.22 Hp/boat and of Government boat - 170.12 Hp/boat.

Up to 1993 number of boats has risen to 59,267 boats with a total engine -1,170,362 Hp and with a average engine of artisanal boats -18.68 Hp/boat and of Governmental boats -180.78 Hp/boat.

The majority of the fishing fleet were concentrated in the South and South of Center part of Vietnam (Phan Thiet - Da Nang). (Figure 6)

The fishing fleet of Vietnam is made up of an estimated 93,600 fishing craft as follows:

- Artisanal fishing craft, not powered, 31,500 units;
- Motorized local vessels, 62,000 units, powered by a total of 1,250,000 HP; and
- Deep sea fishing vessels, about 100 units, powered by a total of 50,000 HP.

The artisanal fishing fleet exploit the coastal, near-shore resources. These resources are within easy reach of the small vessels. Passive fishing gears, nets, lines traps and hooks are used. The productivity of these vessels and the income of fishermen working these vessels are low.

The mechanized inshore fishing fleet has developed to take advantage of more modern fishing gears: trawling, gillnetting, and longlining. These vessels are made of wood and they are generally between 10 and 20 mtr. in length, powered by 30 to 40 HP inboard engines.

These larger vessels have efficient space to handle the fishing gears, keep their catch and provide primitive accommodations for the crew while at sea. These vessels

typically stay out at sea for several days at the time to reduce steaming time and improve fishing productivity. The mechanized vessels exploit all of the fishing grounds of Vietnam, both close to shore and further off the coast.

An estimated 10,000 vessels of the motorized fleet use trawl fishing gear for catching shrimp and fish. The remaining fleet of motorized vessels use a variety of different gears and often change between gears to take advantage of different fishing seasons. The most commonly used types of gear are different types of nets, gillnets, line fishing and longlining.

An additional fleet component of larger motorized trawlers and a few modern tuna longliners also contribute to Vietnam's fisheries. These vessels were brought in under different development programs and they are typically owned by state enterprises.

The operation expenses for larger motorized fleets are costly.

5. OVEREXPLOITATION

Overexploitation is clearly shown by the noticeable decline in catch per unit effort in the past some years.

Overfishing, pollution and habitat destruction have led to rapid decline of coastal fish stocks and the degradation of the marine environment and coastal resources.

Catch trends and catch per unit effort in the Tonkin Gulf has reached 0.75 Ton/Hp in 1980 and which has declined to 0.66 T/Hp in 1990.

In the Center part of Vietnam -1.06 T/Hp of catch was obtained in 1986, though the catch is much reduced to 0.66 T/Hp in 1991.

In the South Vietnam it has reached 2.05 T/Hp in 1985 and has declined 1.2 T/Hp in 1988.

A number of species have shown serious depletion. In North Vietnam, production of the three Clupeidae: *Hilsa reveesi* (Fivespotted herring), *Clupanodonthrissa* and *Clupanodon punctatus*, have dropped from 500-1000 ton/year to 10-20 ton/yr. Non-fish products such as lobsters (*Panulirus*), Abalone (*Haliotis*), Scallop (*Chlamys*) and squid (*Loligo*) have shown marked decline in production.

6. SOME SUGGESTIONS AND DIRECTIONS

To rationally utilise the potential of the environment for sustainable fishery development we could make the following recommendations:

- 6.1 - To ensure effective management of aquatic resources and their habitats, brackishwater, coastal water and maritime habitats.
- To maintain and enhance sustainable nature habitats to ensure optimal big-productivity of the aquatic environments of fish and other aquatic species.
- To rehabilitate habitat and living aquatic resources which are damaged or depleted.
- To establish an effective management regime for each exploited population of living aquatic resources in harmony with protection of their habitats to ensure they can be harvested in a sustainable manner in perpetuity.

6.2 To improve and to renew mechanical policy:

To make the suitable condition for developing of economic components. To continue carry out on economic policy with polycomponent in the fisheries section. To encourage on production and circulation making the jobs for fisheries labour forces.

6.3 Establishment of Marine protected areas system

There is until now no protected area in the Vietnamese sea waters. While the fisheries resource protection department keeps track on overall fisheries production at provincial levels, it would be more effective if scientists are also actively involved in fisheries monitoring, focusing on certain heavily exploited or declining species and sensitive areas where fisheries are prone to negative impact from overexploitation or environmental degradation.

6.4 Revision of fisheries laws and regulations

The present fisheries ordinance is being revised by a local fisheries expert as requested by the Government and should be finished as soon as possible. Some obvious deficiencies have been identified such as the lack of articles limiting bottom trawling in coastal water of depths less than 30m and control on the collection of juvenile individuals (lobsters, groupers) for marine culture to supply foreign markets.

6.5 Priorities for dealing with environmental problems:

- Prohibition of the use of destructive fishing methods is important for the conservation of fishery resources.

In order to maintain and develop marine shrimp resources, it is necessary to limit the fishing effort on small shrimp and fry with barrier, drift nets in the estuaries and sea waters within 10 km of the coast; with an aim to minimise the small shrimp killed.

- To control water pollution, there is need for early completion of regulations for the prevention of pollution, which is regarded as a potentially serious threat to coastal waters.
 - There is a needed to prepare an integrated strategy for the protection of environment in Vietnam. This strategy should be based on a clear understanding of the causes of pollution on fisheries.
- 6.6 To develop a programme of close co-operation with other countries in the region for environmental protection. In countries adjacent to the Eastern Sea, close co-operation will be necessary to preserve the aquatic environment and marine resources.

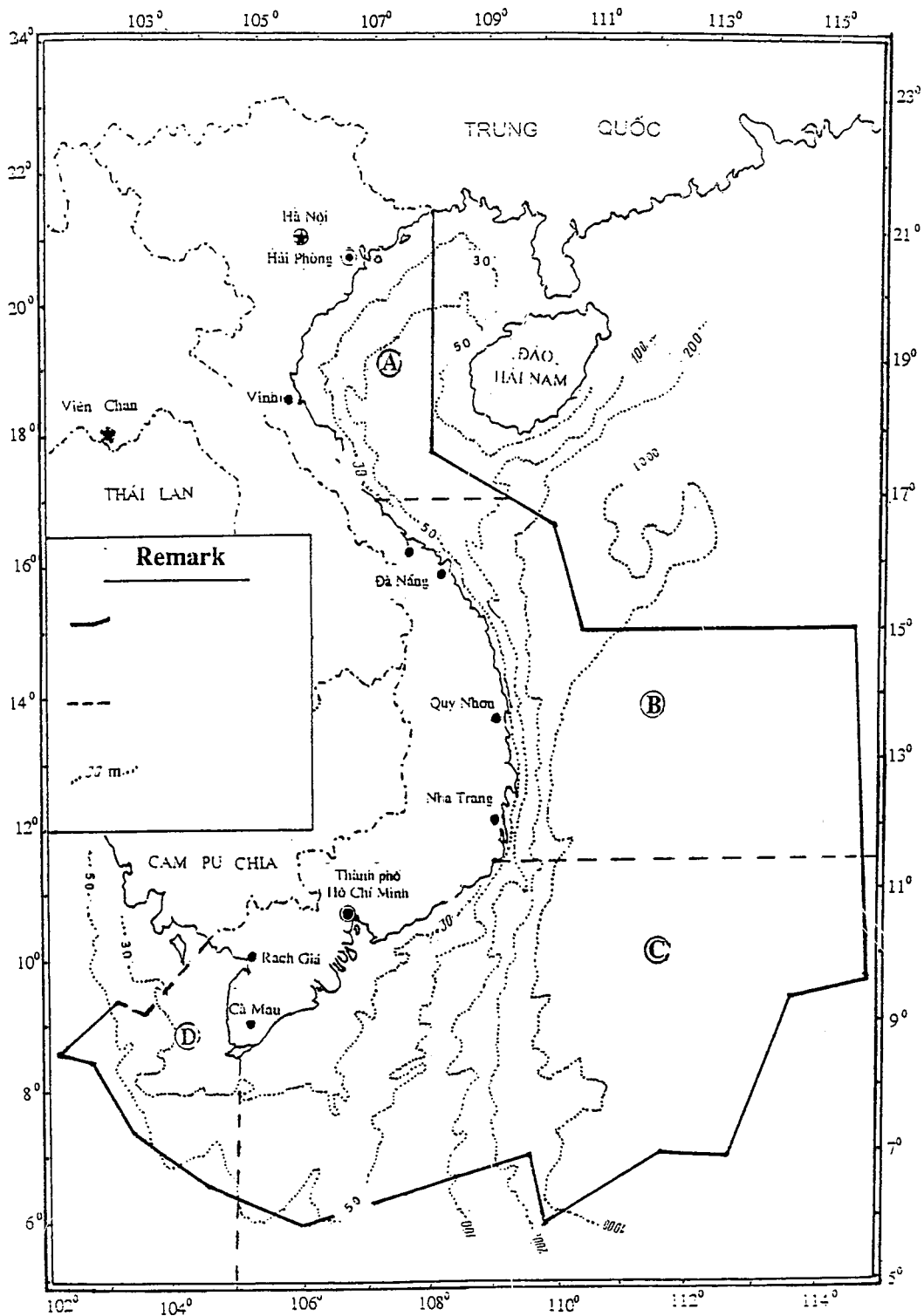


Figure 1. Fisheries exploitation by regions in Vietnam sea waters

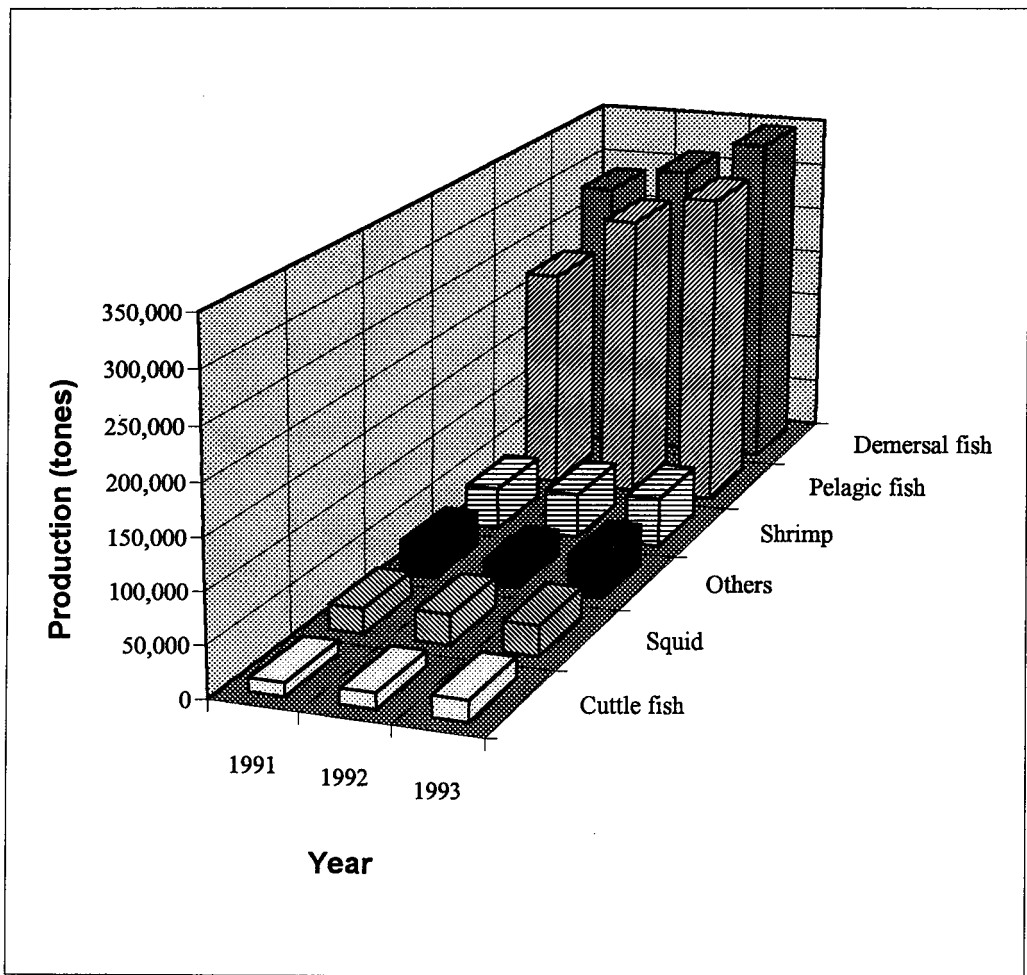


Figure 2. Groups of species fisheries production 1991-1993
 Source: Fisheries Economics and Planning Institute 1994

Figure 3. Fisheries Production in Vietnam

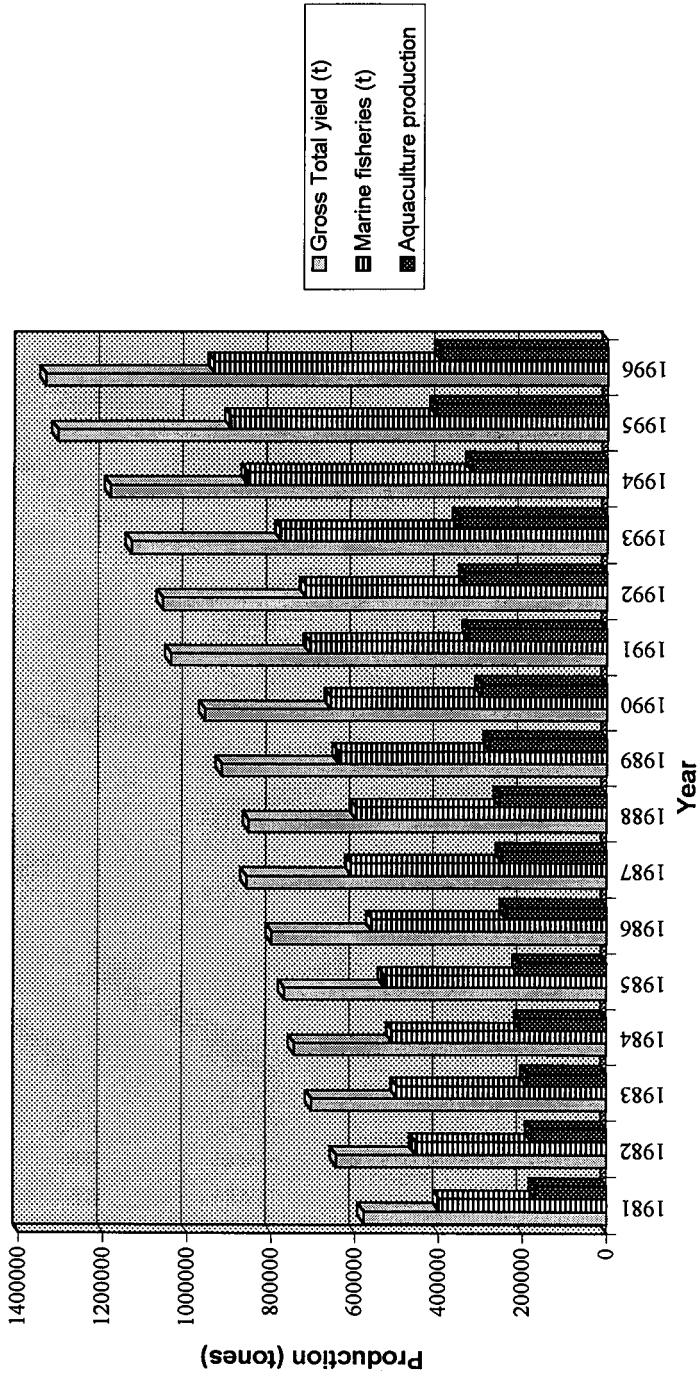
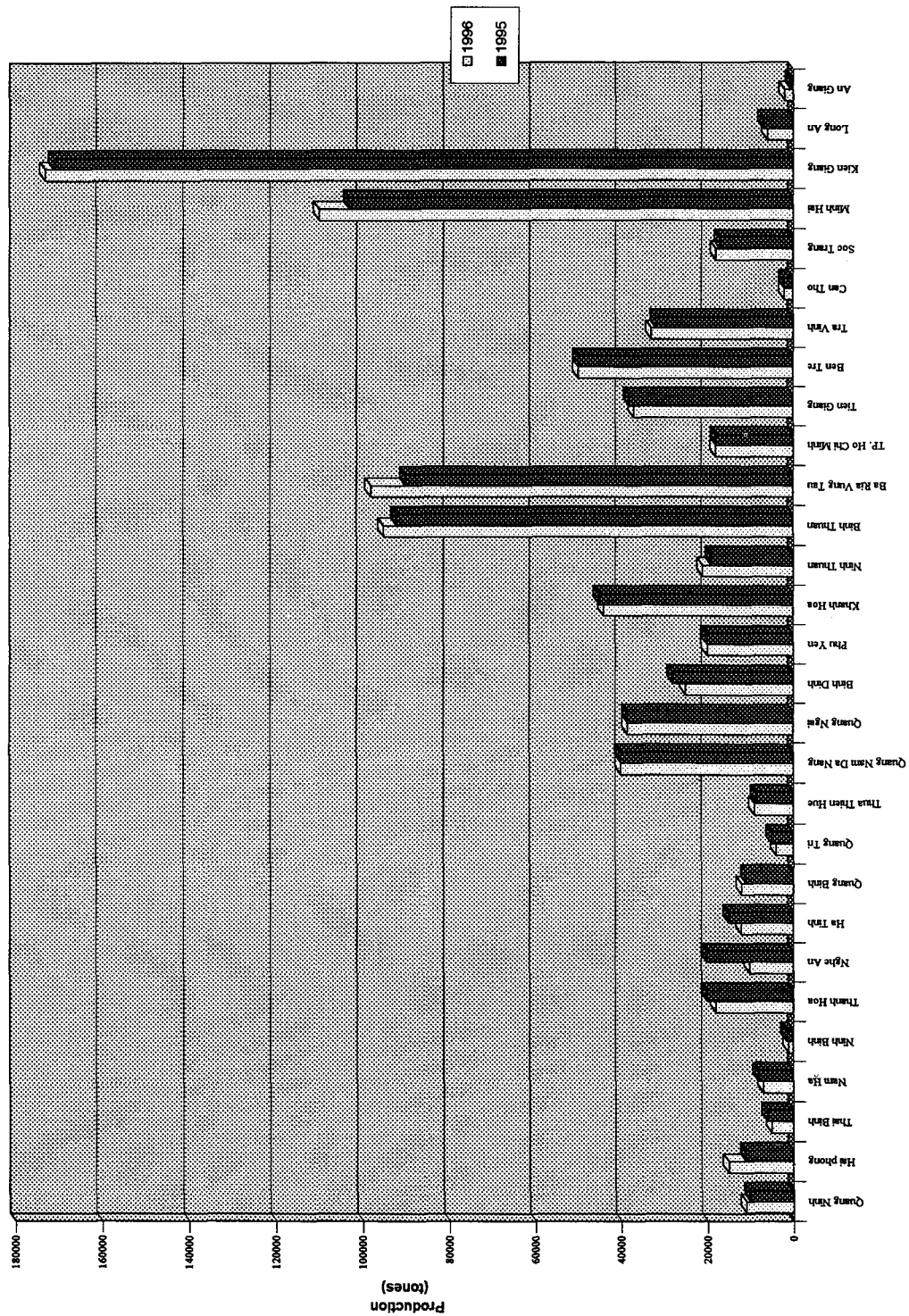


Figure 4. Provincial Marine Fisheries Production 1995-1996



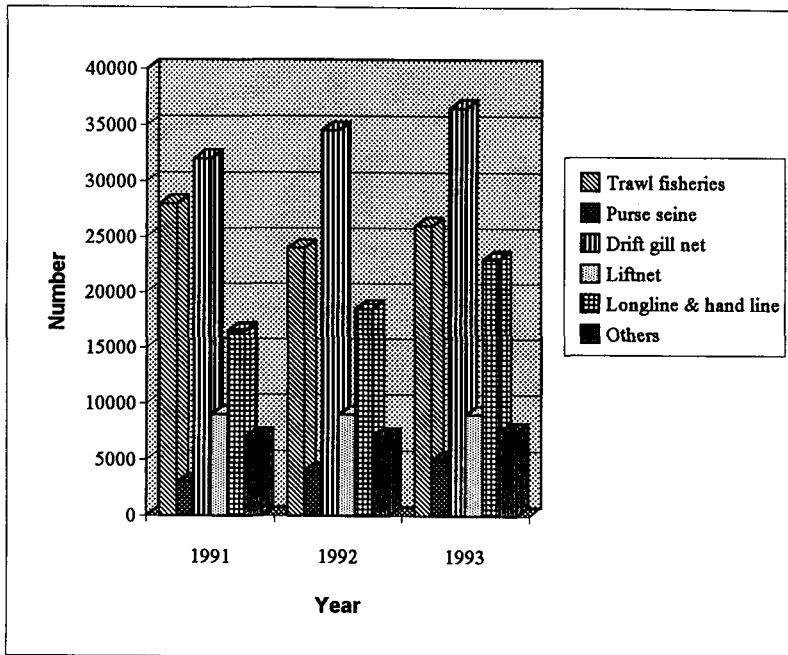


Figure 5. The Variation of Major Fishing Gears in Vietnam 1991-1993
 Source: Fisheries Economics and Planning Institute 1994

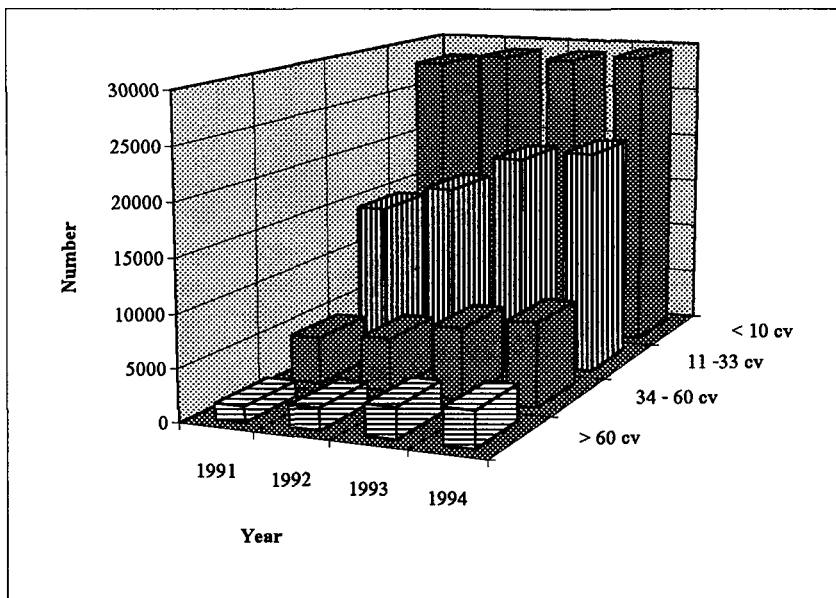


Figure 6. Motorized fishing boats of coastal zone provinces in Vietnam 1991-1994
 Source: Fisheries Economics and Planning Institute 1994