FISHERY COUNTRY PROFILE	Food and Agriculture Organization of the United Nations	FID/CP/VIE
PROFIL DE LA PÊCHE PAR PAYS	Organisation des Nations Unies pour l'alimentation et l'agriculture	May 2005
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THE SOCIALIST REPUBLIC OF VIET NAM

GENERAL GEOGRAPHIC AND ECONOMIC DATA

Area [1] :	329 560 km^2
Water area (inland) [1] :	4 200 km^2
Shelf area [2] :	Approx 700 000 km^2
Length of continental coastline (excludes islands) [1] :	3 444 km
Population (July 2004, est.) [1] :	82 689 518
Population growth (2004) [1]	1.3%
GDP at purchaser's value (2003) [1] :	203.7 billion US$

GDP (ppp) per head (2002) [3] (2003) [1] :	435 (2 500) US$
Agricultural % of GDP (2003) [3] :	21%

Fisheries GDP (2003):	4%

FISHERIES DATA

Date	Production	Import	Export	Total supply	Per capita supply
	'000 tonnes (live weight)				Kg/year
Fish for direct human consumption	1 434 (2002)	21	482	973	[4] 19.4 (2001)
Fish for animal feed and other purposes	990 (MOFI, 25% of total=634)	54	8	1 036	

Estimated employment (2002) [6] **:**	
(i) Primary sector (including aquaculture):	553 900
(ii) Secondary sector (2001) [5] :	3.4 million
Gross value of fisheries output (2003) [6] :	1.7 billion US$
Trade (2003):	
Value of fisheries imports:	52.1 million US$
Value of fisheries exports:	2.24 billion US$ (2.35 billion in 2004, estimated in January 2005)

FISHERY SECTOR STRUCTURE

Overall fishery sector

The fisheries sector in Vietnam can be divided in three main sub-sectors; the marine, the inland and the aquaculture sub-sector. The recreational fisheries sector is still not

developed except from the production of ornamental fish.

Marine fisheries are the biggest contributor to the fisheries production, followed by aquaculture.

Vietnam mainly exports seafood products though the rise in income and the demand for new and luxurious products does increase the imports. In 2001, Vietnam imported sea products, mainly salmon, crab meat, and caviar from Norway, France, the U.S. and other countries.

Marine sub-sector

Catch profile

Viet Nam has a coastline of 3 260 km that crosses 13 latitudes, from 8°23'N to 21°39'N. There are four main fishing areas: Gulf of Tonkin, shared with China; Central Vietnam; South-eastern Vietnam; and South-western Vietnam (part of Gulf of Thailand), shared with Cambodia and Thailand. Marine catches are highest in Central and Southeast Vietnam. The Mekong river delta provides over 75% of the total marine landings and therefore most of the fishing industry is concentrated in the southern provinces, from Khanh Hoa to Ca Mau.

Apart from these geographical zones the fishing areas can be divided in inshore-coastal fishery and offshore fishery. Inshore waters are considered the waters of less than 30 m deep in the Tonkin Gulf and the South and less than 50 m deep in the centre of Vietnam.

According to recent evaluation, the marine fishery resources potential has been estimated at 4.2 million tonnes of which the annual allowable catch is 1.7 million tonnes, including 850 000 tonnes of demersal fish; 700 000 tonnes of small pelagics; and 120 000 tonnes of oceanographic pelagic fish.

At the present time, big foreign boats often penetrate into Vietnamese seawaters fishing illegally. Those boats often have length of more than 25 m, engine of more than 200 hp, specially >400 hp in case of trawlers. According to unofficial statistics from Coast guard stations, there are 300-500 calls of foreign boats fishing illegally in Vietnamese seawaters every year. They are active off shore at day time and near shore at night time. The quantity of marine catches taken by foreign fishing boats are not small (estimated of about 100 000 tonnes/year).

[7]

Detailed catch data are not available .

LANDING SITES

There are over 80 landing places for mechanized boats. However, few are fully suitable for large-scale offshore fishery use. The bulk landings end up in local town and village markets, but high-value species are sold to professional dealers and factories. Some ports have basic facilities such as ice, water and fuel supply. Most ports serve larger offshore vessels with smaller vessels continuing to use traditional landing sites that generally have no support services. Ice supplies are now generally sufficient to meet the industry's needs, though all plants produce blocks which are less effective at fish cooling than the flake ice now used in more advanced fisheries. Processing plants have been established in several ports. In most ports, small- and medium-scale businesses have been established within the port area, providing a range of services supporting the fishing industry.

In Table 1 the main fishing ports in the provinces of Vietnam are mentioned as well as the length of the port and the biggest size of vessel entering the port. Figure 1 shows the map of the main landing ports in Vietnam.

Data on the landing quantities in each port are not available as there is no monitoring system for that at the moment.

Table 1. Ports per province, length of port and biggest size of vessel entering the port

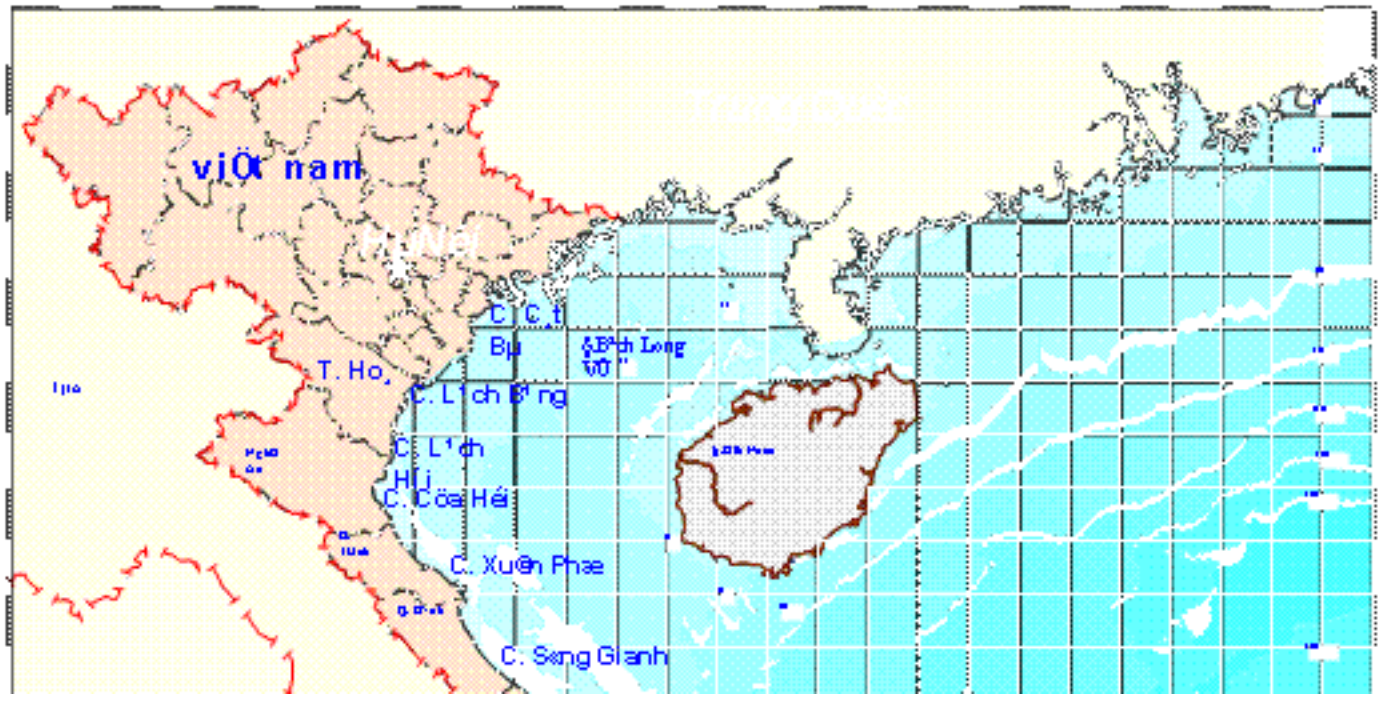
No	Provinces	Port Name	Length of port (m)	Biggest size of vessel coming (hp)
1	Haiphong	1. Cat Ba 2. XN. Ha Long	155 200	
2	Nam Dinh	3. Nam Dinh	200	
3	Thanh Hoa	4. Lach Bang 5. Lach Hoi	105 150	400
4	Nghe An	6. Cua Hoi	100	400
5	Ha Tinh	7. Xuan Pho	110	400
6	Quang Binh	8. Song Gianh	250	400
7	Quang Tri	9. Con Co	175	135
8	Da Nang	10. Thuan Phuoc	130	400
9	Khanh Hoa	11. Cu Lao Xanh	125	
10	Ninh Thuan	12. Dong Hai 13. Ninh Cu 14. Ca Na	267 200 200	
11	Binh Thuan	15. Phan Thiet 16. Phu Quy	422 140	
12	Ba Ria - Vung Tau	17. Cat Lo 18. Ben Dam 19. Loc An	290 336 200	

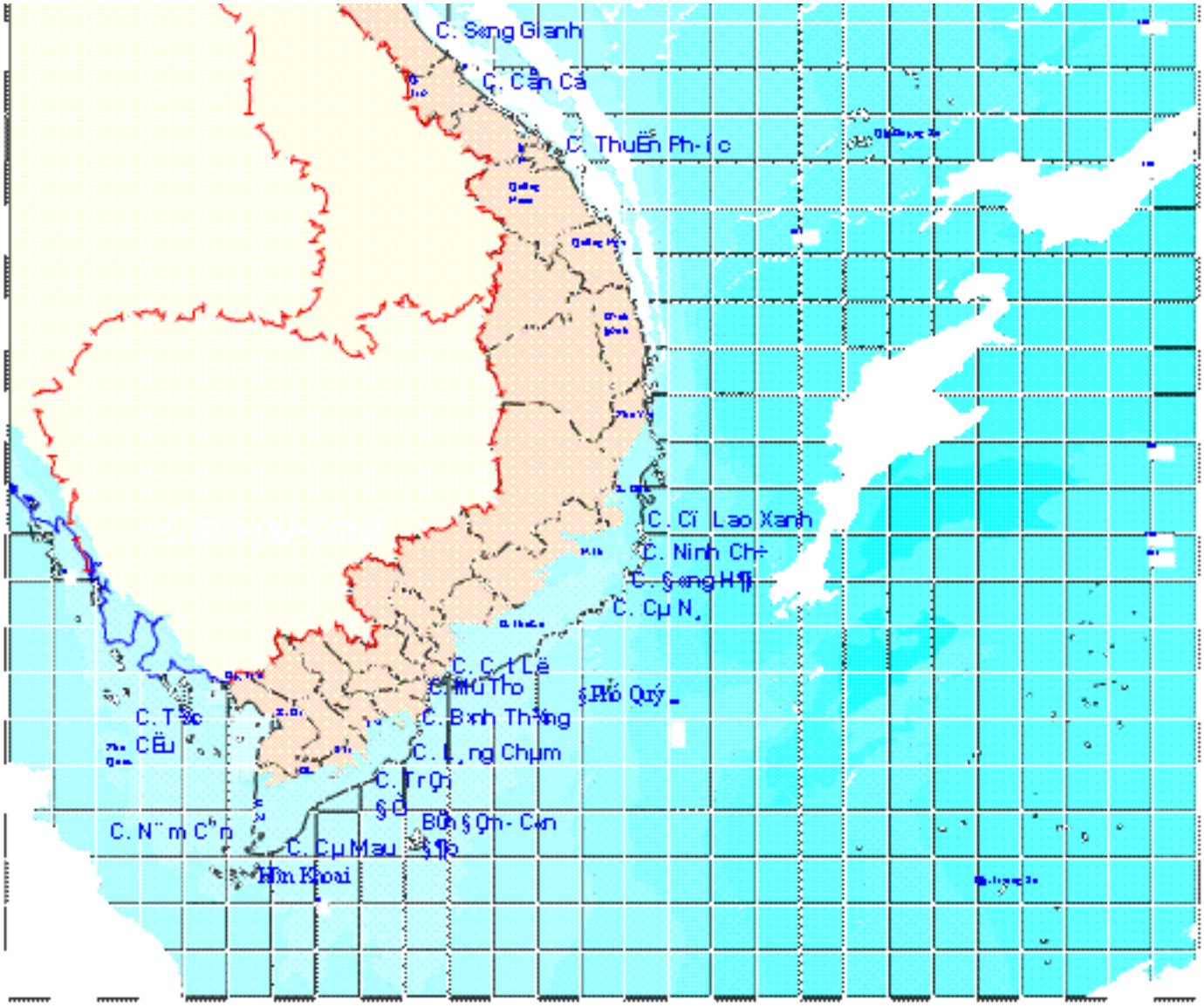
13	Tien Giang	20. My Tho	195	
14	Ben Tre	21. Binh Thang	180	

15	Tra Vinh	22. Dai An 23. Lang Cham	150 160	
16	Soc Trang	24. Tran De	370	
17	Bac Lieu	25. Ganh Hao	100	

18	Ca Mau	26. Ca Mau 27. Nam Can	300 300	
19	Kien Giang	28. Tac Cau 29. Nam Du 30. An Thoi 31. Tho Chu	500 130 135 188	

Figure 1. A map of the main ports in Vietnam. Source: RIMF





FISHING PRODUCTION MEANS

In recent years, the number of fishing boats has increased considerably in Vietnam. The Vietnamese capture fishing industry had a total of 81 000 motorized fishing vessels with a total capacity of 4 038 000 hp (2003).

Inshore Fisheries

There is an ancient tradition for both collecting and capturing fish direct from the beach or in shallow mangroves, estuaries, lagoons and river deltas, helped by the influence of tidal water. A variety of simple, as well as sophisticated, fishing gear is used for capture of all kinds of fish and shellfish species. This provides a substantial amount of protein to the coastal population. Due to the increase in human population, there is an enormous pressure on these resources.

Inshore fishery (up to 4-5 nm from the coast) depends on a fleet of about 28 000 non-mechanized canoes and boats and approximately 45 000 smaller mechanized boats with attached long-tailer or stationary 1-cylinder diesel engines up to approximately 20 hp, mainly of Chinese and Japanese make. All these vessels operate directly from the beach

without using harbour facilities. The most popular fishing gears are gillnet, longline, lift-net, push net and traps.

Offshore

In the shallow-water offshore fisheries, it is mostly small trawlers that are used, but also deploying many other types of fishing gear, such as purse seines, longlines and various traps. The offshore fisheries supply about 90% of the commercial landings, but less than 60% of estimated marine capture landings. The total fleet consists of approximately 20 000 vessels, almost all of them made of wood. Total engine power is approximately 1 000 000 hp, an average of 50 hp per boat. Most vessels are equipped with second hand truck engines. Among these, 6 675 vessels were fitted with engines of 90 hp or above, with a total capacity of 1 000 000 hp (on average 166.5 hp/unit). These form the offshore fleet. Only about 100 vessels (400-500 hp) have the capacity for deep-sea fishing. This fleet comprises either trawlers or purse seiners. Trawlers are used in waters 35-80 m deep in south-eastern waters, whereas purse seiners fish pelagic species in deep waters, mainly off the central region.

The estimated percentage of the total catch from major types of fishing gear are; trawling 30%, purse seine 26%, gillnet 18%, lift net 5%, long line 6% and others (fixed net, push net etc.) 15%. Among the main trawling (both pair and single) predominates in the south with around 40% of vessels. Drift gillnetting is more important in the north, while fixed nets are concentrated in provinces with substantial estuaries (e.g. Tra Vinh and TT Hue). It is notable that in Tam Giang lagoon in TT Hue, DOFI and the provincial government are making strong efforts to reduce both set netting and trapping, both of which are environmentally damaging [6].

MAIN RESOURCES

There are more than 2 000 species of fish, of which 130 are of commercial importance, 1 600 species of crustacean, 2 500 species of shellfish, and a lot of seaweeds. The most important commercial species groups are shrimp, tuna, squid sea bream, snappers, groupers and small pelagics. An over view of main species in the marine catches is given in Table 2 below.

Table 2. Main fishing grounds and species caught in Vietnam

Fishing grounds	Location	Depth (m)	Main species
Bach Long Vi	19 30-20 30N 107-108 30E	50	Long spine, sea bream, round scad, lizard fish, threadfin bream
South Long Chau		25-30	*Sardinella gibbosa*
North Hon Me	18 35-19 35N 106 30-107 30E	22-28	Anchovy, *Sardinella gibbosa*
Tonkin Gulf Mouth	18 35-19 35N 106 30-107 30E	30-47	Round scad, sardinella, rainbow sardine

Hon Gio	16 30-17 30N 107-108 E		Threadfin, threadfin bream, toothless travally, grey bream, lizard fish
E-N Da Nang	16-16 50N 108-110E	100-300	lizard fish, bigeye, threadfin bream, yellow bream
E-S Quy Nhon	13 10-13 30N 109 10-109 40E	50-200	Bigeye tuna, lizardfish, threadfin bream, croaker
E Phan Thiet	10 30-11 30N 109-109 50E	<50	Lizardfish, bigeye, scad
S Phu Quy (Cu Lao Thu)		50-200	Brushtooth lizardfish, bigeye, threadfin
Con Son	8 30-9 30N 106-107E	25-40	Round scad, snappers, yellow-stripe trevally, threadfin bream, threadfin lizardfish
Mekong Mouth	9-9 30N	10-22	Threadfin, sardinella, toothless trevally, croaker, snappers
Mekong	9-9 50N	10-15	yellow-stripe trevally, snappers, thrapon, ponyfish, threadfin bream
SW Phu Quoc	9 20-10N 103 40-104 20E	10-30	yellow-stripe trevally, snappers, thrapon, ponyfish, threadfin bream

Source: World Bank - Fisheries Sector Report Vietnam, 2004.

Live reef fishing is also a significant sector, but few data are available on production, either of aquarium fish or of live reef fish for the Chinese market. The main species targeted include groupers, snappers and lobster, either wild caught, or wild caught and grown in cages. Main production areas include northern and central region (Khanh Hoa and Phu Yen). In the North, the main collection and trade areas are located in Quang Ninh and Hai Phong. In Quang Ninh Province, four areas, Coto Island, Thuong Mai Island, Ha Mai Island and Halong City are deeply involved in the trade. In Hai Phong province, Cat Ba Island and Bach Long Vi, both proposed marine protected areas, are the major collection centers. Most reef fish are exported live, often unofficially through transfer to Chinese vessels at sea, at Co To Island, Cat Ba port and other locations [8].

Trash Fish

A number of the fishing gears used in Vietnam result in high catches of trash fish. Trawlers

(single and pair) typically land between 50 and 70 percent of non-table species of fish, which are used (i) for direct feeding to fish or livestock; (ii) in the manufacture of fish sauce or fish meal or (iii) for conversion into fish sauce. Trash fish landings are estimated at 33 percent of total marine fish landings. Southeast region accounted for two thirds of production. Southern fisheries had the highest proportion of trash fish (averaging around 60% of the catch), compared to 5% in central, and 14% in northern regions. Quality is often poor, since salt is usually used for preservation as opposed to ice.

There are over 100 species of marine "trash fish" that are used as an aquaculture feed or aquaculture feed ingredient in Vietnam. Fish comprise the greatest amount but trash fish includes small molluscs, crustaceans and echinoids. The composition of trash fish will also vary depending on the type of gear set to fish but most is from trawling, hence one of the common names in Vietnamese for trash fish, "trawling fish". Composition also varies by area or region. The major trash fish species by area are anchovy (*Stolephorus* spp.) in the centre and southwest, lizard fish (*Saurida* spp.) in the north, centre and southeast and pony fish (*Leistognathus* spp.) in the centre and southwest. The relative abundance of trash fish is also highly seasonal. Trash fish, therefore, comprises mainly demersal species but pelagics may be used when fish landings exceed local marketing or fish processing capacity. Spoiled higher value species may also be used as trash fish. In general there is no special fishery for trash fish. Trash fish is therefore a by-product of fishing for higher value fish, crustaceans and mollusks. The single exception was a report on the recent establishment of a fishing fleet at Cat Lo near Vung Tau in southeast Vietnam, where trash fish is the main target as it is more economic than fishing for larger species.

MANAGEMENT APPLIED TO MAIN FISHERIES

In 2004 the Ministry of Fisheries and FAO worked on a national strategy for marine fisheries management and development 2005-2015. Hopefully this strategy will be approved in 2005.

The offshore fisheries have been strongly promoted by the government. According to a recent report published by the Institute for Aquaculture, marine harvest output is 1.8 times higher than the regulatory level.

In order to reach the target of increasing offshore fishery production, a program of investing offshore fishing vessels have been implemented since 1997. However, the efficiency of the program is limited due to some reasons such as lack of suitable fishing technologies, unidentified fishing grounds, lack of skilled labour forces, difficulties in fish consumption, inadequacy of services for the vessels operated in offshore areas.

- description of measures and institutional arrangementsapplied to manage the system. Management measures may be classified under the following categories: Technical measures: closed season; closed areas (including marine parks); mesh size control;
- There are no closed seasons in Vietnam, but there are closed areas. The government proposed to establish 15 marine protected areas of which 3 have already been funded and are under implementation; Hon Mun, Cu Lao Cham and Con Dao. The aim is to conserve 2% of the sea area of the country by 2010. However, even for their existence, the government has not issued any regulations (VASEP 2004).

Minimum mesh size in marine fishing gear are set for 5 species specifically; sardine,

anchovy, mackerel, shrimp, and lobster. Also an increase in engine power increases the minimum mesh size (Table 3).

Table 3 .Type of fishing gear and minimum mesh size

No	Type of fishing gear	Minimum mesh size (mm)
1	Sardine gillnet	28
2	Mackerel gillnet	90
4	Shrimp trammel net	44
	Shrimp gillnet	44
5	Lobster gillnet	120
6	Anchovy seine net; Anchovy Surrounding net	10
8	Fish trawl	
	- For vessel having engine <60 cv	28
	- For vessel having engine from 60 to 150 Hp	34
	- For vessel having engine >150 Hp	40
9	Shrimp trawl:	
	- For vessel having engine <33 Hp	20
	- For vessel having engine >33 Hp	30
10	Stationary net	20

Source: Ministry of Fisheries

Input controls

Input controls are limited to a modest number of gear size and type restrictions, but are seldom enforced due to budgetary constraints. Fishing licenses are imposed, but many fishermen appear to ignore them. Licenses are granted on the basis of submitting a number of supporting documents such as vessel inspection and registration papers. A small license fee, proportional to engine size is levied. The marine capture fisheries are open access, e.g. a license application generally leads to a license being issued.

Output controls

The total allowable catch (TAC) is set for five different areas; Tonkin Gulf, Central Region, South-eastern Vietnam, South-western Vietnam, Sea Mouth and the total Sea Area. The total estimated fish stocks are 4.18 million tonnes and the TAC is 1.67 million tonnes (Table 4).

Table 4 .Fish stock and TAC per region and per class of fish

	Fish stock '000 tonnes	TAC '000 tonnes
Tonkin Gulf	681.2	272.5
Central Region	606.4	242.6
South Eastern	2 075.9	830.5
South Western	506.7	202.3
Sea Mouth	10.0	2.5
Total Sea Area	300.0	120.0
	4 180.2	1 670.4
Small pelagic	1 730.0	694.1
Demersal <50 m	597.6	239.2
Demersal >50 m	1 542.6	617.1
Deep sea pelagic	300.0	120.0
Total	4 180.2	1 670.4

Source: Fistenet based on RIMF 1997 estimates

There is in fact no quota system in Vietnamas there is free access to the aquatic resources.

Economic incentives

Since 1998 the Vietnamese government has a policy to give preferential loans to offshore fishermen to upgrade their vessels to 90 hp and install modern equipment and efficient fishing gear (worth 65 million US$). The government also invested in harbour infrastructure. Private businesses (including foreign-invested businesses) exploiting the offshore fisheries are given reduced tax reductions during the first 3 years of business (VASEP).

FISHERMEN COMMUNITIES

Most of the fishermen communities are poor. Fishing and aquaculture contributes an average 75% to the fisher household income. Those in the South Central Coast are particularly dependent on marine fishing. Households commonly lack access to formal credit and other fishery support services, such as high quality seed and fingerlings, professional extension, disease control and market information. As opportunities of other sources of income are quite limited, labor migration to other areas is common, including work on foreign fishing fleets, including Korean, Japanese and Taiwanese. The development of the seafood processing industry is attracting many people, mainly women (85%), to come and work in the city.

There are some initial forms of association among households, e.g., credit group and cooperative groups, which associated about 21 000 fishers in 4 300 cooperative groups in 2 000 and has subsequently grown significantly.

Inland sub-sector

The total area of natural inland water bodies (lakes and rivers) is estimated to be about 4 200 km^2, and ponds and seasonal flooded areas are an additional 6 000 km^2. The total area is still increasing by the construction of new dams and reservoirs.

In the past, freshwater capture fisheries were important for the economy in many regions. During the 1970s there were more than 70 fishing cooperatives with annual production of several thousand tonnes. However, overexploitation led to a reduction in the resource and the end of operation for most cooperatives with fishers converting to other activities. Inland (river, lake, dam and rice field) fisheries remain important for rural dwellers in many inland areas. The main data source for inland data is the GSO statistics that suggest a peak of 244 000 tonnes in 2001, declining to 209 000 tonnes in 2003, probably due to drought. Inland capture fishery landings include culture-based-capture, through the stocking of lakes, dams and other inland waters, mainly with carp and tilapia. However, the FAO fish consumption survey (Lem 2002) identified freshwater fish consumption averaging 14 kg/person or 1.1 million tonnes. The difference is likely to be due to inclusion of aquaculture products in the FAO survey and likely underestimation by the GSO, a feature common to most inland fisheries statistics of the Mekong region (FAO/MRC 2003). Vietnam's rivers are generally quite productive. The Mekong River for example provides more than 30 000 tonnes of fish annually, landed by around 48 000 fishers in 250 communes (MOFI Master Plan). However, the Red River delta in the north, which was once highly productive, is now almost devoid of fish, due to extensive flood control and the closure of flood plain fish breeding and nursery areas.

[1]Aquaculture sub-sector

The aquaculture sector can be divided in marine, brackish and freshwater aquaculture. The total aquaculture area in 2003 was 902 229 hectares; 575 137 hectares (63.7%) for marine and brackish water and 327 092 hectares (36.3%) of freshwater aquaculture. The major aquaculture species are listed in Table5.

Table 5. Major aquaculture species in Vietnam

Scientific name	English name	Vietnamese name	Current production t (2002)	Future production t (by 2010)

Pangasius bocourti	Basa catfish	Ca Ba sa	+++	++++
Pangasius hypophthalmus	Tra catfish	Ca Tra	+++++	+++++
Piaractus brachypomus	Pirapitinga	Ca Chim trang	+	++
Oreochromis spp.	Tilapia	Ca Ro phi	++	++++
Cyprinus carpio	Common carp	Ca Chep	++	++++
Clarias spp.	Walking catfish	Ca Tre	++	++++
Macrobrachium rosenbergii	Giant freshwater prawn	Tom cang xanh	++	++++
Penaeidae	Penaeid shrimp	Tom he	+++++	+++++
Panulirus ornatus	Spiny lobster	Tom hum	++	+++
Scylla serrata	Mud crab	Cua Xanh	++	+++
Epinephelus spp.	Grouper	Ca Mu	++	++++
Rachyentron canadum	Cobia	Ca Bop/Gio	+	+++
Lutjanus spp.	Snapper	Ca Hong	+	+++
Pacrosomus major	Red sea bream	Ca Trap	+	+++
Lutjanus spp.	Asian seabass, barramundi	Ca Vuoc / Chem	+	+++
Chanos chanos	Milk fish	Ca Mang bien	+	+++

+ < 1000 t

++ 1000-10 000 t

+++ 10 000-50 000 t

++++ 50 000-100 000 t

+++++ > 100 000 t

Source: Ministry of Fisheries

Marine aquaculture

In comparison with other countries in the region, sea fish farming is still not much developed in Vietnam. However fisheries based aquaculture, which is based on catching young wild fish (mostly by hook and line) and raising it in cages to commercial size, is more and more practised. One of the difficulties of farming sea fish species is the problem

of reproduction. Unlike fresh water species, the artificial reproduction techniques for sea fish are still not well developed. Methods of marine aquaculture include cage farming of groupers and cobia, float-raising of lobsters, oyster raising for pearl, marine fish raising in ponds and mollusc raising. In 1995 there where 600 cages throughout the country, in 2003, the total number was 40 159 (excluding cages for oyster raising).

Brackish aquaculture

Vietnam has huge potential of coastal aquaculture with shrimp culture being dominant. The farming system of brackish water culture can be divided into traditional extensive, improved extensive, semi-intensive and intensive culture. The cultured species are; shrimp, mud crab, bivalve and artemia. Brackish-water shrimp (*Penaeus* species) is the main species raised along the coast. The total area used for brackish-water shrimp culture in 2003 was 546 757 hectares, an increase of 14.2% compared to 2002.

The coastal provinces in south of Vietnam are producing most of the shrimp using 476 582 ha (87%) followed by 41 372 ha (8%) in the Northern provinces and 28 803 ha (5%) in central Vietnam.

Improved extensive farming and semi-intensive farming are the most common cultivation methods. Aquaculture productivity based on extensive farming is on average 300 kg/ha and productivity based on semi-intensive farming 1 500-2 000 kg/ha. At present the area used for intensive and semi-intensive farming accounts for 10% of the aquaculture area. The total production of brackish-water shrimp in 2003 was more than 200 000 tonnes. In some provinces, the productivity of intensive shrimp farming has reached 5-7 t/ha/crop. In northern Vietnam usually only one crop per year can be harvested while in the south this is generally two crops per year.

The enormous increase of the brackish-water aquaculture has some negative impacts as the silting of the inland area as the aquaculture areas are up to 10 km inland and the reduction of the mangrove area.

Freshwater aquaculture

Freshwater production environments include ponds, ditches, cages, net enclosures and pens in reservoirs, lakes, rivers and channels, and paddy fields. In the North, pond poly culture is the most important farming system and commonly stocked with Chinese carps (silver carp, grass carp and bighead). The main freshwater aquaculture production takes place in the south of Vietnam, especially the cage culture in the Mekong and Bassac rivers. Cage culture of catfish 'Basa', 'Tra', common carp, Indian major carps (rohu, mrigal) and snakehead are mainly carried out in the bordering to Cambodia. The culture of prawn by monoculture system in rice fields is extensively practiced in the Mekong Delta.

In recent years, red tilapia is cultured in ponds by using intensive monoculture system while giant prawn is cultured in ponds and ditches using a semi-intensive system. In addition, an integrated VAC system (V: garden, A: fish pond, C: livestock) is also common in the country.

The last five years the catfish production has increased enormously from 20 000 tonnes in 1999 (Cacot 1999a) to 200 000 tonnes in 2003, which was 17.4% of the total aquaculture production of Vietnam.

The production in the coming years is expected to grow even more as the Ministry of Fisheries recommends farmers in the Mekong River Delta to focus on raising catfish. The government stimulates this development by supplying free extension to the farmers and it

has established state owned hatcheries to meet the demand of fingerlings.

Together with the program of capital loan for offshore fishing fleet investment, the Government also approved the "Aquaculture development program 1999-2000". The objectives of this program are to develop aquaculture to assure food security and create material sources mainly for export. This strives for a total aquaculture production of more than 2 000 000 tonnes and exporting value of more than 2 500 000 000 US$ in the year 2010, and creating jobs and income for about two million people.

Economical incentives

To facilitate the implementation of the program, the Government has put forward the following policies:

- To allot or rent lands, water surface areas, gulfs, lagoons, water reservoirs to economic components to use for sustainable and long-term aquaculture. To allow the conversion of fields affected by marine waters, low-lying fields, salt field and low efficient rice growing, into aquaculture areas.
- The Government encourages investment to aquaculture, to develop culturing shrimp, marine fish with high commercial value for export, freshwater aquaculture, and puts forward policies allowing poor farmers loan money in State-owned banks with low interest and without pledge.
- Use the state capital to invest for scientific research, building centres for aquatic seed production, human capacity building, establishing stations for environment monitoring and forecast, fishery extension activities, aquatic feed production and medicine for aquatic animals.
- Economic components taking part in this program will receive tax concessions.

Recreational sub-sector

There are so far known, no real recreational activities in fishing except for the culture of ornamental fish. Ornamental fish is a growing business for both the domestic and the international markets. Vietnam is exporting both marine and freshwater ornamental fish. HCM City has identified the ornamental fish trade as a field that will be at the forefront of the local fisheries industry in the near future. Export markets are expanding, especially to European countries and the US. The city has set a target to produce US$20 mil worth of ornamental fish by 2005 and the business has gained an annual growth of 10-15%. According to the Vietnam Association for Seafood Exporters and Producers (VASEP), ornamental fish breeding households earned around US$5 mil from exporting their products to France, Germany, the UK, Italy, the Netherlands, the US and Singapore. The city also imports certain ornamental fish from Singapore, Taiwan and Hong Kong.

POST HARVEST USE

Fish utilization

According to the Ministry of Fisheries, the percentage use of the marine finfish catch is as follows: 20% export, 20% fresh human consumption, 25% animal feed and fish meal (for

livestock and aquaculture) and 25% fish sauce , though this does not completely reflect in the production figures.

High value products will be stored properly. Middlemen sell them to export processing plants or export them directly to China and other countries. Products classified for the domestic market are usually transferred in frozen trucks to big cities as fresh food or to processing plants mainly for dried products.

About 40-50% of the total landings of trawl fishery, almost all trash fish, and low value products are used for processing fish sauce. Vietnam produces a total of 80 million litres a year and this expected to double by 2010.

There are in total 405 processors nation-wide. The percentage of value-added products of the total processed products is growing constantly from 23% in 2003 to 35% in 2004.

Fish markets

Domestic markets

The marketing of fish, shrimp and other capture and culture products in Vietnam is complex. There are numerous species, product forms, marketing channels and markets. Products may be marketed live by farmers or sold to middlemen who collect product and sell to processing plants (or in the case of shrimp fry or grouper fingerlings, to other producers). Marine fish are normally sold to agents at the port or jetty. Fishers often develop long-term relationships with market traders or wholesalers who provide them with credit for fuel, ice and other supplies, and can provide finance for off-season needs or even assist with vessel purchase. Offshore vessels, fish may be sold at sea to buyers on transport vessels or collector vessels run by their agents.

Where marine product processing plants are present, vessels may contract to supply them with product. Factories can seek product over a wide area. In the north, significant quantities of fish and other products are purchased by Chinese agents using collector vessels. Aquaculture products follow a similar path, though some producers contract directly with processing plants. Almost all processed aquaculture production (96%) is destined for export. Fish from aquaculture are often sold live in local or city markets.

International markets

Seafood is the third major export product of Vietnam after textile-garments and crude oil. In 2004 Vietnam exported fisheries products to 80 different countries and territories. The main export markets for fishery products are USA (35%), Japan (26%), China/Hong Kong (7%) and Europe (6%) (Table 6).

Table 6. Main export markets in terms of volume and value

Market	Volume (tonnes)	Value (million US$)
USA	122 162	777
Japan	97 953	582
Asia (Ex. Japan)	90 503	291
Europe	38 186	117

Others	132 259	431
Total	481 066	2 199

Source: Fisheries Information Centre (FICen) of Vietnam's Ministry of Fisheries, 2003

The main export products are shrimp, fish, squid, cuttlefish & octopus and dried sea fish products. Among export products, frozen shrimp is the highest earner, pulling 40% of the total revenue (Table 7).

Table 7. Main export products in terms of volume and value

Items	**Volume (tonnes)**	**Value (million US$)**
Frozen shrimp/prawn	124 780	1 057
Frozen finfish	132 271	406
Frozen Squids/Cuttlefish	21 462	68
Dried squid	9 903	57
Tuna	17 362	48
Frozen octopus	23 351	44
Dried fish	7 222	17
Dried krill	3 656	3.4
Live/Fresh fish	144	0.6
Lobster/Slipper	33	0.4
Dried shrimp	84.6	0.3
Others	141 799	497
Total	482 067	2 199

Source Fisheries Information Centre (FICen), 2003

FISHERY SECTOR PERFORMANCE

The fishery sector has been growing continuously since the late '80s. Viet Nam's fisheries production volume and value expanded by 7.7% and 11.2% respectively in 2002 and 2003, despites all difficulties facing this sector. It is expected that the fisheries production will score 3.3 million MT (including 1.94 million MT of capture and 1.36 million MT of aquaculture) and the export will amount to US$2.6 billion in 2005.

Concerns are rising in the inshore sector. Over the past decade, catches have halved in some regions, while the cost of fishing has doubled.

Economic role of fisheries in the national economy

The fisheries and aquaculture sectors are significant contributors to the economy of Vietnam, registering a 12 percent year-on-year rise from 1999-2003, making great contributions to the national poverty alleviation programme. Direct production value (at the farm gate or on the wharf) in 2003 was approximately US$1.7 or approaching 4% of GDP. Available data show that the relative contribution from aquaculture represented about 60% of the revenue generated while yielding fewer than 40% of the total catch from capture fisheries and aquaculture. Export earnings from fish, shrimp and other seafood products totalled about US$2.2 billion in 2003 of which 52% was shrimp. Both sectors have expanded rapidly over the past decade with marine fisheries production rising from 800 000 tonnes to 1.5 million tonnes over the period 1990 to 2003. Aquaculture production has increased rapidly to around one million tonnes, while inland fisheries contribute in excess of 200 000 tonnes [6].

The fisheries sector plays an important role in the national economy. Vietnamese fisheries have been growing considerably and have been promoted by the government, aiming hunger elimination and poverty reduction and at the same time increase people's income.

With a per caput consumption of 19.4 kg in 2003, the sector provides about half of the annual supply of animal protein in the national human diet. More than four million people are directly employed in the sector; nearly 10% of the population derives its main income from fisheries. With over 10% of the total export earnings, fisheries remains the third most important export-oriented sector, after the garment and the crude oil industry, and ahead of agricultural products such as rice and rubber.

Domestic seafood businesses have targeted local markets as a strategic outlet in coming years.

The household remains dominant in both capture fishing and aquaculture. In 2001, fisheries represented the main business of 4.3% of households and the primary employment of 5.1% of the national labor force (GSO, 2001). Levels were highest in South Central Coast (9.9% and 11.3%, respectively) and Mekong Delta (9.1% and 9.8%). Most fishers and aquaculturists are small-scale producers – 77% of households conducting aquaculture have under 0.1 ha of pond area and another 7% from 0.1-0.2 ha.

Demand

The demand for fish and fish products in Vietnam is high. People consume on average 19.4 kg per year, which is more than half of their animal protein intake.

Shrimp is the most favoured product with 60.9%, followed by squid, with 36.6%, and mackerel, 32%. However, consumers have a preference for fresh seafood rather than frozen products. As Vietnamese eat often out of home, restaurants are big demanders.

Domestic demand for aquatic products has grown rapidly in recent years in Vietnam. With

a population of over 80 mil, the home market remains very promising for seafood traders, who will initially focus on large urban areas, including Hanoi and HCM City.

Given the large potential to expand freshwater culture, it is expected that production will more or less keep pace with demand for the next few years, suggesting average real prices will remain reasonably stable. However, given the reported inelastic demand, substantial short-term fluctuations are likely.

Supply

Trade

In 2003, Vietnam exported products to 75 countries and territories. By far the largest importers of Viet Nam's sea products were USA, Japan, China (included Hong Kong), Korea, Taiwan and the EU. In 2003, Viet Nam exported to the USA 123 472 MT of sea-products, worth US$782 238 million, an increase of 25.1 percent in volume and 19.3 percent in value over 2002; to Japan 98 310 MT, valued at US$528 902 million, growing by 2.1 percent in volume and 8.4 percent in value compared with 2002 (VASEP).

There are presently over 330 processing plants in Vietnam, of which 100 are certified for exporting to Europe. Further investment in processing technology, programmes for improving food safety standards and the privatization of state enterprises are ongoing. It is likely that European markets will see a significant increase in imports of both Vietnamese shrimp and other seafood products in the near future. (VASEP, 2004)

So far 152 of 330 seafood-processing enterprises (45.8%) have met foodstuff hygiene and safety standards.

Frozen shrimp is still the country’s major export earner, gleaning 46% of export value. Vietnam is now the second largest exporter of shrimp to the US, after Indonesia. Frozen fish now also accounts for 19.6% of export value.

Vietnam does not import much fish, but the small quantities of imported product consist mainly of raw material for processing and re-export. Imports play also the role of cushioning seasonal variation in domestic aquaculture and capture fisheries.

Food security

On average, people in Vietnam get 50 percent of their dietary protein from different kinds of aquatic products. Domestic seafood consumption has steadily increased from 880 thousand mt in 1990 to 1.434 million mt in 2002 (VASEP).

Per capita consumption of fishery products in Vietnam increased from 13.2 kg in 1990 to 18.7 kg in 2000 and 19.4 kg in 2002 (Globefish 2004), but fish consumption per capita varies considerably throughout the country from claims of 60 kg/capita in Long An to 30 kg/capita in the Mekong Delta to 12 kg/capita in the North.

In the Mekong Delta, 83 percent of the low-income families catch fish in rice fields, canals and rivers.

Employment

A considerable labour force of around three million persons are employed in the fisheries sector in Vietnam or around 10% of the total population of Vietnam derives their main income direct or indirect from fisheries.

An estimate of 430 000 people is directly involved in capture fisheries of which 310 000 in coastal fisheries and 120 000 in the offshore fisheries. Around 670 000 people are involved

in aquaculture.

Each year around 26 000 people enter the Vietnamese capture fisheries sector. By promoting the aquaculture sector the government is trying to lower the fishery pressure on the coastal waters.

The considerable increase in aquaculture and more centralized fisheries processing has opened opportunities for women in aquaculture, processing and trading in these areas where most of the workers in the processing factories are women (85%).

Rural development

The increase in the population rate in fisheries communities is around 2.6-2.8%, much higher than the national average (1.3%), with an average fishery household of 6-7 people. High population densities in coastal areas and the high rates of population growth in fisheries communities have exacerbated the unemployment concerns for Vietnam.

In 2001 the Ministry of Fisheries prepared and approved the "Sustainable Aquaculture Poverty Alleviation (SAPA)". This policy provides the basis for implementation of more targeted intervention for poverty reduction in the fishery and aquaculture sector. Vietnam's Comprehensive Poverty Reduction and Growth strategy (CPRGS) of 2002 provides a valuable framework for further poverty reduction over the period to 2010 and beyond. Fisheries and aquaculture are seen as having a major role to play in the national poverty reduction programmes. The government aims among other things to give fisher folk more access to education, to improve the access of poor fishery households to production inputs, information, extension services, credit and markets, and improve the infrastructure.

FISHERY SECTOR DEVELOPMENT

Constraints

Fisheries:

- The investigation and assessment of aquatic resources is done annually, but with low efficiency due to improper methods and limited budgets. At present, the surveyed data and statistics are not strong enough to be a theoretical foundation for the government to manage and protect the aquatic resources.
- Despite the fisheries law started to work in 2003 the implementation and control of it still is very difficult.
- The demand for trash fish has increased and price has risen. Trash fish landings have become a significant source of income for many fishers. Trash fish landings are likely to increase in future, unless trawl net designs are modified to reduce catches of small fish.
- Overcapitalization (increased fishing effort/number of vessels and fleet horsepower combined with decreased catch per unit effort) is a common feature for coastal, inshore and shallow water offshore fisheries. This is aggravated by the fact that there are no regulations to exclude bigger vessels off shallow-water fishing grounds devastating the marine environment with their large trawl nets.
- Boat and engine repair has not fully kept pace with the development of the needs of the offshore fisheries (e.g. ice plants, modern slipway and repair facilities are only present in major ports).
- The inshore fisheries are considered by fishers and the government to be over-

exploited, causing hardship for many coastal communities. Intervention is required to improve management and performance with regard to productivity and biodiversity conservation, and find alternative livelihoods for those unable to make a living from fishing.

- Destructive fishing methods as explosives and chemicals are used, which have damaged already large parts of coral reef environment.
- Generally, available formal credit for fisheries is limited and can not meet the demand. For poor fishing households' lack of collateral is also a problem.
- The Fisheries Ministry reported that the coastal aquatic resources in many regions have been overexploited by 10-12%. A rapidly increasing number of aquatic species are being threatened with extinction.

Aquaculture:

- The production of seed and fingerlings does not meet the demand. The bulk of the marine fish fingerlings stocked in cages are wild caught, which puts a high pressure on the already over-exploited marine resources. Hatcheries are not evenly distributed over the country. Especially farmers in the highlands do not have easy access to seed and fingerlings.
- Services for disease control and product quality are growing but are still limited and insufficient to manage risks.
- Products and production system often do not meet the stringent requirements of the EU and US markets on food safety, quality standards, certification as well as the social and environmental awareness of the consumers of those markets.
- Shrimp farming has boomed as an industry, but has been poorly planned and inadequately regulated, causing large scale destruction of coastal environments.
- Future demand for fish meal is expected to increase dramatically as an ingredient in aquaculture feeds. Currently, 90% of fish meal is imported and the development of Vietnamese aquaculture will therefore be influenced strongly by the price for fish meal and oil on the international market. Fish meal produced domestically is mostly of poor quality because trash fish is degraded by the time it reaches the fish meal plant[9].
- Catfish anti-dumping legislation and shrimp anti-dumping tariffs by the United States have let to a reduction in exports. Other markets have to be explored.

DEVELOPMENT PROSPECTS/STRATEGIES

Fisheries in Vietnam have been recognized by the Vietnamese government as one of the main sectors of economical importance and are expected to grow.

The (marine) aquaculture sector is having the best prospects for the future, followed by the off-shore fisheries. The government has set targets up to 2010 for both fisheries and aquaculture, which are shown in Table 8 and 9.

Table 8. Fisheries Production Targets in Vietnam, 2001, 2005 and 2010

Items	2001	2005	2010
Marine catching, 1 000 MT	1 320	1 350	1 400
- Inshore	870	800	700
- Off-shore	450	550	700

Source: Master Plan of Social-Economic Development of Fisheries Sector, Ministry of Fisheries.

Table 9. Aquaculture production targets in Vietnam, 2001, 2005 and 2010

Items	2001	2005	2010
Production of Aquaculture, 1 000 MT:	850	1 150	2 000
- freshwater fish	500	600	870
- black tiger shrimp	120	200	360
- marine finfish	10	38	200
- bivalve mollusks	140	185	380
- others	40	127	190
Export value from aquaculture, US$ million	500	1 400	2 500
Employment (1 000's of people)	555	1 400	2 000
Aquaculture areas (1 000's of ha):	700	850	1 000
- fresh water (1 000's of ha)	340	530	650
- brackish-water and marine (1 000's of ha)	300	320	350

Source: Master Plan of Social-Economic Development of Fisheries Sector, Ministry of Fisheries.

Research

List of the research institutions

1. The Research Institute of Marine Fisheries (RIMF), Haiphong.

The main fisheries research centre in Viet Nam. The institute focuses on biological aspects, and is engaged in resource monitoring and stock assessment. http://www.rimf.org.vn

2. The Institute of Fisheries Economics and Planning (IFEP), Hanoi. Produces statistics as well as sector analysis. IFEPemploys about 35 people. The Institute is also involved in fisheries management problems, and serves as a training centre. http://netnam.vn/ifep

3. Research Institute for Aquaculture No. 1 (RIA1), Bac Ninh. The main tasks are to carry out scientific and technological research in the field of fish seed techniques, culture techniques, fish feed, protection of aquatic resources, fishing, preservation and processing of aquatic products as well as to undertake some basic research on physiology, biochemistry, ecology and genetics of aquatic species. Furthermore, to collect data on environment and aquatic resources for formulating a master plan in aquaculture and related fields and to cooperate with other national and international institutes in the field of fisheries. Info on the FICen website.

4.Research Institute for Aquaculture No. 2 (RIA2), HCM City RIA2 is a governmental institution assigned by the Ministry of Fisheries to be responsible for research activities on aquaculture development, post harvest technologies and management of environment and inland fisheries resources in the http://www.ria2.org.vn/

5. Research Institute for Aquaculture No. 3 (RIA3), Nha Trang. The main tasks and responsibilities are; Investigating environmental and aquatic resources; Research on aquatic seeds production, aquaculture, fishing, processing, and aquatic resources protection; Application of advanced aquaculture techniques for farmers in the coastal provinces (from Da Nang to Binh Thuan province) and in the Central Highlands , and education, training, technical transfer, and effectuating international co-operation. No website.

6. The Fisheries Information Centre (FICen), Hanoi. The Centre its function is the management and implementation of activities of information services at the level of the ministry and to supply concrete guidance on professional skills to information departments of all institutions and agencies under the Ministry of Fisheries of Vietnam. http://www.fistenet.gov.vn

7. The Mekong River Commission (MRC).

The MRC member countries are Cambodia, Lao PDR, Thailand and Viet Nam. MRC maintains regular dialogue with the two upper states of the Mekong River Basin, China and Myanmar. The MRC member countries agree to co-operate in all fields of sustainable development, utilisation, management and conservation of the water and related resources of the Mekong River Basin, such as navigation, flood control, fisheries, agriculture, hydropower and environmental protection. http://www.mrcmekong.org/

Education

1. Fisheries University of Nha Trang, Nha Trang (no website)

2. Can Tho University (CTU), Can Tho. College of Aquaculture and Fisheries http://www.ctu.edu.vn/

3. Hanoi Agriculture University (HAU), Hanoi. Within the faculty of Animal Husbandry and Veterinary Medicine there is training, research and extension executed in the field of aquaculture. http://www.hau1.edu.vn

4. University of Agriculture and Forestry, Ho Chi Minh City www.hcmuaf.edu.vn (was not working when checked).

5. Fisheries Technical Colleges No.1, ‘2, and ‘4. These vocational colleges are responsible for training human resources for the sector and train their students in: Navigation and fishing, processing and preserving of aquatic products, building, operating and repairing ship engines, operating and repairing refrigerators, mechanics, electricity and refrigeration, ship electricity, information of wireless telegraphy on ships, welding of ship hulls, to become fishing crew.Information on the website of FICen:http://www.fistenet.gov.vn

Foreign aid

Overall, the fisheries sector has received relatively little bilateral or multilateral agency support over the past decade compared to other natural resources sectors. Given the sector′s urgent need for improved management and its capacity to alleviate poverty and improve the coastal environment, higher levels of support are needed in future. ODA resources in the sector are limited, but play an important role, providing about 36% of public resources. There is high concentration of emphasis on investment and investment-related technical assistance that comprises two-thirds of the ODA resources under 12 projects in 2003. This contributes to the imbalance between investment and maintenance and operation funding in the sector. Fifty smaller stand-alone technical assistance projects contributed just one-third of the total ODA. The Ministry of Fisheries has announced a list of 14 priority projects to be allocated ODA capital from 2006-2010, totalling nearly US$700 mil.

Significant contributors include DANIDA, NORAD (in relation to fisheries legislation formulation and possibly implementation) and to a lesser extent SIDA, JICA, World Bank, the Mekong River Commission, AusAID through ACIAR and the EU which provides some support to research. ADB has also been involved significantly in the past. The main program assisting the sector at present is the DANIDA-funded Fisheries Sector Program Support (SPS) with fiveseparate components covering marine fisheries, seafood processing, state enterprise restructuring and aquaculture sectors.

FISHERY SECTOR INSTITUTIONS

The Minister of Fisheries is a member of the Governmental Cabinet. He/she is assisted by three Vice Ministers and ten advisory departments. The departments are: the Administration Dept., Finance and Investment Dept., Dept. of Science and Technology, Personnel and Labour Dept., Inspection Bureau, International Cooperation Dept., Legislation Dept, Dept of Aquaculture, National Directorate of Fisheries Resources Exploitation and Protection (NADAREP), and the National Fisheries Quality Assurance and Veterinary Directorate (NAFIQAFED).

The Fisheries Resources Conservation Department and a system of 37 sub-Departments in localities are responsible for policy promulgation, direct management and inspection and protection of the fisheries resources.

The NAFIQAFED consists of a Head Office and 6 branches located in key fisheries places. It is the national competent authority for fisheries food safety assurance and quality control.

The Central Fisheries Extension Centre with its Representative Office in Ho Chi Minh city and a system of fisheries and agricultural extension units in nationwide is responsible for transferring experiences, techniques, technologies and information to fishermen and farmers (in both public and private sectors) to help them with their fisheries production.

In coastal provinces, local fisheries administration authorities are the Provincial Fisheries Departments. They are units of the Provincial People's Committees and under the

professional management from the Ministry of Fisheries. In inland provinces, the fisheries administration units are included in the Provincial Departments for Agriculture & Rural Development.

Socio-political organization and professional societies play an important role in organizing, encouraging fisheries labours and enterprises to develop their business and production, as well as participating in the sector administration. They are:

- Vietnam's Fisheries Trade Union, with 67 900 members;
- Vietnam Fisheries Society (VINAFIS). VINAFIS is a socio-professional organization established in 1992 on a voluntary basis of people from various economic components evolving in fisheries and operating in various organizations: individual organization, cooperatives and State-owned enterprises. VINAFIS plays a role as a linking organization between the Government and fishermen; it keeps with the Government's objectives and orientations to organize activities for promoting fisheries development and bring back practical benefit to all its members as well as fishermen communities. See FICen website at http://www.fistenet.gov.vn ;
- Vietnam Association of Seafood Exporters and Producers (VASEP). http://www.vasep.com.vn.

In the near future a Fish Fry Supply Group and a National Hatchery of Marine Species of Central Areas will be established.

The research institutes as well as universities and colleges are also under the responsibility of the Ministry of Fisheries and are mentioned in paragraph VI-4 and VI-5 respectively.

GENERAL LEGAL FRAMEWORKS

The most important law is the Fisheries law that went into practice in 2003. Furthermore there are all kind of decisions, directives, regulations, decrees and circulars concerning the fisheries legal status. All these can be found on www.ecolex.org, searching for fisheries and Vietnam. A selection of the regulations is mentioned below.

- Fisheries Law 2003:
  The Law includes 10 Chapters: Chapter I, General provisions; Chapter II, Protection and development of fisheries resources; Chapter III, Fishing operations; Chapter IV, Aquaculture; Chapter V, Fishing vessels and service units for fisheries activities; Chapter VI, Processing, sales, import and export of fish and fishery products; Chapter VII, International cooperation on fisheries activities; Chapter VIII, State management of fisheries activities; Chapter IX, Rewards and sanctions; Chapter X, Executive provisions. The present Law deals with all issues related to aquaculture and mari-culture, the ecosystem preservation, the protection of fish and of the environment, the regulation for fishing vessel navigation, docking and transportation. Moreover, it disciplines the conduct of fishermen, the fishing gear and methods allowed or prohibited, the seasons and size of catch, the functions and responsibilities of the competent Authorities. Overall the law aims to improve the fishing activities while avoiding potential environmental damages and preserving the natural fishing resources.

- Decision No. 131/2004/QD-TTg approving the Aquatic Resource Protection and Development Program till 2010.
  The present Decision provides for the protection, development and management program of aquatic resources in the inland and territorial waters of the country up to 2010, aiming at the protection, rehabilitation and social community awareness relating to the resources and the wetlands and their possible environmental, economic, social and biodiversity potential, also with the education of the fishermen community.
- Decision No. 844/2004/QD-TTg instituting the Sub-Department for Bac Bo Gulf Aquatic Resource Exploitation and protection.
  The Decision provides for the institution of the Sub-Department for Bac Bo Gulf Aquatic Resource Exploitation and protection, providing for all activities related to the concession and supervision of exploitation operations and for the protection of aquatic resources in that area.
- Decision No. 112/2004/QD-TTg approving the Program on the development of aquatic seeds till 2010.
  The Decision provides for the approval of a Program destined to the development, improvement and infrastructure planning and building of related facilities in order to increase the breeding of aquaculture species presenting higher productivity, quality and traceability. The involved species shall include prawns, lobsters, freshwater fishes, molluscs. Budget capital shall be used to sponsor and support research on breeding, the construction of up-to-date facilities, the modernization of aquaculture laboratories and research centres. International cooperation shall be actively sought and supported for research and economical purposes.
- Directive No. 02/2004/CT-BTS on the work of flood and storm prevention and combat, natural disaster reduction and assurance of safety for fishermen and fishing means.
  The Directive provides instructions on prevention and handling storms, floods and other disasters concerning the safety and rescue of fishing crew and fishing boats.
- Regulation on management of the environment at aquatic product-processing establishments.
  Regulation on Management of Environment at aquatic product-processing establishments (as defined in art.1), specifically the requirements for constructions of aforesaid establishments, handling of post-processing solid and water wastes in order to avoid environmental pollution.
- Regulation on management of aquatic veterinary drugs.
  The Regulation states which drug qualify as "veterinary drugs" in aquaculture, the terms of production, eventual internal trade, their potential testing. The indication for use are disease prevention and control, diagnosis of disease, improvement of reproductive processes, growth and development of aquatic products and other environmental issues (as the protection of environment and pollution control).
- Regulation on the Fishing Ship Registry and the Fishing Ship and Crew Registration.
  The present Regulation redefines the terms used in the text as per art. 2, indicates which authorities will be presiding over the Registry (art.3), art. 5 lists which fishing vessels are subject to registration. In Chapter II are indicated the Agencies in charge for the registry and the registration, Chapter III deals with the "registry of fishing

ships", and Chapter IV deals with "registration of Fishing Ships" while Chapters V and VI, respectively, list the procedures for "Overseas registration of fishing ships owned by Vietnamese organizations and individuals" and the "Registration of Crew".

1	CIA - World Fact Book Vietnam: http://www.cia.gov/cia/publications/factbook/geos/vm.html
2	FAO country profile
3	The Economist Intelligence Unit Limited 2003 - Country Profile Vietnam
4	Globefish Research Programme-Vietnam, 2003
5	Ministry of Fisheries (MOFI)
6	Worldbank / MOFI Report 2004 – Vietnam Fisheries and Aquaculture Sector Study
7	Nguyen Long, 2001. Responsible management for marine fisheries in Vietnam. Research Institute for Marine Fisheries, 56p.
8	International Marine Alliance (IMA) – www.ima.org
9	World Bank - Fisheries Sector Report Vietnam, 2004
10	Peter Edwards *et al.* 2004. A survey of marine trash fish and fish meal as aquaculture feed ingredients in Vietnam. ACIAR Working Paper No. 57, pp 56.