

## **VIET NAM – SUSTAINABLE EXPLOITATION AND PROTECTION OF FISHERIES RESOURCES AND THE ENVIRONMENT**

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### **1. FISHERIES RESOURCES OF VIET NAM AND ISSUES OF MANAGEMENT**

#### **1.1 Vietnamese fisheries sector**

Viet Nam has 3 260 km of coastline facing the South China Sea, with an EEZ of over 1 million km<sup>2</sup>. There is considerable potential to develop the fisheries economy. Fisheries have had and will continue to have an important role in the national economy. In fact, the fisheries sector spearheaded economic development within the Asia-Pacific region and in recent years has made an important contribution to the national economy.

In 1997, the Vietnamese fisheries sector produced about 1.5 million t, of which two-thirds came from the marine sector. Production has been increasing at about 6-7% annually. This is the equivalent of between 12 and 13 kg of fish per caput, providing 30% of the total animal protein intake of the population. The export value of fisheries products in 1997 was \$US 776 million.

However, as the fisheries sector continues to grow, so there arise management difficulties, and these have to be addressed in order to husband resources so that they continue to provide a sustainable source of food for the people and source of foreign exchange income.

The marine resources of Viet Nam are characterized by their plurispecies nature, with small schools, not concentrating in large exploitation areas with clear variation. Another characteristic is the resource distribution, with the bulk concentrated in shallow waters, inshore from the 50 m depth contour.

### **2. FISHERIES RESOURCES OF VIET NAM**

According to resource surveys and other investigations, the fisheries resources of Viet Nam are about 3-3.5 million t, giving a total allowable catch (TAC) of 1.2 to 1.5 million t/year. The four categories are considered in more detail below.

#### **2.1 Marine fish**

The species composition is plentiful and diverse, with at least 2 000 species identified, of which about 130 species are of commercial value. The commercial marine fisheries are in four areas: Bac

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Bo Gulf, Central Sea, and Eastern and Western Sea in the south of Viet Nam. Table 1 gives a breakdown of the estimated exploitable fish resources.

**Table 1** Potential marine fish resources in Viet Nam (tonnes)

Sea area by depth	Estimate resources	Maximum sustainable yield	of which	
			Demersal fish	Pelagic fish
<20 m	554 000	194 000	88 000	106 000
21 - 50 m	1 620 000	552 000	254 000	298 000
51 - 100 m	782 000	251 000	87 000	164 000
>100 m	152 000	44 000	15 000	29 000

Source: Institute of Marine Products Research

## 2.2 Crustaceans

Vietnamese waters have 1 647 identified crustacean species, but the most important are the 70 shrimp and prawn species in 5 genera. Annual shrimp production is 40-50 000 t, mostly taken in the southern sea waters.

## 2.3 Molluscs

Some 2 500 species have been identified, with many commercially valuable ones, including squid (*Loligo* spp.), cuttlefish (*Sepia* spp.) and scallop (*Chlamys* spp.). This resource is one of the most important after the shrimps and prawns. Annual mollusc catch is in the range of 40-50 000 t.

## 2.4 Seaweed

There are 638 named species, of which *Gracilaria* sp. has received most attention in development.

## 3. SOME FEATURES OF VIET NAM FISHERY (1992-1997)

### 3.1 Marine fisheries production

A breakdown of marine fisheries production by year and area is given in Table 2.

*Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance  
Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June - 3 July 1998*

**Table 2** Marine fisheries production (tonnes)

Area	1992	1994	1995	1996	1997
Gulf of Northern Viet Nam	93 034	116 281	113 900	102 400	
Central Viet Nam	140 800	178 888	199 000	207 000	
Southeastern Viet Nam	277 510	385 379	403 060	424 050	
Southwestern Viet Nam	185 303	209 450	212 900	229 050	
Total	696 647	889 998	928 860	962 500	1 072 000

**3.2 Fishing boats**

The fleet is summarized in Table 3.

**Table 3** Development of the fishing fleet

	1992	1994	1995	1996	1997
Motorized craft	54 162	65 302	68 000	69 953	71 500
Total power (hp)	986 420	1 443 950	1 500 000	1 543 163	1 850 000
Artisanal craft (unmotorized)	29 360	28 370	27 700	27 700	
Total fishing boats	83 972	93 672	95 700	97 653	
Average power (hp)	18.06	22.11	22.05	22.07	

**3.3 Exploitation of the fisheries**

Concomitant with the development of fishing boats, the number of fishermen also developed rapidly, with an annual increase of 13.4%. As of 1996, there were about 460 000 fishermen, of which 91% in the private sector, 8.6% in the cooperative sector and 0.4% in the state sector.

Sea fishing operatives are mainly in the inshore areas employing simple, easily handled gears. However, the development of exploitation means that the inshore area has been subjected to ever increasing exploitation pressure on the marine resources.

There is a trend of constructing larger boats for offshore fishing, but there are several difficulties, such as lack of research into marine resources and fishing grounds, difficulties in changing from traditional to technically more demanding occupations, the still-poor state of the logistic base, etc.

**4. MARINE RESOURCES EXPLOITATION AND ENVIRONMENTAL MANAGEMENT**

Mismanaged fish harvesting and production could have a strong negative impact on marine resources. Mean marine fishery production in recent years has been from 750 000 to 800 00 t/yr,

with 1997 production estimated at 1 080 000 t, of which over 80% was caught along coastal areas at a depth of 30 m to the east and west of South Viet Nam and in the Bac Bo Gulf, and <50 m in the central coastal area. The coastal area is about 106 000 km<sup>2</sup>, equal to 11% of the EEZ, with an estimated resource of about 1.5 million t, giving a TAC of 600 000 t/year. The reasons for the overfishing are primarily the rapid increase in fleet capacity and effort in the last decade.

**Table 4** Effort data for Viet Nam's fisheries sector

Item	Unit	1985	1990	1995
Total fisheries production	t	628 000	672 000	928 000
All fishing boats	number	53 561	73 323	95 700
of which motorized	number	29 093	41 255	68 000
– total engine power	hp	494 507	727 582	1 500 000
– average power	hp/unit	16.86	17.63	22.06
Artisan boats	number	24 468	31 068	27 700
Catch productivity	t/hp	1.27	0.92	0.58
Fishing labour	Persons	220 770	253 287	420 000
Labour productivity	t/person	2.84	2.65	2.10

At the end of 1985 there were 53 561 fishing boats (of which 31 906 were motorized), but by the end of 1995 there were 95 700, of which 68 000 were motorized craft. (see Table 4). A large number of the motorized boats have only small power units (more than 80% of craft have engines <30 hp) and lack necessary equipment and supplies. Therefore they tend to operate only inshore. In some areas, the density of boats exceeds 100 units/km<sup>2</sup>.

There are more than 40 kinds of gear in use, in two groups: active and passive gears. Active gears include trawls and purse seines, and represent some 29% of total fishing means. The passive group includes lift nets, handlines, longlines, gill nets, traps and fixed gear. These make up the other 71% of Viet Nam's fishing means. All these are small scale, operating mainly along inshore along the coast, although gill nets and longline units can operate directly from the shore.

Of all these gears, the bottom trawls and trap setters in estuaries and near shore have the greatest impact on the environment. These methods are unsustainable and result in an immoderate number of fingerlings being caught each year. These catch methods can alter fish habitats, thus jeopardizing valuable marine resources.

There are about 380 000 fishermen in Viet Nam, of which only a few have received formal training. Most have learnt their trade from their forbears, and operate with inherited knowledge passed on within the family. They are therefore operating without scientific knowledge, and often cause harm to the environment and to the habitats of the fisheries resources. Fisheries violations are common, including using dynamite, nets with undersize mesh, and so on.

There are annual migrations of fishing vessels. Between 12 and 15 000 vessels move between fishing grounds. They concentrate at a few main fishing grounds: Quang ninh-Hai phong, Ninh thuan, Binh thuan-Ba ria-Vung tau and Kien giang-Minh hai.

Viet Nam has common sea borders with many countries in the region. Regrettably, a lot of illegal fishing occurs in the offshore areas of Viet Nam's EEZ, and the total illicit catch by foreign vessels has been estimated to be between 250 000 and 300 000 t annually.

## **5. ENVIRONMENTAL IMPACT OF ACTIVITIES ALONG COASTAL AREAS**

### **5.1 Social and industrial impacts on coastal environments**

In addition to direct fishing practices, marine resources have been reduced as a result of certain ecological changes. So far there have been no in-depth studies of the marine resources' fluctuations, such as the reproduction of fish species or seasonal concentration. Prospective research topics include the migration of some fish species to offshore areas and annual movement of shrimp and fish grounds. Some specific factors that additionally affect the environment and fish habitats are considered below.

### **5.2 Aquaculture**

At present the country has about 600 000 ha of water surface dedicated to aquaculture, of which about 290 000 ha is brackish water. Aquaculture contributes food for consumption, creates more employment for labourers, and reduces the pressure to overexploit coastal fisheries resources. However, aquaculture practices have negative impacts on the environment due to pollution from the feed products and chemicals.

Aquaculture development requires the destruction of mangrove forests, and construction of dykes and ponds. These changes destabilize the land, negatively affecting the relationship between the mangrove areas and coastal waters. These habitats are interacting ecosystems and need to work together to supply nutrients for the dwelling and spawning of many species. If the mangrove areas and coastal waters are not sustained there will be ongoing depletion of marine resources in coastal as well as offshore areas.

### **5.3 Fish processing**

Since the initiation of its "open-door policy," Viet Nam's export of fishery products has increased, and the once regional markets have now expanded to be international in scope. In 1980, there were only twenty processing factories. Today the number exceeds 170 units. Increased export has resulted from high demand, particularly for special, high value species such as shrimps, molluscs, etc.

Currently the processing factories dump waste direct into waterways, polluting valuable water resources. In addition, the factories have not installed systems for efficient water use in processing fish, and therefore unnecessarily waste water.

### **5.4 Other economic sectors**

Other economic sectors also have considerable impact on marine resources and their habitats. These sectors include oil refining; logging; agriculture, especially agrochemicals; tourism; sea transportation; and industrial centres where processing export zones have been established.

Policies need to be established that will monitor and regulate sector growth as well as manage methods for waste disposal.

## **6. FISHERY POLICY AND MANAGEMENT**

Government policy in recent years is clearly to develop fisheries as well as state fisheries administration.

From 1990 to now, the Government has issued a number of policy documents and regulations concerning management and development of fisheries, with more and more performance orientation.

### **6.1 Protection of the marine resource**

As well legislation, an organizational system has been developed for protection of sea products as an income source from the Ministry of Fishery to local level, with considerable effect in terms of protection of fishery resources. The rules and guidance texts have aimed at having in place a normative system for the management of the various fisheries-related occupations and controlling exploitation by sea area and season in order to protect marine resource and ensure sustainable exploitation of marine aquatic resources.

### **6.2 Management of fishing in activities on the sea**

Rules have been issued to establish a clear legal system for managing fishing activities at sea. Legislation aims to enhance management through a licensing requirement for each boat and for all gears, both national and foreign boats and operators. The offences and penalties are clearly defined.

### **6.3 Policy encouraging development of the fishing industry**

The Government has issued policy guidelines for the sustainable development of production, especially for sea products exploitation in offshore areas. These cover priority loan reductions, tax breaks for mariculture, etc., and have had an important influence on the development of fisheries in recent years.

The implementation of these guidelines and policies has achieved some practical results in terms of protection of marine resource and the management of marine aquatic resources exploitation activities.

However, there are still several tasks unfinished due to the immensity of the problems involved and the limited resources available: the legal system remains nonhomogeneous on the one hand, and on the other it is inconsistent and unclear in areas, making consistent, coherent MCS difficult.

## **7. CONTROL AND MONITORING OF FISHERIES ACTIVITIES IN INSHORE AREAS**

Due to the distribution characteristics of fishery stocks in Vietnamese waters, fishing activities are concentrated in the 30 to 50 m depth zone, and so MCS of fishing activities in Viet Nam are essentially inshore in nature.

As a result of a resolution of the Government, the Department for Protection of Marine Resources was established, and which operates in coastline localities. Equipped with small boats, the Sub-departments have proceeded with MCS of marine aquatic resources exploitation and legal enforcement.

However, the capacity of the Department and Sub-departments for protection remains too small compared with the task. In particular, the boats available for patrol work are small and few, so control and inspection are constrained. Especially in the EEZ, there are still frequent cases of illegal fishing by foreign vessels.

## **8. MCS OF MARINE ACTIVITIES FOR ENFORCEMENT PURPOSES**

The national network for fishery resources conservation was established with the function and responsibility to protect the fisheries resources; manage, register and control fishing vessels; to effect veterinary inspections and to control the quality of fisheries and animal products.

At the end of November 1997, the system of national resources protection consisted of the Central Agency Department, two representative agencies in Danang and Ho Chi Minh City, and 34 branches in 28 coastal provinces and 6 inland provinces, and with a staff of more than 600.

Although the network of fisheries resources protection and inspection is newly established, considerable achievements have been made in conservation activities, enhancing marine resources and habitats of aquatic species. This has facilitated an increase in levels of production. While these achievements are important to setting an overall conservation policy for fisheries, many limitations exist. First, there is no consistent policy for issuing fishing licences. Second, there is no mechanism to prevent overharvesting of particular species, specifically those having a high economic value.

Clearly, with an industry that produces 1.6 million t/year of fisheries products and that is expected to be exporting for \$US 1 000 million/year by the year 2000, the task that Viet Nam's fishery sector faces is a challenging one. Establishing an improved marine conservation policy will be the first step in fulfilling this task. The second step will be to ensure that that policy is implemented consistently and fairly throughout the country.

## **9. FUTURE DIRECTIONS FOR SUSTAINABLE FISHERIES DEVELOPMENT**

### **9.1 Strategies**

The fishing industry in Viet Nam is a very important element in the structure of the national economy. Given this, it would seem obvious that the management of the marine habitat would be of critical importance.

In the next years, fishing will depend mainly on the resources in coastal areas. Therefore, to maintain sustainable growth of the fishing industry, attention must be concentrated on protection of those resources along the coast. Viet Nam intends to institute a number of

measures in order to manage coastal fisheries, while not ignoring the need to husband in a sustainable manner the inland fisheries.

### **9.1.1 Inshore exploitation**

- Development with an orientation toward job diversification, and structural adjustment to match the fishery resource characteristic of each area, coupled with enhancement in the professionalism and attitudes of fishermen.
- Only provide investment support for new motor boat types larger than 20 hp.
- Encourage the development of mariculture in coastal areas both to protect marine resources in the inshore area and to contribute actively toward employment creation for fishermen and thus improve the quality of life in fishery communities.

### **9.1.2 Offshore exploitation**

It is seen as a key area for investment, to harvest pelagics, migratory fish stocks and special sea products.

Jobs and boat sizes defined as appropriate for investment support are gill-net motor boats of 150-450 hp, trawlers of 250-600 hp, longline boats for special products and migratory fish species of 60-350 hp, and middle-water trawlers of 1 000-2 000 hp.

### **9.1.3 Continued coastal areas planning**

- Modify the structure of the fishing effort by controlling the gears in nearshore waters along the coastline. This includes banning fishing vessels motorized with engines <20 hp; limiting increases in fishing vessels motorized with engine from 20-45 hp, especially those operating in waters over 5-7 m deep; and limiting the number of bottom gears in estuaries.
- Encourage development of offshore fishing through policy measures such as exemption from some taxes, and preferential credit for investment in development of the means for deeper-water fishing. The Government of Viet Nam has established programmes to provide such credit for offshore fishing activities.
- Import advanced fishing techniques and selectively exploit fisheries with the aim of protecting sustainable coastal resources.
- Promote investment in inshore aquaculture to reduce pressure on the inshore capture fisheries.
- Increase investment in infrastructure for offshore fisheries, including construction of fishing harbours, water and fuel supply systems.



#### **9.1.4 Strengthening the protection of fisheries resources in coastal areas**

Actions include demarcating important fishing areas, defining restricted areas, reducing exploitation, prohibiting or limiting use of certain gears or fishing methods, and establishing marine protected areas.

- Make use of international cooperation and development potential at home and to continue research and surveys to revalidate the fisheries resources, followed by adjustment and redistribution of production forces to match the revised sustainable yield potentials.
- Study and try to re-stock the various species overexploited almost to extinction, and implement a programme of renewal of fisheries resources.
- Continue and improve the system for registration and issuing of permits for fishing, concentrating initially on the key areas of shrimp and fish grounds with species of high economic value.
- Apply measures to protect fisheries species in danger of extinction.

#### **9.1.5 Enhancing people's knowledge and the social and cultural life of fishing communities**

- Increase aware-raising and education of the community concerning law, basic knowledge of aquatic resources, habitats, relationships between different coastal ecological systems, and so on.
- Increase technical and material investment, creating favourable conditions for production development and better social and cultural life for fishing villages and islands, such as harbours, bridges, fish landing areas, markets, schools, hospitals, transport, and so on.
- Continue testing and expansion of joint management models, with the government and the people together participating in management of fisheries resources and the living environment.

#### **9.1.6 Improving fisheries Law**

Since the publication of the constitution in 1992, many new laws have been promulgated, amended or expanded. With its open policy, Viet Nam has signed or will consider signing or participating in many international agreements, such as UNCLOS 1982, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), MARPOL, the Convention on Biological Diversity (CBD), etc.

#### **9.1.7 Strengthening monitoring and enforcement**

- Strengthen the capacity of the fisheries resources conservation system, firstly the fisheries protection inspectors at sea in terms of number as well as the quality of officers, facilities (Inspection Vessels) and equipment need for controlling and enforcing observation of the law.
- Strictly enforce penalties for violations resulting in harm to resources and the living aquatic environment, especially activities such as use of dynamite, toxic chemicals, electricity under-sized meshes, taking protected species, etc.

### 9.1.8 Continuing research programmes

The research programmes will aim at assessment of fishery resources and potential catch, especially offshore in the EEZ; protecting the environment; determining allowable fleet effort and gears, and advising on appropriate investment programmes. All these will be within a framework of sustainable fishery development.

- Promote research into novel uses and exploitation methods for aquatic marine resources.
- Improve infrastructure and support services in order to better serve development.
- Enhance the performance of management and control systems for activities at sea, including:
  - establishing a proper legal system for fisheries, reflecting the fishery code;
- continuing to reform the organizational system from Ministry of Fishery to the Provinces, as well as enhancing investment in the physical resources needed to be able to protect marine resources through efficient MCS; and
- setting up in a phased manner a modern information management system from the Ministry of Fishery to the Provinces, in support of MCS activities at sea, as well as providing a source of information for fishermen to prevent and avoid risk at sea.
- Promote international cooperation through technical assistance programmes to:
  - investigate and assess fishery resources in Viet Nam;
  - learn and apply advanced techniques for sea products exploitation, boat construction and maintenance; and
  - learn, adapt and apply community-based fisheries management models in coastal areas.