

Solutions for the Sustainable Development of Marine Resources in Vietnam in the Current Period

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Abstract: Vietnam is located on the coast of the East Sea, with a coastline of 3,260 km (27th in coastline of 157 coastal countries in the world). The sea level in Vietnam is six times higher than the global average. Vietnam has more than 3,000 islands, including Hoang Sa, Truong Sa archipelago; The continental shelf is under the sovereignty, sovereignty and territorial jurisdiction of over 1 million square kilometers (3 times the land area). There are 28 provinces and cities in coastal areas, accounting for 42% of land area and 45% of the national population. With these characteristics, Vietnam is considered a country with great advantages for marine resources. The sea is truly the sacred territory of the motherland of Vietnam, the natural heritage of the nation, the spiritual and material support for the Vietnamese people today and tomorrow. The East Sea has rich and diverse marine resources. However, protecting the marine environment in Vietnam is challenging. Many marine resources are exploited exhausted, many marine environment is polluted. The level of pollution has caused serious damage, hindering the socio-economic development in Vietnam. The purpose of this paper is to understand the current situation of marine resources and marine environment in Vietnam and to present some specific solutions towards the sustainable management of biological resources. The results of the article include: Surveying statistics on marine resources in Vietnam. Identify causes that lead to depleted marine resources. From there, solutions will be developed to protect marine living resources in a sustainable way.

Key words: marine resources, Vietnam, marine environment, The East Sea

1. Introduction

In addition to Vietnam, The East Sea is bordered by eight other countries: China, the Philippines, Indonesia, Brunei, Malaysia, Singapore, Thailand and Cambodia. The potential of this sea is a rich source of life in the countries of the region and in the world. Therefore, The East Sea is seen as an endless source of life. But the South China Sea will no longer be an endless source of life, as the exploitation of the sea, often enriched by the sea, is accompanied by unsustainable modes of exploitation. Harvesting activities are focused only on meeting economic development objectives to achieve immediate expectations, without taking into account the consequence of environmental degradation such as

lack of planning. Along with the lack of strict management mechanism, the impacts of climate change leading to the decline of marine biological resources, increasing pollution of the marine environment and negative repercussions for economic development. Along with the depletion and depletion of many marine resources due to exploitation, unreasonable use and lack of sustainability, coastal areas in Vietnam are facing the challenges and pressures of population growth. The development of the coastal economy, especially the development of industry, tourism services, agriculture directly discharged into estuaries and coastal areas. Vietnam is pursuing the basic objective of the Vietnam Sea Strategy until 2020 “to develop Vietnam to become a strong country on the sea, to get rich from the sea, to integrate closely the economic development — social security and defense, international cooperation and

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environmental protection” (Resolution No. 09- NQ / TW dated February 9, 2007 of the Fourth Plenum of the Party Central Committee on the Vietnam Sea Strategy to 2020).

2. Material and Methods

In this article, we have used some analyzes and conclusions of Vietnamese researchers on marine resources and marine environment in Vietnam as a reference. The results of the study are based on the methodology of systematization, analysis - synthesis and comparison of theories and views. In addition, we synthesize and analyze data provided by local researchers on marine biological resources in Vietnam. In addition, we synthesize and analyze data provided by the Ministry of Natural Resources and Environment of Vietnam.

3. Results and Discussion

3.1 Marine Resources in Vietnam

Location, geography and climate have created a high biodiversity in the East Sea compared to other countries in the world, both in terms of species composition, ecosystems and genetic resources. Differences in natural conditions from north to south such as changes in temperature along the latitude, the degree of exchange of environment with the surrounding areas, the shape of the continental shelf has created the characteristics of ecosystems. between the waters of Vietnam.

According to the Seafood Research Institute under the Ministry of Agriculture and Rural Development of Vietnam on marine resources. Vietnam is on the list of 10 marine biodiversity centers and lists 20 of the world's most economically viable marine fisheries. Up to now, there have been about 12,000 species of marine life in Vietnam with over 2,000 species of fish, of which about 130 species have economic value; Marine fish stocks of the whole region are about 4.2 million tons; The yield is about 1.7 million tonnes/year, including 850,000 tonnes of bottom fish, 700,000

tonnes of floating fish, 120,000 tonnes of floating fish. In addition, the sea of Vietnam has many other marine resources with about 1,600 species of crustaceans, yields that allow exploitation of 50-60 thousand tons per year, of which high value seafood is shrimp, lobster, shrimps, crabs, crabs; About 2,500 species of molluscs, of which the highest economic value are octopus and octopus (60-70 thousand tons per year). Sea birds in Vietnam are extremely rich, including: gulls, pelicans, birds, swift. In addition to animals, the sea also provides humans with a variety of valuable seaweed. This is a source of nutritious food and a rich source of medicinal herbs. Vietnam Sea has about 638 species of seaweed.

Significant marine resources have given advantages to the livelihoods and economic development of Vietnam. The fishery catch is about 3 - 3.5 million tons, the seafood structure is very rich, has high economic value can be exploited every year. Coral reefs, seagrass beds, seagrasses, mangroves, zooplankton, zooplankton, sea bass, seabirds, marine mammals and reptiles with high economic value, have been exploited, serving people and socio-economic development in coastal areas and on the islands.

However, according to the Vietnam Administration of Sea and Islands, deterioration in the quality of the marine environment has caused the habitat of marine creatures to be destroyed or lost biodiversity. Many species of marine life are declining in numbers, some species is extinct locally. There are 236 species of rare and endangered marine species, of which more than 70 species of marine life are listed in the Red Book of Vietnam. Many of these species are still exploited in various forms, including chemical and explosive extermination. The decline in biodiversity has led to a decline in the number of economically valuable species. As the fisheries resources are being exploited in an unsustainable manner, it is increasingly exhausted in quantity and decreasing in quality. Fish stocks declined from 4 million tons in 1990 to 3 million tons today. The

average size of fish and species diversity is also significantly reduced.

The value of coral cover and species diversity have also been declining in recent years, in some areas more than 30%. Some important fish species living on reefs are severely degraded, such as Doctor shrimp, lobster, Sea ginseng, Butterfly fish, Angel fish, Dauai fish ... Density of big size fish group has commercial value High is severely reduced. Similar to coral reefs, seagrass beds are also being gradually diminished to encroach upon sea for the construction of aquaculture ponds, coastal structures and pollution. The hot spots for seagrass decline are Ha Long Bay, Tam Giang-Cau Hai Lagoon, Phu Quoc Island. At the same time, the area of mangroves was reduced dramatically, from 408,500 ha in 1943 to only 155,290 ha in 2000.

The above data show that, although the sea of Vietnam brings great value and resources, it is also facing alarming risks. It is necessary to find out what factors influence marine resources in Vietnam and find solutions.

3.2 *Factors Affecting Marine Resources in Vietnam*

According to the assessment of the Ministry of Natural Resources and Environment of Vietnam, the main cause of marine pollution is the development of industry and tourism rampant; unreasonable aquaculture; increasing population and poverty; simple lifestyle and low education; Institutions, policies are inadequate. In this article, we focus on the following underlying causes:

3.2.1 *Unsustainable Mining Methods*

At present, the rate of population growth is increasing rapidly, the demand for economic development is increasing in the context of increasingly depleted land resources as well as promoting the tendency to go to sea, exploit the sea, get rich from the sea, but often accompanied by unsustainable modes of operation. Harvesting activities mainly focus on economic development objectives to achieve maximum aspirations, while minimizing

environmental protection. The issue of exploiting marine resources and protecting the marine environment in Vietnam is facing many challenges, many resources are exploited exhausted, the marine environment in many places are so polluted. The main reason is due to the increase in fishery exports, which results in annual catches in excess of available reserves. On the other hand, illegal and destructive fishing methods, such as the use of explosives, cyanides, electric pulses and small meshes, are not strictly controlled, not only reducing marine resources, but also Harms the habitat of marine species. Exploitation by using mines, using toxic chemicals to rapidly deplete aquatic resources and causing serious consequences for marine ecological zones. Due to low awareness of fishermen, fishermen in the habitat of destruction are quite popular. That is not to mention the effects of pesticide residues, pesticides accumulated in the water that flow through the nutrient levels of the food chain, which are considered as one of the last chains.

3.2.2 *Factories, Factories, Industrial Zones and Residential Areas That Discharged Waste Water, Untreated Solid Waste into Rivers in the Coastal Plains or Directly Discharged into the Sea*

Between 70% and 80% of marine waste comes from inland waters when factories, factories, industrial parks and residential areas discharged waste water, untreated solid waste into the rivers, coastal plain or discharge to the sea. For example, in the aquaculture process, there is a significant increase in the amount of solid waste directly to the sea. The main sources of waste are fertilizers and artificial feeds used in aquaculture. On average, one hectare of shrimp ponds will emit about 5 tons of solid waste and tens of thousands of m³ of waste water in one crop. With a total shrimp farming area of more than 600,000 hectares, it will emit nearly 3 million tons of solid waste each year. Specifically: In the provinces from Quang Ninh to Quang Binh, over 37,000 hectares have been exploited and used for aquaculture (accounting for 30-35% of the area of salt

water). A large number of establishments have come into aquaculture on the industrial scale leading to the habitat of living creatures, spawning grounds, breeding grounds, disease outbreaks. A newly published study shows that Vietnam is the fourth country in the world to dispose of plastic waste to the sea, but there are no policies and regulations governing waste management.

Along with the most alarming cases of marine pollution, the most serious cases of Ha Tinh formosa discharge, causing serious consequences to the marine environment and socio-economic situation in four provinces Central Vietnam in early 2016. According to Dictionary Encyclopedia open Wikipedia: Mass mortality in Vietnam 2016, also known as Formosa Incident, refers to mass mortality in Vung Ang waters (Ha Tinh). From the coast of Quang Binh, Vung Chua has hundreds of individuals of grouper species from 40 to 50 kg drifted to the shore and died (Thanh Long (2016)). On April 25, Ha Tinh province has 10 tons, Quang Tri 30 tons, to April 29 Quang Binh more than 100 tons of sea fishing suddenly. This disaster has a great impact on the production and life of fishermen, the coastal aquaculture households, affecting the marine tourism and life of the Central residents. There are 18 communes specializing in marine fishing with more than 14,000 households and 24,000 marine workers. VNExpress cited information from the National Tourism Authority in November saying that pollution from the Formosan company along the Central Coast in April had almost completely destroyed the region's tourism sector as revenues from Tourism reduced to 90%. On 30 June 2016, the Government of Vietnam held a press conference, announcing the cause of dead fish is due to polluting wastes from Formosa Hung Nghiep Co., Ltd. exceeded the permitted concentration. Large wastes from the factory complex of Formosa Company Ha Tinh contain toxic to form a complex, moving to the South for seafood in the dead sea floor, which causes the disaster of marine pollution. The Vietnamese government thinks that the waste that the Formosa plant in Ha Tinh

acknowledges discharges into the sea affects the lives of more than 200,000 people, including 41,000 fishermen. The marine environment incident caused by Formosa Ha Tinh in April 2016 was ranked by the Ministry of Natural Resources and Environment in the list of outstanding environmental pollutants in 2016. According to the Ministry of Natural Resources and Environment and environment in Vietnam, environmental problems caused by Formosa caused serious economic, social and environmental damage; The most affected are the fisheries sector, followed by the business, service, tourism and the life of the fishermen. Formosa has accepted responsibility, apologized to the Government, people and made a \$ 500 million compensation. In my opinion, the amount of compensation is never compensated. The losses caused by the failure of Formosa to the Vietnamese people are the consequences of the Vietnamese people's long-term consequences.

3.3 Solutions for the Sustainable Development of Marine Resources in Vietnam in the Current Period

In order to achieve the objective of sustainable development, measures must be taken to manage and protect the environment and marine resources. Within the scope of this article we focus on the following solutions:

3.3.1 Strengthen Control and Prevention of Marine Pollution Sources

Strengthening the control and prevention of marine pollution sources should be carried out through the following specific tasks:

- Promote the propaganda and raise the awareness of the people about the importance of the sea, the need to protect the marine environment, protect the environment is to protect our lives.
- Strengthening environmental inspection, inspection and supervision. Prepare monthly reports on marine environment, coordinate with

units to receive timely information on marine pollution incidents.

- Building a standard waste treatment system in factories and industrial zones.
- + Have sanctions to sanction the violations. To formulate regulations on sanctions for each case of polluting such offshore activities, acts of deliberately polluting the marine environment from outside the borders or acts of submerging without permission.
- Continue to improve and implement effective policies and regulations on sustainable fisheries development, combat illegal and destructive fishing.
- To review the planning on development of seaports, special economic zones, marine economic zones, open economic zones and marine technologies so as to ensure efficient investment in line with the country's resources.

3.3.2 Ensure Sustainable Livelihoods for Coastal Communities

It has been shown that most of the coastal population is poor and dependent entirely on marine resources. In order to minimize the pressure on resources and protect the marine environment, the emphasis should be placed on the application of market-based solutions to resource management while addressing career transition solutions. Sustainable livelihoods for coastal communities are also of great concern. So far, in many countries, especially in countries with large numbers of fishermen such as China, Indonesia has many activities, programs for sustainable livelihood diversity for coastal residents are deployed as training handicrafts; support sustainable aquaculture, build ecotourism programs in association with marine protected areas, train tourist guides for local communities, and have obtained encouraging results. For example, in China, statistics show a sharp decrease in the number of fishers involved in fishing (a decrease of 13% from 2001-2004), while the number of fishers changing their livelihoods through aquaculture Fishery has increased

in recent years. In the Philippines, the establishment of Protected Areas in the Apo Islands has created more employment opportunities in the coastal tourism sector, according to estimates by more than half of Apo's households involved in the work. Or in California, some fishermen have been involved in support to monitoring and researching protected areas, ensuring sustainable livelihoods for coastal communities.

3.3.3 Community-Based Management/Co-management Model

Community-based marine resource management has been adopted in many countries, especially in developing countries, and is recognized as a cost-effective and efficient way to maintain and manage resources. Fisheries, biodiversity protection, and meet other conservation objectives as well as the needs of human livelihoods. In the region, the Philippines, Indonesia ... are the first countries to soon implement the model of community-based management and achieved certain success. Through this model, local coastal communities are given specific and controlled rights to manage coastal resources. This has strengthened the initiative, promoting greater community participation in shared responsibility with the state in the effective management and conservation of marine resources.

3.3.4 Establishment of Marine Protected Areas

Marine protected areas are designed to protect and preserve biodiversity, natural resources and cultural values. Vietnam's waters are recognized as one of the high biodiversity centers in the world and include the major marine geographic subdivisions: the Tonkin Gulf, the coastal waters of Central Vietnam and coastal waters. The South West, the coastal areas of the Southwest and the Hoang Sa-Truong Sa archipelago. Based on the survey data collected by scientists from the research institutes, the Ministry of Fisheries proposed a marine protected area system of Vietnam comprising 15 marine areas representing the maritime zones of the whole for submission to the government for approval.

No. Location Depth Recommended type Province/
city Remarks

I. The Gulf of Tonkin

- 1) Tran island 10m Not yet identified Quang Ninh Island forwards, lack of surveying
- 2) Coto Island 20m Marine Sanctuary of Quang Ninh An island district, not yet zoned
- 3) Cat Ba Island National Park On the island was decided by the state to establish a national park (1986) with about 540 ha of sea (the area of Southeast Sea Cat Ba Island)
- 4) Bach Long Vi Island 30m Hai Phong Marine Reserve and Natural Resources The island of pepper island, the highest coral cover
- 5) Hon Me Sea Conservation Area The broad coral distribution, but with high threat, there are 11 new species for Vietnam.
- 6) Con Co island, Quang Tri marine protected area, intact coral reef, high diversity, located in the baseline system
- 7) Hai Van - Hon Son Tra 30m Thua Thien Hue Natural Reserve and marine resources Including Son Tra, North Hai Van and Lang Co Lagoon, the highest habitat diversity

II. Coastal waters of Central Vietnam

- 8) Cu Lao Cham 30 m Quang Nam Marine Reserve The whole of the coral reef is intact, with unique structures, diverse coral reefs and precious germplasm.
- 9) Ly Son Island Anonymous Quang Ngai Marine National Park Reefs develop on a volcanic background with many rare species.
- 10) Hon Mun - Bich Dam 30m Khanh Hoa Marine National Park The most diverse reef fish communities, the richest coral reef fish fauna, many rare species.
- 11) Hon Cau - Vinh Hao 27 m conservation area/habitat Binh Thuan Reefs intact, high biodiversity, rare species, spawning grounds of fish and sea turtles
- 12) Phu Quy island Not identified Binh Thuan The most diversified and diversified fishery resources in Vietnam, fishery logistics and ecotourism.

III. The coastal waters of the Southeast

- 13) Con Dao National Park (50m) Ba Ria - Vung Tau Sea National Park High biodiversity, typical coral reefs, 60 rare species in the Red Book, a national park (1993) with a sea area of 9000 ha. Internationally accredited region

IV. Coastal waters of the Southwest

- 14) Phu Quoc National Park 10m Kien Giang National Park Including An Thoi island group, high biodiversity, turtles and dugong, many predatory islands

V. The Truong Sa-Hoang Sa sea area

- 15) Truong Sa 3000 Khanh Hoa Marine Nature Reserve International Center for Biodiversity, Coral Reefs, Also Disputed Sovereignty

(Source: Nguyen Quang Hung (2009))

The author's article is formed on the basis of a comprehensive analysis of the research results in Vietnam on marine biological resources and the protection of marine resources in a sustainable manner. The paper presented in logical order. Starting from the survey of reliable statistics on marine resources in Vietnam, from there, find out the causes leading to the depletion of marine resources. Finally, draw up solutions to protect marine living resources in a sustainable way. In particular, the improvement of the system of measures to protect marine living resources in Vietnam in the current period in order to ensure the sustainable development of marine resources in Vietnam is the most important issue that the author has done.

4. Conclusion

After more than 30 years of policy reform, the economy of Vietnam in general and in the coastal area in particular has developed strongly. Economic development moving towards industrialization and urbanization tends to go to sea. In recent years, the marine economy has been estimated to contribute about 48% of GDP, of which marine economic sectors have contributed significantly to oil and gas 64%, fisheries and seafood processing 14%, shipping and water seaports account for 11% and marine tourism about 9%. But the growing pressure on the environment and natural resources as well as other coastal and marine values is always a problem, exposure now.

In the past few years, in order to solve the problems related to the sea in Vietnam, aiming at rational exploitation of natural resources and environmental protection for sustainable development of the sea, Continuously develop and implement many policies, measures, programs and plans to exploit and rationally use natural resources and protect the marine

environment and sustainable development of the country, remarkable progress and success.

Vietnam is rapidly establishing a coastal protection corridor. According to the Law on Natural Resources and Environment of the Sea and Islands, by February 2020, the People's Committee of the province or city directly under the Central Government has the responsibility to set up a coastal protection corridor under its management. . However, to date, no local authority has implemented this task. Therefore, in the coming time, the establishment of coastal protection corridors in localities should be speeded up.

Finally, special attention should be paid to marine planning. There are regulations on the development and promulgation of a number of master plans in the sea such as master plan for resource use and environmental protection of the sea and islands; Planning on the use of the sea in Vietnam; Master plan for sustainable exploitation and use of coastal resources or recent national marine space planning. These plannings, though different in name, scope ..., are still interdisciplinary, overall and contribute to reducing overlapping conflicts between sectors and areas of marine use, while protecting the systems. marine ecology. However, none of these plans has been issued yet. Therefore, it is necessary to urgently carry out this task to ensure harmony in the exploitation and use of natural resources and the protection of the marine environment while ensuring the right of people to approach the sea.

Some criteria for assessing sustainability in the exploitation and use of marine living resources should be proposed in the context of Vietnam. By the end of 2020, people of all walks of life will be aware of the value of marine life resources and the basic steps that they can take to preserve and use it, sustainable way. The value of biological resources and marine biodiversity must be integrated, integrated into national criteria and indicators for sustainable development, poverty reduction strategies and the planning process, plan, national accounting system and reporting system.

By 2020, to limit and eliminate all unreasonable incentives for the exploitation of marine biological resources, Abolish or renew (new) policies with specific policies to minimize, mitigate, and promote policies that encourage the conservation and sustainable use of biological and biological resources, learn. These positive policies are developed and applied in accordance with national regulations and in harmony with the Convention and other relevant international obligations, taking into account the country's socio-economic conditions. Governments, businesses and stakeholders at all levels have completed the development of a roadmap, concrete steps to achieve or have implemented strategies, planning and plans for exploitation, production and Sustainable consumption of marine biological resources. There is a specific program of activities that contribute to mitigating negative impacts, making use of biological resources within ecological safety limits.

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