FUTURE POTENTIALS OF MARINE RESOURCES

Sudaryono*

Abstract

Being a fast archipelago, Indonesia has enough marine resources. On the other hand, the agricultural area is decreasing, while population growth increased unpredictably. Marine resources, therefore, should be used optimally and wisely to anticipate the worst condition of the ocean and its vicinity. Exploitation of the North Sea for example has exceeded its loading capacity and has been contaminated by pollutants that are directly discharged by industries without treatment.

Further, other regions, such as the Eastern Region of Indonesia is yet not been optimally utilized and developed. It is, therefore, the time for us to wisely reconsider the potentials of the Indonesian ocean with its high organism diversities.

I. INTRODUCTION

The social-economic condition of a ruined community caused by the economy and monetary crisis's in Southeast Asia, especially in Indonesia, apparently has an impact on our economy or national environmental system. Taking lessons from this event, we should more strengthen our economical foundation and improve management of the natural and environmental resources, to conserve development.

Nowadays, the conservation of agricultural areas on food plant in Indonesia is becoming more threatened. For example, every year the densely populated Java Island experience a shrinkage of potential agricultural area as much as 55,000-60,000 hectares, because of the conversion into various interests beyond the agriculture sector, particularly the development of industrial and settlement areas. Objectively these two sectors require wide areas, which unfortunately will increase in the future, unless they could understand the political interest in the production of food. While changes in use of the newly developed area, which replaces the agricultural area, was never realized.

The problem is more aggravated by the fact that the level of population growth in Indonesia is still high. For example, the population growth rate in the densely populated Java Island is absolutely too high, with a growth rate of 2.32% in 1971-1980, and 1.98% in 1980-1990. Certainly, the big increase in population will also increase pressure on the land, which has a limited supporting power. The need of resources will continuously increase, which will force people to turn away from land and look at the sea and coastal area for the supply of resources in the future.

* Directorate for Environmental Technology - BPPT

But it is necessary to realize that the lower position of the sea from land, and the characteristics of sea ecosystems have mutual relationships to one another, hence the sea ecosystems become very susceptible to environmental changes. Environmental change may be caused by pollution as a result of oil spill in the sea, disposal of uncontrolled industrial and household wastes. Pollution, especially originating from the industry, is usually very dangerous, because it contains relative high waste which could not be neutralized by nature.

Therefore, an initiative to exactly and rightly control pollution from various industries must be performed in order to safeguard the quality of living places (both on land and sea) to remain good and sustainable.

II. THE POTENCY OF SEA RESOURCES

The sea of Indonesia has the most biggest potency, in numbers and in species, of living resources, from plants to mammals. Marine plants are represented by algae or seaweed, while animals are represented by fish (Pisces) until mammals (the suckled animal), all are present in the seas of Indonesia. Not less than 2,000 species of fish are found in our sea, with a potency of at least 6.5 million ton/year. According to Tanjung (1994) among the reptilians, 5 species of marine turtles are known, which are the carambola turtle (Darmochelys coriacea), the gray turtle (Lepidochelys olivaceae), the green or flesh turtle (Chelonia mydas), and the flat turtle (Chelinea depressa). Turtles must be conserved, because their numbers are relative small and scarce. With the increase in demand for flesh of turtles for consumption, and the scull stuffed or used for decoration, made turtles high in value.

The numerous organisms of the sea are resources which have high potency for human life. Some have been utilized, but others are still reserved for the future. These resources are in the form of organisms, plants and animals that are self improving or renewable resources, especially the fish resources.

There is a potency of aqua culture of various kinds of mollusks (including pearl oysters), seaweed and fish. According to Dahuri (1998) the increase demand on sea living products for food industry, medicines, cosmetics, and other biotechnology industries, made the prospect of marine bio-industry very bright.

The fish resources in the sea may self-improve provided that the renewal process is guaranteed. The fish production will not decrease when conservation of fish population is preserved, which could be exerted with the following steps: 1) prevent pollution processes in the marine environment; 2) prevent interference and damaging activities to fish sites and breeding places, and damage of the environment should be repaired and improved; 3) overfishing should be avoided; 4) fishing by using explosives or poison must be forbidden, because it will destroy the whole fish population, including their eggs.

The current fishery resource potency in Indonesia's East Area (KTI) is very large and its usage is not optimal, which made it a National Development Capital. This is supported by the fact that, at most District Fisheries Management in KTI, the

level of utilization of fish commodity (big tuna, cakalang and tenggiri) is still below 40% (Anonim, 1999).

Similarly, the non-living resources are most varied in the form of stone, sand, lime, coal, and other minerals, which can be mined in the sea as it is mined on land. Furthermore, various forms of energy (i.e. OTEC, wave, stream, and tides) can be developed by using advanced technology. The sea bed can be exploited, such as the mining of off-shore petroleum in the northern part of the Java Island and other places. Natural gas reserve in the waters of Natuna Island (South China Sea), supposedly containing around 70 trillion M3 and petroleum reserves, which is also found in various areas, such as Irian Jaya, Timor and Australia, are resources that may support economical growth in the future (Harminani, 1993).

Beside the above mentioned potency, the coastal and oceanic ecosystems also posses certain roles and functions. These are not only important for the continuity of economic development, but also for the continuity of human life as well. First of all, it functions as global climate regulator, hydrography and biochemical cycles, wastes absorbent, and the utilization of oceanic ecosystems, which should be balanced with conservation initiatives, in order to perform optimally and continuously.

In the land fishery framework, people are familiar with fish cultivation, but fish cultivation in the sea has just started. Sea plants, such as algae etc., have been utilized, although on the bases of direct collection from the sea, and not as a product of aquaculture. Several research reports indicated that the consumption of food from sea plants is very important, and few farm enterprises are unable to fulfill the demand for food.

III. PRESSURE ON THE SEA AND COASTAL AREA

A petroleum leakage that floats and is stagnated on the sea water will influence the balancing process of oxygen and carbon dioxide in water, and will cover the surface and greatly affect sea life. Rocks and corals in the sea bed, with its various forms, are usually the habitats for fish and other organisms to lay eggs. A damaging act to these habitats will lead to shrinkage of fish population and its species. Therefore, for the sake of conservation of the marine environment, exploitation of the sea bed should be accompanied by an act to prevent damage of the environment and not harm the marine productivity, fisheries and other sectors.

To optimize the utilization of marine resources also means to increase added value and oceanic services, which will result in the ability to compete in the global market. This can be accomplished by developing a downstream industry, starting from a processing and packaging industry (fishery agroindustry, processing of mineral and mining material), transportation, to marketing. Through the development of a downstream industry, the excessive labor force from oceanic primary industry in saturated areas are expected to be absorbed.

Based on this policy, areas and commodities that presently are saturated and damaged are expected to be restored, while areas and commodities that presently are superfluous will optimally be utilized, which will help promote the development of areas. According to Dahuri (1998) the overfishing phenomenon, marine pollution, degradation of prime coastal habitats (especially mangrove and coral reefs), abrasion

and sedimentation that become conspicuous in these areas, when not handled seriously, will threaten the sustainable capacity of marine resources in supporting continuation of the national development to encounter the 21st century.

Another problem that becomes a constraint for oceanic development is poverty of most coastal population and the low quality of human resources operating in the oceanic sector. Damage of the sea and coastal environments are not only caused by industrialization, but frequently also caused by population exploiting marine resources by inhospitable environmental methods, such as the use of explosives and poisons to catch fish.

Pollution from settlements and industries are pollution that are caused by activities on land. By 1988 the amount of oxygen in the Jakarta Bay waters had reached 3.2-5.6 miA of water. Other parameters, such as Chromium, Nickel, Mercury, and Zinc at several points around Angke, have reached a value as big as 110, 160, 0.55, and 460 mg/i respectively (Harminani, 1993). Although only the Zinc value indicated a value above quality material, controlling activities of the Jakarta Bay water should be increased. A worrying inclination of increase of pollution also appeared in coastal areas of Sumatera, Ujung Pandang, Medan, and Ambon. Therefore, the Local Government should participate in the conservation of the beach and coastal waters, since presently this area receive the biggest load of pollution from land. Load of pollution received by the beach and coastal area does not originate only from the sea, but from land as well.

Generally, application and mastering the SEAWATCH Technology from the production aspect, processing to marketing in the oceanic sector (fishery, tourism, communication, mining and energy, maritime industry, environmental management) is still weak. Thus, to make optimal and continuing use of the oceanic resources to strive for a fair and prosperous community, a conducive policy and strategy is necessary for the oceanic sector.

The development of SEAWATCH Technology is expected to support the development and the increase of oceanic resources, entirely respond to marine environmental problems, since the SEAWATCH Program is an intact oceanic information system which achieves and integrates physical, atmospheric, and biological data of the sea area.

IV. CONCLUSION

Indonesia, as an island state with the widest sea area, has a good chance to develop farm operations in the sea. But every revolution has a damaging effect, which excess must be prevented, so that the sea, which presently give their blessings, will not lose its power caused by over-exploitation, mismanagement or ignorance and frivolity actions.

Finally, the realization of an ideal oceanic development requires the application of science and technology and professional human resources for each activity in the ocean sector. Furthermore, the development of management of the madne resources, especially on the planning, inspection and control phases, must be performed in a coordinated and integrated way between related institutions.

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