MANAGEMENT OPTIONS FOR OCEAN CONSERVATION

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Summary

Ocean conservation not only means maintaining and enhancing the productivity of the marine ecosystem but it also involves protecting marine habitats in their entirety. The unsustainable use of marine resources in many parts of the world has resulted in the loss of habitats, extinction of some species and the overall devastation of the marine environment. Clearly, there is a necessity to adopt more effective approaches to manage human uses of the oceans as well as to conserve marine resources.

In practice, there are many options for ocean conservation. For instance, several international treaties have played an important role in the protection of the marine environment on the global scale. All partied states must follow the detailed management framework to establish their own institutions and adopt all necessary actions to deal with problems related to the oceans. Other useful institutional tools include policies, laws, regulations and other administrative mechanisms such as economic incentives.

Additionally, an integrated management plan, and information system, along with a training and educational program are also essential to ensure the conservation of the oceans. All of these management directives necessitate thoroughly planned procedures, integration, and a solid foundation in the sustainability of the marine environment.

1. Introduction

Traditionally, the utilization of the seas and the oceans has met human needs but has often neglected the suitability for and the carrying capacity of the marine environment. The conversion of coastal wetlands, which are commonly filled for the purpose of aquaculture and industrial development in many countries has already led to a significant loss of their precious resources. Everyday, hundreds of thousands of tons of municipal and industrial wastewater are discharged into rivers and finally into the seas. Such volumes far exceed the assimilation capacity and, consequently, degrade the environmental quality of our coastal waters. The great variety of present and future uses of the sea will impose even heavier stresses on the oceans, of such kind and magnitude that people of the world must now attempt to resolve the many conflicts of interest that have and will continue to occur. Ocean conservation is now the name of the game.

Conservation refers to the wise use of natural resources in adherence to sound principals on the protection of the environment. Even so, the loss of sensitive habitats, the decline in marine productivity and the degradation of the marine environment are still common trends throughout the world. Ocean conservation, therefore, has become one of the major goals on both the international and local environmental agendas. The United Nations Convention on the Law of the Sea, for example, outlines the necessary guidelines and mechanisms for countries to follow. Many countries have actively followed the Convention to develop adequate strategies towards ocean conservation encompassed within their own ocean policies.

From the standpoint of environmental planning, the considerations of ocean conservation center upon three issues: the marine environment, human needs and management institutions. The quality of the marine environment is closely linked to the productivity of the marine ecosystems and the overall health and well-being of all mankind. In order to maintain the productivity of the marine environment, human populations must wisely make use of the oceans in a solely sustainable way. In so doing, man should fine-tune development and "economic progress" on the basis of a thorough investigation to determine the characteristics and adaptability of the marine environment. Only by doing this can man balance his needs with measures to enhance ocean conservation.

The performance of ocean conservation ultimately depends on effective management institutions, which include policies, plans, laws, administrative organizations, enforcement and evaluation of any related program. Institutional planning is, therefore at least equally important as, if not more important than, the physical planning of artificial structures (e.g., ports, seawalls).

A consensus has been reached among environmentalists and other scientists that ocean conservation should not only conserve specific endangered species, but also protect the

whole environment of the seas and the oceans. Sensitive habitats, like estuaries, mangroves, coral reefs, seagrass beds, tidal flats, salt marshes, barrier beaches, sand dunes and spits must to be strictly conserved and protected. On many coasts, the nature of construction projects has also been changing. To prevent flooding, many "soft methods", such as the preservation of coastal wetlands, are now being employed instead of the traditional "hard structures" (e.g., river levees). All of these recent developments illustrate that people have come to recognize the power of nature, and that they must devise ways to adapt development so as to keep in harmony with the environment.

In the past, governmental agencies bore the full responsibility of environmental management. However, it has been realized that safeguarding the marine environment should not be the sole responsibility of the public sector. All citizens along with the private sector must share the responsibility with the government. This is particularly justified since the private sector has the required experience, technology, funding and flexibility that can help governments to deal with the environmental problems more efficiently. Thus, public-private partnerships greatly assist in the more effective management of the oceans. In this regard, it is compulsory to enhance official capabilities and to raise public awareness as to marine issues, so that such partnerships may be facilitated.

The next section introduces management options with regard to ocean conservation on both the international and the national scales.

2. International Treaties and Initiatives

In 1609 the Dutch legal authority under Judge Hugo Grotius published *Mare Liberum* - the first enunciation of the concept of freedom of the seas. Grotius proclaimed the freedom of all nations to use and pass over the high seas and the rights of coastal nations to their own sovereign sea territory. In 1703 the limit of the territorial sea was delineated at about 5 km (3 miles), which is the distance a cannonball could be fired from a ship. However, at the end of World War II, the United States discovered oil beyond the 5-km limit, and this prompted President Harry Truman to quickly issue a proclamation annexing the resources of the continental shelf contiguous to the United States. Truman also declared that the United States had the right to regulate and conserve fishery resources of the waters over the continental shelf. Following the Trumen proclamation with regard to the continental shelf, other nations hastened to expand their own jurisdictions, thereby increasing the complexity of international maritime affairs. Observers meanwhile had noted that pollution was an international problem since oil spills were affecting many nations. The discovery of manganese modules during the voyage of the HMS Challenger also raised the issue of seabed mining. As a result of these realities, a series of U.N. conferences and conventions was launched. The Third U.N. Law on the Sea Conference was first formulated in 1973, after 9 years of negotiation, and finally a treaty for ratification was released in 1982.

The United Nations Convention on the Law of the Sea (UNCLOS) was put into action in 1994. This international treaty contains a pledge that ocean environments and their resources are, in the words of Arvid Pardo (then U.N. representative of Malta), the "common heritage of mankind". The UNCLOS has since served as a "great charter" of

marine uses and protection at the international level. In addition to establishing maritime zones, such as the exclusive economic zone (370 km or 200 nautical mi) and the territorial sea (22.2 km or 13 nautical mi), the treaty sets goals for the conservation and management of living resources while granting coastal nations full jurisdiction over those resources within their own exclusive economic zone. Part twelve of UNCLOS also stipulates that each contracting state must adopt necessary mechanisms to prevent, reduce and control all kinds of marine pollution. Definitely, the UNCLOS will continue to play a key role in ocean conservation and marine protection.

Besides the UNCLOS, many international treaties and initiatives have been developed out of the concern for ocean conservation. In April 1996, the United Nations Commission for Sustainable Development reviewed the progress achieved on oceans and coasts subsequent to the 1992 Earth Summit, and indeed, much progress had been made: a binding agreement dealing with the management of straddling and highly migratory stocks had been adopted; the Program of Action for the Sustainable Development of Small Island Developing States had been approved; the Global Program of Action on the Protection of the Marine Environment from Land-Based Activities had been adopted; the Law of the Sea Convention had entered into force; and implementation of the Convention on Biological Diversity and the Framework Conversion on Climate Change had been proceeding successfully. Additionally, many countries had adopted the UNCED Agenda 21 and had further developed their own version of Agenda 21 at both the national and local levels. For instance, China formulated its "Ocean Agenda 21" in 1996. These developments illustrate that international treaties and initiatives serve first as important milestones to protect the oceans and, secondly, act as a catalysts for individual countries and states to develop their own programs on ocean conservation.

3. National Ocean Policies

To institute a policy is to guide a course of action. An overall policy on the management, uses and conservation of the marine environment should be developed for a nation as a whole, for regions of the nation, where appropriate, and at the national level for any identified sites of particular significance. In 1998, the U.N. International Year of the Oceans, Australia presented its ocean policy. The main achievement was a new integrated planning and management regime that "allow the government and community to ensure the conservation of Australia's rich marine bio-diversity and security for marine-based industries and all other users". *Australia's Oceans Policy* in its entirety is nestled within the broader National Strategy for Ecological Sustainable Development, endorsed in December 1992. At the core of the new ocean policy is a commitment to an ecosystem-based management of Australia's exclusive economic zone. Management has implemented a thorough new regional marine planning process, based on one large marine ecosystem. Thus, the goals of the new policy include: the protection of Australia's rights and jurisdiction over offshore areas; the conservation of marine biodiversity and the ocean environment; the promotion of economic development through ecologically sustainable marine industries; the improvement of expertise and capabilities in ocean-related management and technology, and the building of public awareness as to the importance of the oceans, and so on.

New Zealand also published a *Coastal Policy Statement* in 1994. Accordingly, "…matters of national importance" include the preservation of the natural characteristics of the coastal environment, wetlands, lakes, rivers, landscapes, significant areas of indigenous vegetation, inclusive of their protection from inappropriate subdivision, their usage and their development. Public access to and along coastal marina areas, lakes and rivers must also be maintained and safeguarded.

Ideally, an ocean policy should also address the issue of integrating the management of coastal lands with watershed. The process of creating such a policy will highlight the national recognition of the importance of the conservation and management of marine and estuarine areas while attaining the principal goal of the sustainable management of ocean usage. Although this type of policy may be an exclusive one, it can be established within a national or regional conservation strategy.

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Biographical Sketches

Wen-Yan Chiau is an Associate Professor in the Department of Marine Environment and Engineering at National Sun Yat-sen University in Kaohsiung, Taiwan. After earning his B.Sc. in Urban Planning (1976) and L.L.M. (1980) in Taiwan, he was granted his M.A. in Urban Planning (1989) and Ph.D. in City and Regional Planning (1991) from the University of Pennsylvania. Dr. Chiau's expertise is in the field of environmental planning and management, especially in the areas of coastal zone management, wetland conservation, coastal tourism, ocean policy and environmental law. He is author of the first book on coastal zone management in Chinese entitled, *Coastal Management: Theory and Practices*, published in November 2000. During his some 20 years as a planner and conservationist, he has served as both project manager and principal advisor on a wide range of projects related to the marine environment. In addition to giving lectures, conducting research projects and advising graduate students, he actively participates in related governmental affairs and serves as a member of various *ad hoc* governmental committees. Currently, he is a member of the National Council on Sustainable Development of the Executive Yuan (Cabinet), the highest-level agency formulating conservation and sustainable development policies in Taiwan. He is also concurrently an advisor for the Subcommittee on Sustainable Development of the Legislative Yuan (Congress), a reviewer of the "National Biodiversity Report" and vice coordinator of the committee on "National Oceans Policy". On a voluntary basis, Dr. Chiau contributes a great deal of his time to several NGOs in Taiwan. He is the president of Wetlands Taiwan and the CEO of the Foundation of Ocean Taiwan. As part of his active involvement in international matters vis-à-vis the marine environment, Dr. Chiau has been one of the representatives of the Chinese Taipei Delegation in the APEC Meetings of the Marine Resource Conservation Working Group since the sixth meeting in Sidney, B.C., Canada in 1994. He is an executive board member of the Asia-Pacific Environmental Council (AEC) and was responsible for organizing the sixth Asia-Pacific NGOs' Environmental Conference (APNEC-6) held in Taiwan in 2002. APNEC meetings, held every two years, have been among the most important events for NGOs in the region.

Born in Changhwa, Taiwan, on 22 April 1949, **Prof. Chen-Tung Arthur Chen**, his wife and two daughters are currently residing in Kaohsiung, where he has been Professor at the Institute of Marine Geology and Chemistry since 1986. After receiving his B.Sc. degree in Chemical Engineering from National Taiwan University in 1970, Prof. Chen was awarded his Ph.D. degree in Chemical Oceanography from the University of Miami in 1977. In the same year, he was appointed Assistant Professor in the College of Marine Sciences of Oregon State University, where he was later promoted to Associate Professor in 1981. He served as Visiting Professor at National Sun Yat-Sen University (NSYSU) in Kaohsiung, Taiwan, and as Chargé de Recherche (CNRS), Université Pierre et Marie Curie in Paris during 1984-1985. During this period, he founded the Institute of Marine Geology at NSYSU, and served as its director until 1989 when he was made Dean of the College of Marine Sciences, a position he held until 1992.
Prof. Chen has sat on numerous international committees, including the Scientific Committee on Oceanic Research and the World Ocean Circulation Experiment. He also served as one of the executives of the Scientific Steering Committee of the Joint Global Ocean Flux Study (JGOFS) between 1992-1995. Just prior to that, he had helped to form the Joint JGOFS / LOICZ Marginal Seas Task Team in 1991, and

served as its chairman until 1995. Prof. Chen is at present one of the editors of *Oceanography Journal* and associate editor of *Marine Chemistry*. Besides having more than 150 of his own scientific papers published, Professor Chen was awarded the highly-coveted Biowako Prize for Ecology from Japan in 1997.