

1972. Regional Programme for the prevention and Management of Marine Pollution in the East Asian Seas, is important in the framework of the GIPME. This Programme has supported over 1000 scientists from the 11 countries since 1995. Over the past five years a total of twenty-five training courses and workshops related to the Marine Pollution, have been organized.

The East Asian Seas is recognized as having the world's richest biodiversity, supporting one-third of the world's coral reefs and mangroves and producing 40% of the world's fish catch. However, it is becoming increasingly evident that these valuable resources are threatened by pollution and other economic activities.

Environmental governance for marine and coastal issues

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There is a complex relationship between human activities and the marine and coastal environments. A number of human activities and economic ventures have a strong reliance on the marine and coastal resources. Conversely, a vast majority of anthropogenic activities impose a burden on the global marine resources. On the whole, oceans and seas have numerous functions that are essential to both ecosystem health and human society.

Our priorities and actions in the field of coastal and marine issues are guided by Agenda 21, which was adopted at the United Nations Conference on Environment and Development (UNCED—Rio de Janeiro, June 1992). It provides a blueprint for the international community to chart its way towards sustainable development of marine and coastal resources. The Agenda 21, Chapter 18 on '*Protection of Oceans, All Kinds of Seas, Including Enclosed and Semi-Enclosed Seas, and Coastal Areas and the Protection, Rational Use and Development of Their Living Resources*' starts with the following statement:

"The marine environment—including the oceans and all seas and adjacent coastal areas—forms an integrated whole that is an essential component of the global life-support system and a positive asset that presents opportunities for sustainable development"

The items covered under Chapter 18 are typically divided into two broad categories: coastal issues and marine/ocean issues. In some cases—such as for small island states—the two may be indistinguishable. This chapter also identifies the difficulties and obstacles in achieving this integrated approach. For example, it pinpoints the potential problems in the management of high-seas fisheries, including the adoption, monitoring and enforcement of effective conservation measures. Fishing fleets operating in international waters are utilizing inappropriate and indiscriminate fishing methods resulting in over-harvesting of living marine resources, frequently species, such as dolphins, that were not targeted. Similarly, monitoring and preventing marine pollution at high seas from sea-based sources, including dumping of hazardous wastes, is very difficult.

Coastal zones the world over, approximately 40,000 km in length, are particularly vulnerable to human influences. These are the areas where urban growth is the fastest, resulting in excessive stress on the natural resources. Encroachment of

human activities by way of building, changing land-use, tourism, and pollution from both industry and agriculture all strain the natural coastal ecosystems. In particular, these developments are rapid and difficult to manage in the developing countries due to relatively uncontrolled population growth and limited infrastructure, financial and manpower resources.

In marine issues, the most significant and long-term threat from human activities is to the marine living resources, which include fisheries, mammals and coral reefs. Fish account for about 20 percent of the protein in human diet and about 80 million metric tones are used for human consumption each year. Fishing and related industries are an important component of the global economy. However, over-fishing has placed most of the world's fishing stock under high stress. Marine mammals are particularly threatened as a result of increased levels of pollution in seawater. It is found that various persistent organic pollutants have been accumulated through the food chain to a great extent in the marine mammals. Another component of the delicate marine ecosystem are coral reefs, which play an important role as carbon dioxide sinks and provide habitat for a wide variety of fish and marine fauna. High pollution levels and increasing water temperatures have led to bleaching of the coral reefs and their ultimate death. This effect is also indirectly linked to the global warming as a result of increase in greenhouse gases and stripping of the ozone layer.

Until the recent past, oceans were considered to be inexhaustible sinks, where wastes and other pollutants could safely be dumped without any concerns about significant adverse effects. However, it has been duly recognized that marine and coastal environments are strongly impacted by human activities and that the substances released into oceans through anthropogenic sources can unfavourably alter the chemical composition of seawater. Although "intentional" pollution poses a severe threat to coastal and marine environments, accidents have also made a very significant contribution to deterioration of coastal zones. Examples of large-scale oil spills, like the *Exxon-Valdez* spill in Alaska have become quite commonplace. Unfortunately, Japan has also suffered its share of oil spills in its territorial waters. The worst accident was in January 1997, when the Russian tanker, *Nakhodka*, broke up in the Sea of Japan and the fuel oil present on the vessel polluted the coast of nine Japanese prefectures.

Against this backdrop of adverse effects to both marine and coastal areas, it is crucially important to manage these global resources through a coherent effort at the international level. Obviously, this requires close international cooperation. Another equally important factor to consider is that these problems are of a multidisciplinary nature. This means that they require input from experts in the fields of politics, social sciences, economics, history, and geography. Therefore, it is essential for the international scientific community to share information and research results across various disciplines and geographic boundaries. A very practical way of achieving this is to develop and promote international and multidisciplinary networks of researchers.

A number of international institutions have been put into place to ensure satisfactory governance and management of marine and coastal resources. These include the United

Nations Convention on the Law of the Sea (UNCLOS), the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA), the UNEP Regional Seas Programme and the Basel Convention on the control of transboundary movements of hazardous wastes and their disposal. Indirectly, several other multinational environmental agreements are also applicable. In order to successfully implement these institutions, we need to ensure that all parties have good intentions to comply with them and they possess the capacity to do so. The latter may necessitate building the capacity to comply, particularly when dealing with developing countries.

In conclusion, the oceans should be considered as a common resource that belongs to everybody and all are equally responsible for wise and sustainable utilization of the bountiful resources that the oceans have to offer.