Introduction to the coastal seas in Japan

In relation to the utilization of the sea, coastal seas in particular of enclosed coastal seas in Japan are very important for human activities since they provide calm sea condition that are suitable for developing urban area, industrial zone and recreational sites. Ports and harbors are often constructed in order to promote regional economic activities. These coastal waters are also important ground for coastal fisheries and aquaculture. Increased population and human activities brought more pollution loads to coastal seas, and consequently the water quality of coastal seas has degraded and many negative effects of eutrophication occurred. Reclamation from the shallow seas has often been carried out to support the increasing economic activities. Land reclamation has been often accompanied by destruction of seaweed beds, tidal flats and natural coastline. Corresponding to these changes above, the approach to the environmental management of the coastal seas firstly made emphasis on water pollution control. However, the approach has gradually shifted recently from water pollution control to the wider goal that includes the conservation of the biodiversity, biological productivity, restoring and ensuring the healthy hydrological cycle, well-balanced nutrient cycle, ensuring opportunities for people to contact with natural beaches and so on.

History of pollution and legal system

Serious water pollution and environmental deterioration in the coastal area of Japan occurred after the postwar reconstruction following World War II although some small scale water pollution and environmental destruction had already occurred before WWII. Rapid economic growth of Japan during the mid-1960s to mid-1970s was accompanied by serious water pollution and ecological disaster such as frequent occurrence of red tide. In 1967, the Basic Law for Environmental Pollution Control was enacted, and then in 1970, the Parliament passed a number of pioneering anti-pollution laws at the Diet nicknamed “Environmental Pollution Diet”. And then in the following year of 1971, the Environmental Agency was established.

The Seto Inland Sea, the largest and one of the most typical enclosed coastal seas in Japan, had suffered from serious pollution during the rapid economic growth when
the sea was called “Dying Sea”, but has gradually recovered by struggling efforts of variety of groups and bodies with the strong support of legal treatment. In 1973, the Law on Temporary Measures for the Environmental Conservation of the Seto Inland Sea was enacted and this law was made permanent in 1978. This law has played a very important role on the environmental conservation of the area after that since area wide total pollution load control in terms of COD load control is one of the major mechanism of the law. This mechanism worked successfully and further countermeasures against eutrophication in terms of total nitrogen and phosphorus load control were also applied in the Seto Inland Sea. These measures are highly evaluated from the viewpoint of improvement of water quality.

In 1993, Basic Environmental Law was firstly enacted in Japan and Ministry of the Environment (former Environmental Agency) established in 2001. However, legal system related to coastal management has been still highly complicated due to many laws based on the individual objective of the utilization of the sea, for examples, land use, fisheries, mineral resources, marine traffic etc. These individual law system is actually controlled by the individual governmental sector, more directly, individual ministry. Also in 1993, a series of standards was enacted to prevent further chemical pollution of public waters. Environmental Quality Standards (EQS) relating to human health were greatly enhanced and strengthened, and environmental standard related to conservation of the living environment of sea was also enacted in order to prevent water pollution ( pH, COD, DO, Coliform group number and n-hexane extract ) and eutrophication ( total nitrogen and total phosphorus ) of the coastal area.

As a new type of the legal system, the Law for the Promotion of Nature Restoration was enacted in 2002, and the Special Law on Restoration of the Ariake and Yatsushiro Seas enacted in 2003. In these new type of laws, “Restoration” is the key word indicating the shift of the policy from water pollution control to promoting restoration. Ocean Basic Law was enacted in 2007 in which integrated coastal management (ICM) is one of the key concept. These new types of legal system are expected to play an important role on the future environmental management in the coastal area of Japan.

Non-legal approach for environmental management

1) “Health examination” of the coastal seas

“Health examination” of coastal seas is essential not only for diagnosis of the present status but also for planning of the treatment or environmental restoration. Since the present status of coastal seas in Japan is more or less "damaged" or "deteriorated" mainly
due to prolonged impact of human activities, “health examination” was conducted in the officially designated 88 enclosed coastal seas and some additional areas in Japan following the proposed examination scheme based on the “Master Plan and Guideline (2002)” and “Concept and Method (2006)”. In these schemes, two major functions of marine ecosystem which are "ecosystem stability" and "smoothness of material cycling" are highlighted.

Although “health examination” of coastal marine environment is widely accepted as a concept of analogy to the human health examination, definition of marine environmental health and practical methodology of examination has not been adequately developed. As a new ecosystem approach to environmental management and monitoring, concept of “health examination” and scheme of “health examination” which consist of preliminary examination and advanced examination have been proposed as a part of the activities of Ocean Policy Research Foundation. In the present report, concept and scheme of “health examination” as well as outlined results of preliminary examination will be introduced.

2) Creation of “Sato Umi”

Recently new idea of the creation of "Sato Umi" is proposed. "Sato Umi" in Japanese, means coastal sea under the harmonization of sustainable wise use with conservation of appropriate natural environment and habitat conditions. Compared with deteriorated coastal environment, "Sato Umi" is able to provide higher biological diversity for habitat and higher biological productivity for living resources. These characteristics of "Sato Umi" are also suitable for demonstrating multi-functional roles of fisheries.

In order to establish functionally efficient "Sato Umi", development of new holistic approach for sustainable biological production and control of eutrophic level are strongly requested. Promotion of integrated environmental management towards environmental restoration of many varieties of habitat is recommended under the international exchange of information, ideas and methodologies. In this context, "Sato Umi" Session will be held in the international EMECS8 conference which will be held in Shanghai, China in October, 2008.

Conclusive remarks

As was already stated, the approach to the environmental management of coastal seas in Japan has gradually shifted recently from an initial emphasis on water pollution control to the wider goal that includes the conservation of the biodiversity, biological
productivity, restoring and ensuring the well-balanced nutrient cycle etc. These holistic approaches may also play a vital role on the ICM.

As examples of these holistic approaches, concept and some related activities of “health examination” and “Sato Umi” are introduced. In Japan, “clean sea”, from the viewpoint of only water quality, has already realized to some extent, although there are still some many water quality problems. Next target to be tackled with might be “biologically rich sea” with variety of living resources. In order to restore or create “biologically rich sea”, idea of “health examination” and “Sato Umi” are expected to contribute.

Overall goal of environmental management in the next stage with use of assessment for eutrophication status and environmental standard might be “Better life through wise and sustainable use of coastal environments”.