

and Hiroshima Bay. in nearly the same style from 2003 to 2007. I want to discuss about the characteristics of these action plans and evaluate to what extent they have comprehensive feature from the viewpoint of “ the guideline for comprehensive management of coastal area” . And I want to analyze why they don’ t reach to the guideline level.

**Research initiative on northwest pacific sea marine environment protection**

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**Background and Policy**

Along the coast of the seas surrounding Japan, fishery troubles have been caused by drifted refuge, as well as breakout of red tide and Echizen Kurage (jellyfishes) and as the countermeasures against these troubles a great deal of attention is turned on making a maritime basic plan in accordance with the Basic Act on Ocean Policy. To maintain a suitable level of water quality in public, the comprehensive countermeasure for reducing environmental loads is needed in accordance with the program for reducing environmental loads discharged from the land-based areas.

In this research, we grasp current status of water pollution in waters surrounding Japan and the loads discharged from the areas and a simulation model of water pollution is developed to assess the land-based countermeasures of the countries concerned. We further discuss the land-based countermeasures necessary to recover the desired maritime environment in waters surrounding Japan.

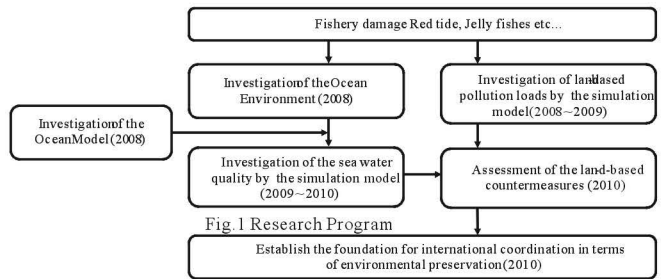
**Objectives**

- (1) In time of an advance in eutrophication and red tide drifting in waters surrounding Japan, current status of water pollution and pollution loads discharged by land-based areas are investigated.
- (2) Using the simulation model of water pollution, the land-based countermeasures of the countries concerned are assessed.

**Results of the Research**

The outcome of this research is expected to establish the foundation for international coordination in terms of environmental

preservation, including the reduction in pollution loads mainly based on the land-based countermeasures such as sewerage construction necessary for recovering the desired maritime environment in waters surrounding Japan.



**The introduction support for Total Pollutant Load Control System (TPLCS) in the countries of the East Asia**

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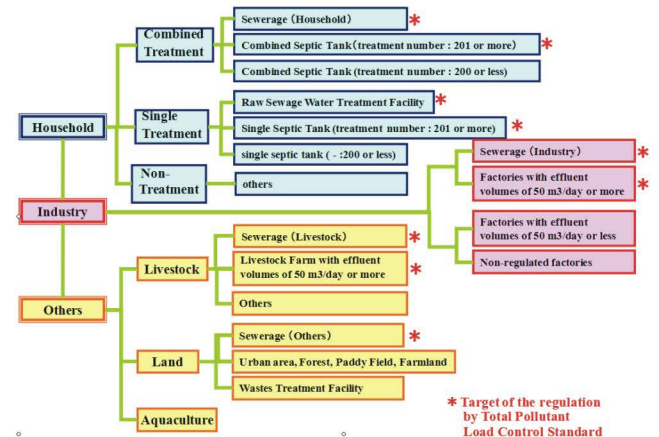
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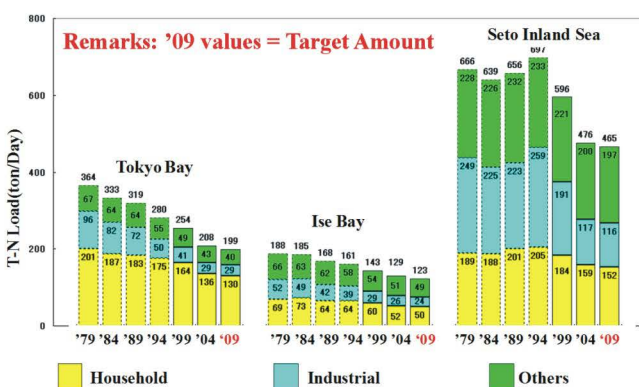
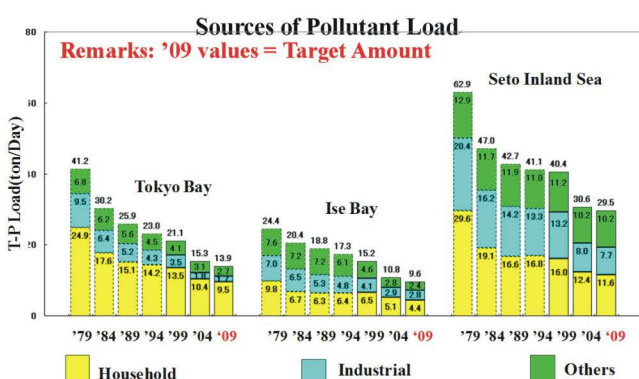
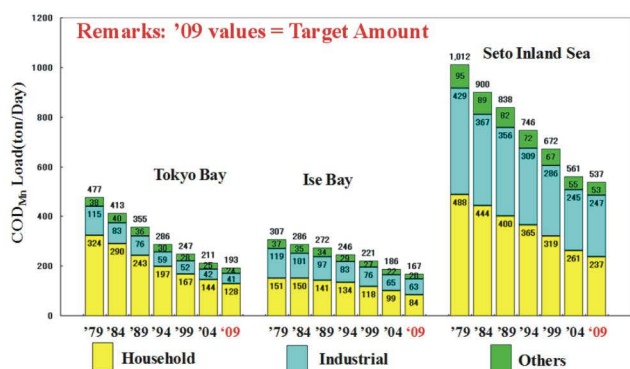
**1. The Preservation from the Enclosed Coastal Seas in Japan**

In Japan, TPLCS of COD<sub>Mn</sub>, T-N and T-P is applied to the large enclosed coastal seas, where the effluent regulations by concentration are insufficient for achieving environmental quality standards.

TPLCS was established in 1979 to achieve environmental quality standards by reducing total land-based load from household, industry and other sectors such as livestock, land and aquaculture, respectively with estimation.

As a result, level of water quality in target seas of Japan has been improved steadily.





## 2. TPLCS as a Countermeasure against the Eutrophication in the East Asia

The eutrophication in the sea areas of the East Asia is now worsening by a large quantity of land-based load in rapid economic development. The introduction of TPLCS should be considered as one of effective countermeasures against the eutrophication.

So MOE started the project that will support the countries of the East Asia to build the framework for estimating total land-based load. The project is expected to establish the introduction guidance that provides the knowledge about the TPLCS that Japan stored in the past for the officials in the countries of East Asia.

## The biodiversity of macrobenthos from the Jiaozhou Bay, Shandong Peninsula

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The situation of biodiversity of macrobenthos in the Jiaozhou Bay (South coast of Shandong Peninsula, Yellow Sea) is reported based on the data from the investigations carried out from 1998 to 2007. A total of 322 macrobenthic species were found, of which, 133 species belong to Polychaeta, while 92 to Crustacea. The biodiversities were very different among the sampling stations in the bay. The mean secondary production in the bay in AFDW was 18.65 g/m<sup>2</sup>/a from 1998-1999 and 13.41g/m<sup>2</sup>/a from 2000-2004; the mean P/B ratio was the same at 1.05/a for both periods of 1998-1999 and 2000-2004. The distributions of secondary production increased gradually from outside the bay (open sea), to the bay mouth, and to the northern bay (deepest part of the bay). The mean secondary production during 2000-2004 was lower than that during 1998-1999; a high value center during 1998-1999 was in central northern part of the bay near Hongdao, and the center during 2000-2004 was in the northwestern part of the bay near Dagu River estuary and Hongshiya. Highway construction and engineering around the bay and busy activities in the wharf in Cangkou area, resulting in disappearing of large area of ecotope in mud flat at Licun River mouth in northeastern part of the bay, which should be the main reason causing the high distribution center of the secondary production shifted from central northern bay to the northwestern bay. Human activity-related pollutions from household and industries around the bay, marine culture, and the dry-out of incoming rivers to the bay should be responsible for the decline of the secondary production during 1998 to 2004. Comparing with the results from the Bohai Gulf, southern Yellow Sea and the East China Sea, the present result confirmed the hypothesis that the secondary production is affected by water depth, and decreased exponentially as water depth increases. The P/B ratio result confirmed that the P/B ratio increased exponentially with water temperature. The P/B ratio at 1.05/a shows that the mean life history of macrobenthos in the Jiaozhou Bay is about one generation in one year. The macrobenthos from the intertidal zones were also studied, the species