

Direction of effort responds to environmental restoration of Tokyo Bay

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(Keywords) Coastal area, environmental restoration, Tokyo Bay

1. Introduction

Since Japan's coastal area has large population and economic accumulation, large amounts of human sewage is finally discharged into the coastal sea. And the circulation of sea water is not enough in the enclosed sea. Consequently, red tides are chronically generated by eutrophication, and dysoxic water masses are formed by accumulated organic bottom sediment, having serious effects on aquatic fauna and flora, and other water environment issues.

"Environmental Restoration of the Sea" has been established for the urban restoration project at the third decision in December, 2001 to remedy those coastal water environment issues. In response to this, Japan Coast Guard (JCG), Ministry of Land, Infrastructure, Transport and Tourism (MLIT), Ministry of the Environment (MOE), Fisheries Agency and relevant local government formulated "Action Plan for Tokyo Bay Restoration" in March, 2003. In March, 2013 it will have been 10 years since "Action Plan for Tokyo Bay Restoration" was implemented.

Tokyo Bay is close to nature sea area that is located in the center of the Metropolitan area. The coastal area and watershed are population and industry intensive and the center of urban and industry that drive the Japanese economy. The size of the Metropolitan area (covering 4 prefectures) is 14,000km² which is only 4% of the total landmass, but its population is 3.5 million (28% of the total population), and the industry ships for more than 47 trillion yen (18% of the national revenue).

2. Past efforts of Tokyo Bay Restoration

The purpose of "Action plan for Tokyo Bay restoration" is to "Creation of "Tokyo Bay" that fits the Metropolitan area by retrieving amiable and beautiful "Sea" that is diverse with wildlife and with comfortably water to play with". 3 section committees: (1) Land area load reduction, (2) Environmental improvement in sea area, (3) Monitoring of Tokyo Bay, had been established

and has made progress towards the goal achievement. Effort items of each section committee are given in Table-1.

Table-1 Effort items of each section committee.

Section committee	Effort item
Land area load reduction	① Implementation of total amount reduction project and efficient business measures to reduce pollution from land. ② Construction and improvement of sewage facilities, and spread of advanced disposal processes. ③ Efflux load reduction in the rain. ④ Cleanup provision of river. ⑤ Reduction of pollution from ground surface. ⑥ Collection of floating debris.
Environment improvement in sea area	① Pollution reduction in sea area. ② Improvement of cleanup efforts of sea area.
Monitoring of Tokyo Bay	① Enhancement of monitoring ② Share and effective use of monitoring data ③ Civilian Monitoring activities

If you look at the efforts in the sea area, there is "Pollution reduction in sea area", removal of mud including sedimentary organics in canals, improvement of bottom sediments, development of shallow bottom by using good sand, efficient collection of floating debris on the sea surface by cleanup vessels, collection of seabed debris by NPOs and fishermen, cleanup activities of the beach and tidal flats, and all of these have been conducted.

Regarding "Improvement of purification ability of sea area", conservation of existing tidal flats and seaweed beds, rehabilitation / development of tidal flats, shallow bottom, beaches and rocky fishing spots, formation of biological network in a standpoint of a long period, construction of port structures that promote biofuels, reconstructing of mildly-sloped seawalls towards the creation of habitats for benthic organism, backfill of deep digging traces in the past that is an occurrence factor of blue tide, and these have been accomplished.

Regarding Monitoring of Tokyo Bay, enhancement of

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monitoring about bottom layer DO and benthic organisms, reinforcement of monitoring of tidal current and water quality by monitoring posts and marine vessels, development of website with relevant information, survey on beach litter and beach cleaning by local residents, reinforcement of cooperation with citizens and NPOs that do environmental conservation activities in Tokyo Bay, and all these have been accomplished.

3. Direction of Effort towards Tokyo Bay Restoration

Tokyo Bay restoration is not a goal that can be achieved by accomplishing entirely new efforts in a short period. Therefore based on previous improvement efforts, technology and knowledge, by making proper choices, improving, adding new efforts, and carrying on traditional efforts will be a realistic approach.

The effort towards Tokyo Bay restoration needs to set the overall goal. The goal should be attractive and hopeful that we can have hope towards the future.

It is impossible to set such a goal that is viable from every side such as the technical aspect, the economic aspect and the social aspect. Therefore when efforts are actually implemented, a goal cannot be set with only thinking of one accomplishment of the overall goal. Where it is implemented, it is possible to think specifically of contents, constraint conditions and other goals of the implementation. Thus collecting information by all possible means, firmly considering, setting goals that are realistic and viable despite the possibilities of certain uncertainties, and implementing are needed.

Today, the Japan economy is in a tough situation. Therefore financial constraints for the efforts of Tokyo Bay restoration has to be considered, and it is important to improve the environment efficiently through a low-budget. In this situation, multipurpose utilization of port facilities, use of dredged soil and recycled material, making improvement of the water quality efficient, and these kinds of efforts are important. The cooperation by various agents to advance those efforts will be needed, but to do that, approach that does not lose possibility by a formalism “Relaxed cooperation based on ability” should be emphasized.

4. Conclusion

The “Environmental Restoration of the Sea” project was started in December, 2001 as part of the urban restoration project, and during the past 10 years efforts

have been made towards achieving it.

Technology and information gathering in regards to the “Environmental Restoration of the Sea” have advanced, but it is a large goal that is not easily accomplished.

Turning Tokyo Bay that is located in the middle of the metropolitan area into an area that is considered valuable with comfortable nature and biological production can only be beneficial to Japanese economy and society.

It is an extremely difficult goal to have, but wrapping your head around it, increasing knowledge, advancing technology and not giving in to the challenges of the goal are necessary.

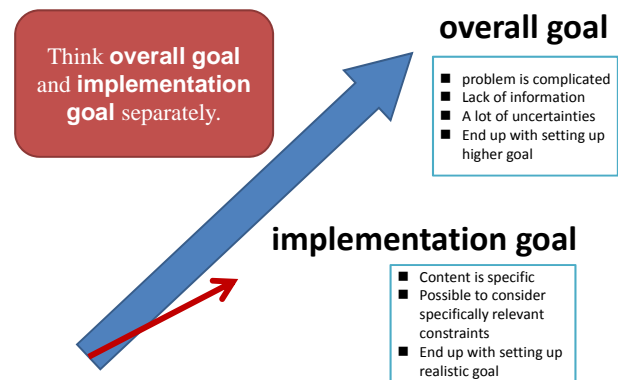


Figure-1 Two goals

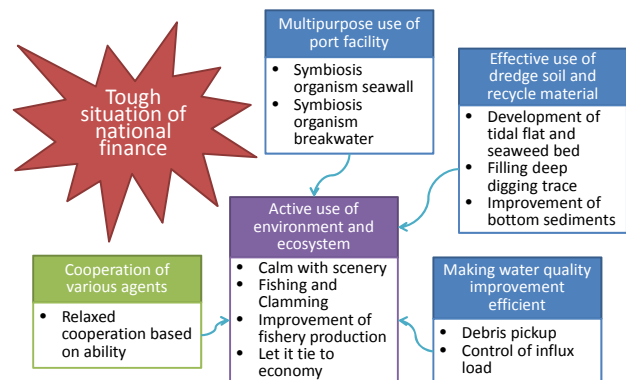


Figure-2 Direction of effort towards restoration of sea