

Investigation and Research on Policies to Reduce Pollutant Load as Joint Efforts of Relevant Bureaus in Tokyo Bay

Year of Research

2008

(Purpose)

Today, three major bays - Tokyo Bay, Ise Bay, and Osaka Bay, which are closed water bodies - as well as designated lakes, swamps, and river areas are facing serious water pollution caused by eutrophication. Thus, pollutant load (COD, T-N, and T-P) that originates on land must be reduced in order to restore ecosystems and create a habitable aquatic environment for many species. In addition to advanced sewerage treatment, reduction of point loads through policy implementations at relevant bureaus and steady progress in measures against non-point pollutant loads are necessary to attain this goal.

Using Tokyo Bay as a model case in which oceanic restoration is being implemented as a priority, this research aims to organize feasible policies for relevant bureaus to get involved in water quality improvement of closed water bodies and to examine the amounts of terrestrial pollutant load and pollutant load reduction.

(Outcome)

(1) Set up the amount of pollutant load (simple future value)

We examined the amount of pollutant load reduction in fiscal 2012, the final year of the action plan period for Tokyo Bay regeneration and in fiscal 2024, the target year of the Tokyo Bay Comprehensive Basin-wide Planning of Sewerage System. With respect to the amount of pollutant load at individual emission sources, we drew up simple future prospects based on the Basic Policy for the Tokyo Bay Comprehensive Basin-wide Planning of Sewerage System, September 2007.

(2) Estimate the amount of pollutant load reduction

We conducted questionnaire survey on the amount of pollution load reduction with relevant bureaus of Tokyo Bay, examined feasible policies (Table 1) through which reduction of terrestrial pollutant load reduction might be possible, and estimated the amount of pollutant load reduction. In addition to measures at emission sources, we also examined the amount of pollutant load reduction through river purification and dredging. Table 2 shows the amounts of T-N pollutant load and load reduction under each individual measure.

Table 1 Items of Pollutant Load Reduction Measures

Emission source		Setup method in this investigation
Surfaces	Paddy fields	Optimal fertilization through the spread of eco-farmers is taken into consideration.
	Farm fields, orchards	
	Urban areas	Reduction of flow rate through installation of rainwater infiltration facilities is taken into consideration.
	Combined sewerage	Storm overflow
Primary treatment		
Facilities	Sewerage treatment plant	The ratio of sewerage system population and the ratio of population on advanced treatment system in each prefecture identified through questionnaire-based investigation are basically taken into consideration. Reduction of pollution load through gradual advanced treatment is also taken into consideration.
	River water purification plant	The amount of load reduced at each plant is calculated based on the results of questionnaire-based investigation and added as the total amount of reduction.
River dredging		The amount of annual dredging is identified through questionnaire-based investigation and calculated as the total amount of reduction.

Table 2 Amounts of Pollutant Load and Load Reduction under Each Individual Measure (T-N)

(T-N: unit kg/day)			
Category	Type	H24	
Breakdown of measures to reduce load	Increase sewerage and conduct advanced treatment	Simple future	161,064
		After implementing measures	137,650
		Amount of reduction	23,414
	Practice optimal fertilization at paddy fields	Simple future	7,013
		After implementing measures	6,464
		Amount of reduction	548
	Practice optimal fertilization at farm fields and orchards	Simple future	14,927
		After implementing measures	13,759
		Amount of reduction	1,167
	Reduce load from urban surfaces	Simple future	13,815
After implementing measures		12,431	
Amount of reduction		1,384	
Improve combined sewerage	Simple future	15,803	
	After implementing measures	13,458	
	Amount of reduction	2,345	
River water purification plants, etc.	Simple future	9.6	
	Amount of reduction	9.6	
Total amount of emission load	Simple future	266,714	
	After implementing measures	237,846	
	Amount of reduction	28,869	
Amount of reduction under the Basic Policy for the Comprehensive Plan of Sewerage Maintenance in Individual Tokyo Bay Basin Areas (2024)		85,618	

* Amount of reduction = Amount of simple future load - Amount of load after implementing measures + Amount of reduction through river water purification

(Future prospects)

Follow-up to confirm efficacy of the estimated amount of load reduction is necessary in the future.

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Key words

Closed water body, advanced treatment, measures against non-point pollution