

Collection of summaries of WAVE studies and research

(Fiscal 1999)

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Waterfront Vitalization and Environment Research Center

## Studies and Research Department

### Basic policy studies

Study	Fiscal year when study was conducted	Study outline
<p>Study on cargo volume on Kanmon Passage (Kanmon Passage Construction Office of Fourth District Port Construction Bureau)</p>	<p>1998 } 1999</p>	<p>The origin and destination ports of each vessel that passes Kanmon Passage and the monthly cargo volume in the passage were investigated. It was found that the numbers of ocean-going vessels are about the same as the number of domestic vessels and that the former vessels connect Japanese ports with more than 100 overseas ports. These data were used as a basis for calculating investment effects. The user demands regarding the improvement of Kanmon Passage (such as extension to 13 or 14 m in depth) were also surveyed.</p>
<p>Basic study on the effect of the Kanmon Passage improvement project (Kanmon Passage Construction Office of Fourth District Port Construction Bureau)</p>	<p>1999</p>	<p>Marine traffic simulation was conducted to investigate how marine accidents can be reduced by making improvements to Kanmon Passage. The simulation results were used to calculate the effect of investment on passage improvement.</p>
<p>Study on the effect of the Kanmon Passage improvement project (Kanmon Passage Construction Office of Fourth District Port Construction Bureau)</p>	<p>1999</p>	<p>Future improvement of Kanmon Passage was discussed in the study. The objective of the improvement and the socioeconomic effect of the project were discussed quantitatively, and the measures to assure accountability in conducting the project were summarized.</p>

Study	Fiscal year when study was conducted	Study outline
<p>Study on the plan of introducing new energy sources into port and coastal areas (Ministry of Transport)</p>	<p>1999</p>	<p>Applications of wind power generation are scarce in the port and coastal areas in Japan. Institutional, technical, and other challenges that should be addressed for introducing wind power facilities were summarized, and the corresponding measures and approaches were presented.</p> <p>The port and coastal areas are more advantageous in wind characteristics than the inland areas. In the former areas, however, precise data are insufficient and constructing independent structural foundations on the seabed entails a higher cost. These problems should be addressed and politic support should be given to promote the introduction of wind power in the future.</p> <p>Constructing a wind power station together with a breakwater is a way to reduce construction cost. Three requirements in pursuing this approach were presented: (1) the functionality of the breakwater should be maintained, (2) any party should have a fair opportunity to participate in the project, as with the PFI projects, and (3) recovery from disaster should be ensured.</p>

Study	Fiscal year when study was conducted	Study outline
Study on the advanced evaluation of private-sector projects (Ministry of Transport)	1999	To improve the port facility projects of the private sector, demand was predicted multilaterally. Through questionnaires and hearings from project operators, any difference between the initial plan and the present status, managerial innovations, challenges arising from project structure, and challenges associated with project prediction were clarified. The criteria of analytical evaluation applicable to proposed projects were determined, and the approach of demand-following investment was proposed.
Study on the socioeconomic effect of port investment (Third District Port Construction Bureau, etc)	1999	Based on the 1999 Guideline for Evaluating Port Investment issued by the Ministry of Transport in fiscal 1998, cost-benefit analyses were conducted and the possibility of commercialization was confirmed for the port facilities to be developed. Specifically, cost-benefit analyses were conducted for the extension of the Port Liner line associated with the construction of Port Island Phase II and Kobe Airport as well as for the development of facilities including a 10-m-deep quaywall at Amagasaki-Nishinomiya-Ashiya Port. The obtained cost benefit ratios (CBR) of 1.5 or more indicate that the evaluated projects are socially promising.

### Basic study on creating integrative areas

Study	Fiscal year when study was conducted	Study outline
Study on measures to develop Public Core as center of marine resort network (Okinawa General Bureau)	1999	<p>The concept of Public Core, which promotes the attractiveness of a port as a marine resort center, is being proposed. The significance and functions of the concept were clarified and its possibility in a marine resort of Okinawa was verified.</p> <p>A case study was conducted on Ginowan Marina. The use of the convention-hosting capability of the existing Ginowan Port facilities and integrated development involving downtown Ginowan were proposed. Also, a tourist questionnaire survey was conducted as a market research.</p>

### Basic study on physical distribution

Study	Fiscal year when study was conducted	Study outline
Study on the competitive environment of international container ports in the Pan-Yellow Sea Zone (Fourth District Port Construction Bureau)	1999	<p>This study investigated the trend of the distribution of international containers in the Pan-Yellow Sea Zone, predicted the amount of container cargo for each import and export item between China and the Kyushu-Yamaguchi area, and analyzed the feasibility of establishing new sea-trade routes to China. It was found feasible to establish new routes to Shanghai and Tianjin Ports.</p>

## Basic study on regional development

Study	Fiscal year when the study was conducted	Study outline
Study on regional measures to develop extended physical distribution zones (Ministry of Transport)	1998 } 1999	In the fiscal 1998 study, challenges and problems related to international hub ports and the arterial high-standard highway network were summarized in view of allowing local regions to perform international activities independent from metropolitan areas. In fiscal 1999, two case study areas around Hiroshima and Shiogama Ports were discussed in detail, and coordinated measures to develop distribution infrastructures (such as the arterial high-standard highway network and inland depots) required for forming extended physical distribution zones were proposed.
Study on the project of coordinated development of Pacific coast areas in the eastern Kanto region (Second District Port Construction Bureau)	1998 } 1999	Following the development of the basic approach in fiscal 1998, a regionally-coordinated development plan was prepared and the issues to be addressed for realizing the plan were discussed in fiscal 1999. A total of 37 regionally-coordinated development plans, which can be divided into the following four areas, were proposed: (1) plans for forming a network of ports and physical distribution, (2) plans for forming a network of recreation areas, (3) plans for forming a network of human exchange, and (4) plans for promoting environmental preservation.

Study	Fiscal year when study was conducted	Study outline
<p>Tudy on the promotion of public access in the Osaka Bay coastal areas (Third District Port Construction Bureau)</p>	<p>1998 ) 1999</p>	<p>The fiscal 1998 study summarized the present status of and development challenges in the coastal areas and discussed basic policies on regional development in view of improving public access.</p> <p>In the fiscal 1999 study, the Osaka Bay coastal areas were divided into eight zones: (1) head of the bay, (2) Himeji and Higashi-harima, (3) Rinku, (4) Wakayama-Shimotsu, (5) Akashi, (6) Awaji, (7) Sennan, and (8) Hidaka. A basic development plan, including the improvement of traffic access to seafront bases and vitalization of seashore by using unused or poorly-used land, was prepared for each zone.</p> <p>Based on the above plan, each case study focused on specific issues, such as circulatory public access using canals and public access using land areas assigned for the project.</p> <p>Institutional and managemental issues relevant to ensuring the public access were discussed, and development plans were prepared.</p>
<p>Study on the present status and future policies on the ports of remote islands in Okinawa</p>	<p>1999</p>	<p>The present status of 37 ports on remote islands in Okinawa was investigated and the ports were classified into four types: (1) regional hub ports, (2) local hub ports, (3) community ports, and (4) ports for recreation and tourism. Questionnaires recovered from people concerned with Hirara Port (regional hub port), Nakada Port (local hub port), Uchihana Port (community port), and Zamami Port (port for recreation and tourism) revealed some problems such as frequent cancellation of voyage. Development of a recreational base at Zamami Port and a supply base at Nakada Port was discussed in case studies.</p>

## Basic study on the use and management of ports

Study	Fiscal year when study was conducted	Study outline
<p>Development of port EDI system (Second District Port Construction Bureau of the Ministry of Transport, etc.)</p>	<p>1996 ~</p>	<p>The port EDI system started to operate tentatively in October 1999. System designing and connection testing were conducted before the start of the operation, and then operational management, user management, and notification were carried out. In fiscal 1997, the Ports and Harbors Bureau of the Ministry of Transport and the Japan Coast Guard prepared the Basic Policies on the introduction of the EDI system into the administrative procedures associated with the arrival and departure of ships. Based on the Basic Policies, the WAVE conducted system development in fiscal 1998.</p> <p>Tentative operation of the system started in fiscal 1999, and the use of the port EDI system for arrival/departure notification as well as the application for permit of mooring facility use started in October 1999. Because it is essential that the developed system comply with international standards, UN/EDIFACT messages were coordinated and information was gathered.</p>

### Other basic researches and studies

Study	Fiscal year when study was conducted	Study outline
<p>Study to support new types of resources-recycling (First District Port Construction Bureau; Noshiro City)</p>	<p>1999</p>	<p>In the fiscal 1998 Study on the Possibility of a Seafront Recycling Complex, recycling of bark and chips generated from the lumber industry in Noshiro Port and surrounding areas was proposed.</p> <p>The basic unit of bark generation and the amount of bark generation in Noshiro were investigated, and the potential of recycled products was explored. The items required for the recycling of bark and chips, including the transport of raw materials and recycled products, were discussed by means of questionnaires and hearings from relevant people and through study meetings.</p> <p>Technologies required for recycled products are being established, and such products as oil absorbent, fertilizer, and bark boards have been proposed. To increase the value of bark as a raw material, establishment of a joint crushing center was proposed, and this will be pursued by collaboration between the public and private sectors in Noshiro City.</p>

Study	Fiscal year when study was conducted	Study outline
<p>Study on the supply of electric power and steam to berthed container ships (Tokyo Gas Co., Ltd.)</p>	<p>1999</p>	<p>Assuming that the number of refrigerated containers will increase in the future, problems and challenges associated with supplying energy from a gas cogeneration system installed in a container yard to a berthed container ship were summarized, the cost of ship modification was estimated, and the effect of environmental improvement was discussed.</p> <p>It was found that a significant environmental improvement could be expected, with reduction in sulfur and nitrogen oxides by nearly 100%. On the other hand, this arrangement takes time to connect and disconnect power cable and there is a technical problem in the case of emergent departure from the berth. Another problem identified is that, assuming a realistic operation timetable, each ship has to pay an additional yearly cost nearly equal to the berthing fee (1.1-million yen).</p>
<p>Study on port management methods with regard to deregulation (Independent research)</p>	<p>1998 } 1999</p>	<p>With the support from Nippon Foundation, this study discusses port development and management in view of improving the efficiency of Japanese ports, whose international competitiveness is said to be declining, and proposed the private-sector-led approach to develop and manage a container terminal in the context of the "landowner's port." Furthermore, to vitalize the hinterland of the port, a port area scheme that promotes fusion and coordination by allowing residence was proposed.</p> <p>A joint research with invited overseas researchers and a study on overseas circumstances were also conducted to support the present study.</p>

## Study on creating integrative port areas

Study	Fiscal year when study was conducted	Study outline
<p>Study on the basic plan of Shimizu Port seafront restructuring (Third District Port Construction Bureau; Shizuoka Prefecture, Shimizu City)</p>	<p>1999</p>	<p>To augment the functionality of Shimizu Port, a basic plan on the restructuring of the Ejiri and Orido areas, which are particularly important areas, was studied. For the Ejiri area, two plans (either the north side or west side is open) were compared in consideration of the present status and challenges, and the north-side-open option was eventually proposed as a basic plan because of its smaller number of existing facilities that need to be relocated, less project cost, and better situation to coordinate the central facilities with the relevant markets. The coordination between the Ejiri area and the S-Pulse area remains to be discussed. As for the Orido area, facilities to be introduced were specified, the project cost was roughly estimated, and a stepwise development plan was prepared.</p>
<p>Study on the vitalization of the Honko area of Komatsushima Port (Third District Port Construction Bureau; Tokushima Prefecture)</p>	<p>1999</p>	<p>The Honko area of Komatsushima Port has been developed according to the Komatsushima Port Renaissance 21 Study (fiscal 1989) and the Study on the Seafront Vitalization of the Honko area of Komatsushima Port (fiscal 1992). However, the Nankai Ferry line, which played a central role in the area, was relocated to the Tokushima Port area in April 1999 because of the opening of the Akashi-Kaikyo Bridge.</p> <p>As a new attempt of port development (including the revision to the port plan), this study promoted collaboration between the industry, government, and academia, centering around the public-involved Komatsushima Port Workshop. The study also prepared development policies and plans with the aim of fostering locally-led vitalization, such as resident participation in the Honko area.</p>

Study	Fiscal year when study was conducted	Study outline
Study on the redevelopment plan of the Nishioita area of Oita Port (Fourth District Port Construction Bureau; Oita Prefecture)	1999	The Nishioita area of Oita Port, where a ferry terminal and warehouses are now located, is being planned for restructuring into a waterfront area open to the public, where the ferry terminal will be integrated with green areas and commercial facilities. This study discussed measures to commercialize the redevelopment plan, prepared basic planning drawings, and summarized the concept, schedule, scheme, and other aspects of the project.

## Studies on the development of the basis of physical distribution

Study	Fiscal year when study was conducted	Study outline
<p>Study on the plan of physical distribution management in the northern Kanto area (Second District Port Construction Bureau; Ibaraki Prefecture; Hitachi City; Hitachinaka City; etc.)</p>	<p>1999</p>	<p>This study was conducted with the aim of promoting the use of Hitachinaka and Hitachi Ports and forming an efficient distribution system in the northern Kanto area. The present status of and challenges involved in the physical distribution in the area were summarized, and measures to improve the distribution were discussed in consideration of port-related opinions and requests from companies in the area. A regional distribution management plan was prepared, including a proposal for collaboration between consignors in consolidating partial cargoes as a way to introduce new shipping routes.</p>

Study	Fiscal year when study was conducted	Study outline
<p>Follow-up study on the plan of physical distribution management in the Matsuyama Port area (Shikoku District Transport Bureau; Ehime Prefecture; Matsuyama City)</p>	<p>1999</p>	<p>Following the Plan of Physical Distribution Management in the Matsuyama Port Area prepared in the fiscal 1998, changes in regional and nationwide physical distribution environments were grasped, the airline industry was added as an object of investigation, and the progress of the project was verified.</p> <p>The greatest change found in the physical distribution around the Matsuyama area is the augmentation of road transport capability associated with the construction of Honshu-Shikoku bridges and the expansion of the expressway network in Shikoku. In view of fiercer competition between land, sea, and air transportation, measures such as the speedup of marine transportat by means of on-board customs clearance and the expansion of international airfreight destinations in cooperation with airlines were proposed.</p> <p>Efforts involving companies and local people concerned are in progress, as exemplified by the start of transporting consolidated containers to South Korea and Taiwan. Because an existing freight yard has reached capacity, it is necessary to start the full use of a new foreign trade wharf at an early point in time, as shown by a cost estimation of using the wharf.</p>

## Study on the long-term vision of business promotion measures

Study	Fiscal year when study was conducted	Study outline
Study on the plan of Naha Port (freight demand forecast) (Okinawa Prefecture)	1999	Okinawa Prefecture is trying to improve Naha Port to make it an international hub port for trade and is conducting relevant studies with the aim of (1) developing an international sea-lane network by making use of Okinawa's geographic advantage, (2) developing port facilities and distribution functions of international level that contribute to the promotion of business in Okinawa, (3) reducing distribution cost by improving port services, (4) and fostering cost competitive businesses through the expansion of the free trade zone system and the promotion of processing trade. This study focused on the forecast of freight demand, in which the amount of port freight was estimated in a generic way and the amount of transshipped freight was estimated using a sacrifice model. The results indicate that a significant amount of transship freight (about 120-million TEU in total) from Japan proper and other Asian countries can be expected if some conditions, such as reductions in port fees, are met and that there is a possibility of Naha Port becoming a hub port.

## Ports, Harbors and Marine Environment Research Institute

### Studies on environmental status and policies

Study	Fiscal year when study was conducted	Study outline
<p>Study on promotion of ecoports (Environment Division of Ports and Harbors Bureau, Ministry of Transport)</p>	<p>1996 } 1999</p>	<p>To develop ecoports (ports in harmony with the environment), the current states of port environments were grasped and the progress of port environmental measures was reviewed.</p> <p>The port and marine environmental conditions in Setonaikai and the three principal bays (Tokyo, Ise, and Osaka Bays), which are characterized by metropolitan areas, closed waters, and active port operation, were summarized and target values for environmental improvement were set.</p> <p>As for terrestrial environment, ideas and challenges involved in setting port improvement targets were discussed in consideration of the current development status of waterfront greenery areas and parks. Among the port environmental measures, the progress, challenges, and evaluation related to the port landscape formation model project and the historical port environment creation project were summarized. The future course of combined environment-related projects was also discussed.</p>

Study	Fiscal year when study was conducted	Study outline
<p>Basic study on the introduction of biotopes in port areas (Niigata Survey and Design Office of First District Port Construction Bureau, Ministry of Transport)</p>	<p>1996 } 1999</p>	<p>Development of ports in harmony with the natural environment is recently being required, and efforts are being made to develop ports in consideration of living organisms and ecosystems. The concept of biotope was introduced into port development, and a guidebook describing the idea and procedure of biotope planning was prepared in fiscal 1998 with the aim of improving the environment of the entire area around the port.</p> <p>The fiscal 1999 study investigated the West Coast area of Niigata Port according to the manual, discussed the introduction of a biotope in ports under the jurisdiction, and verified the manual.</p>

Study	Fiscal year when study was conducted	Study outline
<p>Study on the promoted use of recycled material considering environmental loads (Shimonoseki Survey and Design Office of Fourth District Port Construction Bureau, Ministry of Transport)</p>	<p>1999</p>	<p>Recently, environmental consciousness is an important aspect of public works, and a basis for making environment-related decision is required in port projects.</p> <p>The basic units of environmental load for the recycled materials (such as blast furnace slag and copper slag) that can be used for port development projects were calculated. For ports in the Fourth District, case studies were conducted regarding the effect of using recycled materials in port improvement projects on the reduction of environmental loads. Measures to use recycled materials effectively for environmental load reduction in port development were summarized.</p>
<p>Study on endocrine disruptors in ports (Environment Division of Ports and Harbors Bureau, Ministry of Transport)</p>	<p>1999</p>	<p>Sediment samples were collected from two locations in each of 39 ports throughout Japan to analyze 12 endocrine disruptors, such as dioxins and organotin compounds. As a result, seven endocrine disruptors were found at more than half of the locations and the geographic distribution of the other endocrine disruptors was also clarified.</p>

### Study on planning methods for environmental creation

Study	Fiscal year when study was conducted	Study outline
<p>Study on advanced cost-benefit analysis in port environment improvement projects (Environment Division of Ports and Harbors Bureau, Ministry of Transport)</p>	<p>1999</p>	<p>To evaluate, in an efficient way, the cost and benefit of port environment improvement projects related to port greening, water and sediment quality improvement, and sea area disposal sites, representative ports were selected and the basic units for project evaluation were calculated by using the contingent valuation method (CVM) and the travel cost method (TCM). The cost-benefit analysis methods were discussed with respect to tideland and seaweed beds developed by marine environmental creation projects.</p>

## Studies on port environmental plans

Study	Fiscal year when study was conducted	Study outline
<p>Study on the basic environmental plan of Nagoya Port (Nagoya Port Management Union)</p>	<p>1999</p>	<p>This study focused on environmental aspects according to the revision of the Nagoya Port Plan. The concept of ecoport (a port in harmony with the environment) and measures to preserve and create port environments in order to realize this concept were identified. The understanding and collaboration of multilateral administrative agencies, citizens, and corporations were promoted. The Nagoya Port Environmental Plan was discussed with the aim of handing down Nagoya Port, which is a symbol of the Chubu region, to future generations as a place to relax and promote exchanges.</p>
<p>Study on tideland environmental creation in Ariakekai and Yatsushirokai (Fourth District Port Construction Bureau of the Ministry of Transport)</p>	<p>1998 } 1999</p>	<p>About half of the tideland in Japan is in Ariakekai and Yatsushirokai, for which the basic idea, direction, and measures of port development in harmony with tideland were discussed and case studies were conducted.</p>

Study	Fiscal year when study was conducted	Study outline
<p>Study on port and marine environmental creation plans in Setonaikai (Third District Port Construction Bureau of the Ministry of Transport)</p>	<p>1997 } 1999</p>	<p>In spite of its rich natural environments, Setonaikai is facing environmental threats because of the densely distributed industries and population in the areas facing the sea and the closed nature of the sea. Environmental preservation and creation are therefore required from the regional point of view. The present environmental plan aims to provide guidelines for the national government and port administrators to cope with the marine and port environments of Setonaikai, providing guidelines for the environmental plan of each port, and promote an integrated commitment to the environment through the cooperation of multilateral administrative agencies, citizens, and corporations. Considering the characteristics of Setonaikai, the basic ideas and objectives of marine and port environmental plans were set together with four basic directions to be pursued, and the main measures proposed were discussed.</p>
<p>Study on the basic environmental plan of Ise Bay (Fifth District Port Construction Bureau of the Ministry of Transport)</p>	<p>1997 } 1999</p>	<p>The Fifth District Port Construction Bureau of the Ministry of Transport presented its basic measures of environmental preservation and creation in Ise Bay and prepared a regional environmental plan that integrates individual port environmental plans.</p>

## Studies on marine environment creation plans

Study	Fiscal year when study was conducted	Study outline
<p>Study on planting for protection against blown sand generated from landfill (Kansai International Airport Co., Ltd.)</p>	<p>1997 } 1999</p>	<p>This study was aimed at introducing protection planting as a measure to cope with blown sand generated from the landfill associated with the development of the second-phase airport island of Kansai International Airport. Challenges associated with plant growing were addressed experimentally. A greening plan and specifications for the second-phase construction were discussed based on the summary and analysis of existing data.</p>
<p>Study on measures to develop second-phase revetments in harmony with the environment (Kansai International Airport Co., Ltd.)</p>	<p>1998 } 1999</p>	<p>This study was aimed at achieving advanced compatibility between revetments and living organisms for the revetments and surrounding sea areas of the second-phase airport island of Kansai International Airport. The results of survey on the revetments of the first-phase airport island were summarized and analyzed comprehensively, and environmental compatibility was discussed in consideration of the latest measures and techniques used elsewhere to attain environmental compatibility. Effective measures of environmental compatibility were discussed for the revetments and surrounding sea areas of the second-phase airport island.</p>

### Studies on port landscape and green space plans

Study	Fiscal year when study was conducted	Study outline
Basic study on facilities intended for nature-oriented port environment (Nagoya Port Management Union)	1999	To pursue the concept of ecoport (a port in harmony with the environment) in consideration of living organisms and ecosystems in Nagoya Port, the properties of a wide variety of biologic environments in the port were summarized, and the idea of nature-oriented port environment was explored. A greening plan of Nagoya Port incorporating the concept of nature-oriented port environment was discussed.

### Study to support environmental ISO activity

Study	Fiscal year when study was conducted	Study outline
Study on establishment of environmental management systems (Kansai International Airport Land Development Co., Ltd.)	1999	With the investments of Kansai International Airport Co., Ltd. (KIAC) and local governments, Kansai International Airport Land Development Co., Ltd. (KALD) was established in June 1996 as a business entity to develop the airport site.  This study intends to support KALD in gaining ISO-14001 certification.

## Studies on environmental creation technologies

Study	Fiscal year when study was conducted	Study outline
<p>Study on environmental compatibility techniques in the Mabori area of Yokosuka Port (Keihin Port Construction Office of Second District Port Construction Bureau, Ministry of Transport)</p>	<p>1999</p>	<p>To plan development of coastal preservation facilities in the Mabori area of Yokosuka Port, techniques to pursue environmental compatibility based on measures to foster biologic diversity were discussed.</p> <p>The present status of the environment and biota around the Mabori area as well as the basic structure of the coastal preservation facilities were investigated, and the studied area was found to be characterized by diverse reef ecosystems. Because the development of the coastal preservation facilities is relevant to reefs, environmental compatibility measures allowing variations in the shape and material of structure were proposed.</p>
<p>Study on environmental compatibility techniques in the west coast of Niigata Port (Niigata Survey and Design Office of First District Port Construction Bureau, Ministry of Transport)</p>	<p>1999</p>	<p>In the sea area on the west coast of Niigata Port where a project of integrated shore protection is conducted, marine environmental and ecological studies have been conducted for a long period from 1986 to 1998. The results were summarized and analyzed systematically and the effect of the project on the environment was evaluated. Based on the evaluation results, coastal development techniques compatible with the environment of the sea area were proposed.</p>

Study	Fiscal year when study was conducted	Study outline
<p>Study on tideland ecosystem modeling (Yokohama Survey and Design Office of Second District Port Construction Bureau, Ministry of Transport)</p>	<p>1996 } 1999</p>	<p>A tideland ecosystem model was constructed to predict and evaluate quantitatively the effect of projects conducted around the Gamo tideland on the tideland ecosystems. The effectiveness of the model and improvements required were discussed.</p> <p>Based on the findings obtained from the model analysis, effective measures and monitoring methods were proposed.</p>
<p>Basic study on environmental database development (Yokohama Survey and Design Office of Second District Port Construction Bureau, Ministry of Transport, Keihin Port Construction Office of Second District Port Construction Bureau, Ministry of Transport)</p>	<p>1998 } 1999</p>	<p>With the aim of coping promptly, adequately, and efficiently with environmental requirements (such as those related to the planning, survey, and design of each port in the area), basic issues were studied to improve the functionality, operability, and versatility of port and marine environmental database systems.</p>

Study	Fiscal year when study was conducted	Study outline
Study on environmental creation along the sea-lane at the mouth of Tokyo Bay	1999	<p>Removal of the Third Coast Battery is planned as part of a project to improve the sea-lane at the mouth of Tokyo Bay. The possibility of using the material generated by the removal was discussed in terms of creating habitats for marine organisms in nearby sea areas.</p> <p>The results of investigation into the functionality of the habitats on the Third Coast Battery and the material generated by the removal of the battery indicate that concrete blocks and concrete structures can be used effectively for creating reef habitats for fish. A plan to develop fish reefs by using the removed material was discussed, and a plan to monitor the effect of the development was proposed.</p>
Study on the project of Setonaikai seabed environmental restoration (Third District Port Construction Bureau of the Ministry of Transport)	1999	<p>Seabed degradation by excessive extraction of sea gravel from Setonaikai is a matter of concern. The general trend of the municipalities in the coastal areas of Setonaikai is to totally ban or restrict the collection of sea gravel. Seabed degradation is considered to be a cause of water quality deterioration and reductions in fishery resources.</p> <p>The Environment Agency is studying the effect of sea gravel extraction on the environment. The necessity of and techniques for restoring sea gravel extraction sites were discussed in this study as regards Hiroshima Prefecture, where sea gravel extraction was totally banned. Challenges to be addressed for commercialization were identified, and the possibility of commercialization was discussed.</p>

Study	Fiscal year when study was conducted	Study outline
<p>Study on the use of sediment derived from the Wada area of Maizuru Port (Maizuru Port Construction Office of Third District Port Construction Bureau, Ministry of Transport)</p>	1999	<p>The water quality of Maizuru Bay, which is a closed area, becomes more deteriorated as the location approaches the head of the bay. Near the timber ponds scattered in the bay, bark-containing sediment is also adversely affecting water quality.</p> <p>This study investigated the present status of Maizuru Bay and discussed a measure of environmental improvement using sediment derived from the Wada area.</p>
<p>Study on the environmental measures along the sea-lane at the mouth of Tokyo Bay (Keihin Port Construction Office of Second District Port Construction Bureau, Ministry of Transport)</p>	1999	<p>Removal of the Third Coast Battery and dredging of the Nakanose sea-lane are planned as part of a project to improve the sea-lane at the mouth of Tokyo Bay. The effect of the project on the environment and living organisms was studied, and environmental preservation and monitoring plans were discussed. Regarding the plan of using the dredged sediment of the Nakanose sea-lane, the effect of using the sediment for sand covering on the environment and living organisms was discussed. Also, environmental preservation and monitoring plans during the execution of the project were proposed.</p>