

Collection of summaries of WAVE studies and research

(Fiscal 2005)

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Waterfront Vitalization and Environment Research Center

Major studies conducted by WAVE are described below.

I Study projects related to port-related measures, plans and information  
Studies on goods movement

Study	Fiscal year when study was conducted	Study outline
Study on Enhancement of Port Functions	2005	<p>There is a growing need for international ferries and RORO ships in order to handle the increasing volume of cargo and the demand for greater speeds due to the increasingly active international trade and personal exchanges between Japan and other East Asian countries. The progress in transportation and the integration of municipalities have caused the hinterlands to be served by ports to become greater, necessitating the restructuring of ports and harbors. In order to invest in and operate ports and harbors more effectively and efficiently by minimizing investment diversification, it is necessary to promote the integration of ports and harbors that serve the same hinterlands.</p> <p>In view of the present state mentioned above, this study focused on two subjects: (1) the enhancement of port functions for international movement of goods and passengers to meet user needs for international ferry and RORO shipping routes and (2) the enhancement of port functions for port integration with the aim of more effective and efficient port investment and operation (hereafter the two subcategories of study mentioned above are referred to as "the international ferry and RORO shipping route development study" and "the port integration study"). The international ferry and RORO shipping route development study considered the possibility of increasing shipping routes mainly between Kyushu and other East Asia countries in proximity of Kyushu, taking into consideration of the opinions of the people</p>

		<p>concerned, demand trends, and the characteristics of ferry and RORO ships. In the port integration study, port integration promotion plans for five prefectures in the administrative district (Oita, Nagasaki, Kumamoto, Miyazaki and Kagoshima) were drawn up, and port integration in the two areas selected as integration model areas—the Matsuura area in Nagasaki Prefecture and the Sakurajima area in Kagoshima Prefecture—were considered.</p>
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<p>Industrial Trend Analysis Study</p>	<p>2005</p>	<p>The industries located in coastal areas have played an important part in the development of local economies and the provision of employment opportunities. The dramatic changes in the industrial structure of Japan, however, have caused the industries located in coastal areas to undergo considerable changes, greatly influencing local economies and port cargo. The purpose of this study was to identify and analyze the present conditions of industrial structure, land use and goods movement related to the industries that are likely to have a great impact on coastal land use and port cargo movement and investigate the land use trends and port cargo movement trends in the coastal areas in the coming years. This study focused on 14 industries. Because 13 of these industries were already covered by previous studies, this study aimed to update the previous study results related to those industries and newly investigated the tire industry, which is an industry of major influence among the automotive parts industries.</p>
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<p>Study on Improvement of Efficiency in Container Transportation (Marine Transportation)</p>	<p>2005</p>	<p>For the purpose of improving the efficiency of container transportation between the ports in the Tokyo and Yokohama areas which is heavily dependent on land transportation (hereafter called "truck transportation") and reducing environmental loads by achieving modal shift to marine transportation (hereafter called "barge transportation"), this study considered the realization of barge transportation services.</p> <p>In view of the results of trial transportation using multiple barge systems carried out in the previous year (FY2004), requirements for barge systems, operation patterns, etc., for barge transportation services were identified, and experiments were conducted to verify those requirements.</p> <p>On the basis of the experiment results, model cases of regular operation were developed, the effects of cost reduction and environmental load reduction measures were verified, and problems to be addressed for implementation were identified.</p>
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<p>Study on Improvement of Efficiency in Container Transportation (Land Transportation)</p>	<p>2005</p>	<p>This study explored measures to enhance the efficiency of container transportation between the ports in the Tokyo and Yokohama areas in order to become internationally more competitive. Working groups were formed to deliberate on different means of transportation (land transportation, marine transportation, rail transportation) to identify concrete measures for efficiency improvement. The working group on land transportation investigated the state of marine container transportation in the Tokyo and Yokohama port areas and planned and carried out a Tokyo–Yokohama joint depot demonstration experiment and verified the effect of the scheme.</p> <p>As the first step, the state of the roads in and around the Tokyo and Yokohama port container terminal gate areas and arterial roads between Tokyo and Yokohama were investigated, and problems related to the land transportation of marine containers were identified. In the study, a questionnaire survey of land carriers was conducted, and GPS units were installed on tractor heads of 15 land carriers in the Tokyo and Yokohama port areas for a two-week (December 12 to 24) survey on operation patterns of land transportation using marine containers (GPS survey).</p> <p>As a next step, the construction of a Tokyo–Yokohama joint depot* at Kawasaki Port was conceptualized in view of the state of marine container transportation in the Tokyo and Yokohama port areas, and a Tokyo–Yokohama joint depot demonstration experiment was conducted to verify the effects of such a depot and identify problems.</p>
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<p>Study on Improvement of Cargo Handling Efficiency at Container Terminals</p>	<p>2005</p>	<p>It is generally believed that domestic feeder transportation interconnecting key ports and local ports helps strengthen Japan's competitiveness in the marine and land transportation network, reduce physical distribution cost, and promote modal shift to environmentally friendly modes of transportation. Therefore, three types of social experiments were conducted in the three port areas of critical importance (Ise, Keihin, Hanshin) for the vitalization of domestic feeder transportation to verify the effectiveness of vitalization measures and identify problems. As a result, the effectiveness and problems of individual vitalization measures were determined.</p>
<p>Study on Measures to Vitalize Domestic Feeder Transportation</p>	<p>2005</p>	<p>It is generally believed that domestic feeder transportation interconnecting key ports and local ports helps strengthen Japan's competitiveness in the marine and land transportation network, reduce physical distribution cost, and promote modal shift to environmentally friendly modes of transportation. In this study, the Domestic Feeder Transportation Committee and the Domestic Feeder Transportation Working Group were formed to investigate the state of domestic feeder transportation and identify problems. At the same time, vitalization measures were proposed taking into consideration the results of social experiments on domestic feeders conducted in another study (Study on Improvement of Container Cargo Handling, 2005).</p>

<p>Study on Container Trends at Hachinohe Port</p>	<p>2005</p>	<p>This study was conducted for the purpose of investigating the trends in container transportation and the trends of port-related and port user firms in the Hachinohe Port and surrounding areas to predict container handling needs in the coming years and identify and study structural and nonstructural problems.</p> <p>In this study, existing information and statistical data were collected and questionnaire and interview surveys of firms located in the hinterland of Hachinohe Port were conducted to investigate goods movement at and around Hachinohe Port, evaluate the possibility of container use, estimate container handling needs in the coming years, investigate the present state of Pier No. 2 in the Hattaro area and the trends in container ships, and studies the container berth functions of Hachinohe Port.</p>
<p>Basic Study on Physical Distribution Networking during a Major Disaster in the Ise Bay Area</p>	<p>2005</p>	<p>This study identified measures to deliver emergency supplies in the event of a disaster and at the same time ensure physical distribution needed for business activity by investigating and analyzing examples of measures taken in connection with historical disasters such as the Great Hanshin Earthquake (Hyogoken Nanbu Earthquake). From the viewpoints of business continuity and early recovery in the event of a major disaster, the study also focused on how ports and businesses should cooperate and a desirable form of redundancy among the important Ise Bay ports and documented the results as a basic reference for use in the coming years.</p>

<p>Basic Study on Port Physical Distribution Network in Okinawa</p>	<p>2005</p>	<p>In this basic study, the actual flow of cargo to and from Okinawa was investigated to consider efficient physical distribution networking in Okinawa.</p> <p>Existing data such as various statistics and economic indices were utilized, and a questionnaire survey of port users such as shippers was conducted to investigate the actual cargo flow on Okinawa's main island.</p> <p>The study revealed that cargo on Okinawa's main island is concentrated at Naha Port and that considerable percentages of the goods produced or consumed in the northern part of the island are transported by land and exported or imported via Naha Port.</p>
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## Studies on port space

Study	Fiscal year when study was conducted	Study outline
Study on Promotion of Proper Utilization of Coastal Waters	2005	<p>Designed as a study on the Program for Promoting Proper Utilization of Coastal Waters, this study was conducted for the purpose of considering various measures to utilize existing stock, methods for adjusting utilization rules and other related matters.</p> <p>In the study, the coastal area along Tokyo Bay was considered as a model case, and a canal boating experience event (social experiment) and a questionnaire survey were conducted to identify and sort out present problems and challenges including ones related to the needs and rules for the use of coastal waters. As a result, the study revealed the needs. It was also proposed that in order to promote the utilization of coastal waters, measures be taken, for example, to adjust the rules for the use of coastal waters, ensure user safety and raise awareness of self-responsibility.</p>

<p>Study on Good Coastal Management Practices Considering Coastal Characteristics of Okinawa</p>	<p>2005</p>	<p>With the understanding that it is necessary to reconsider Japan's universal planning and improvement approach that has been applied to coastal projects in Okinawa and reflect the distinctive characteristics of Okinawa in coastal projects, this study was conducted in order to define good coastal management practices in the coming years by identifying the characteristics and charms of the coasts of Okinawa, recognizing the challenges, and undertaking case studies.</p> <p>In the study, by performing literature and data research and conducting questionnaire and interview surveys of coast visitors and coast planners, distinctive characteristics of Okinawa were extracted and measures that should be taken to create coasts characteristic of Okinawa were identified.</p> <p>In this study, the distinctive characteristics of the coasts of Okinawa were clarified, and 13 basic ideas about good management practices for the coasts of Okinawa and challenges to be undertaken in order to implement those ideas were proposed.</p>
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<p>Study on Promotion of Use of Nanao Port</p>	<p>2005</p>	<p>Nanao Port is an excellent natural port on Nanao South Bay near the midpoint of the Noto Peninsula. Nanao Port has long prospered as a port of call for ships on coastal routes along the Sea of Japan and as a port for trade with the continental countries. Since its designation as an important port in 1951, Nanao Port has contributed greatly, as a center for marine transportation. Over the years, efforts have been underway for the development and expansion of Nanao Port, and the port now has an extensive array of port facilities. In order to further contribute to regional development, efforts are being called for to make even more effective use of the existing port facilities, taking into consideration the emerging expectations for the port and new approaches being taken.</p> <p>This study aimed to evaluate the present state of the port facilities and port space of Nanao Port and the emerging expectations for the port, find a theme for efforts being made to make effective use of Nanao Port in the coming years, and identify effective measures to implement the theme and the direction of efforts to be made by the people and organizations concerned.</p>
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<p>Study on Ways to Make Port Facilities Easier to Use and More User-friendly by Making Use of the Characteristics of Okinawa</p>	<p>2005</p>	<p>The tourism-oriented prefecture of Okinawa is in need of user-friendly port facilities that are easy to use not only for tourists but also for many local residents and that make effective use of Okinawa's characteristics.</p> <p>In this study, through literature and data research and other surveys including discussions held in interview surveys (lecture meetings) and questionnaire surveys of local businesses, the current usage of existing port facilities and the opinions of users were investigated, and measures to promote the use of waterfront space in order to make it more lively were considered.</p> <p>Furthermore, in accordance with the belief that in order to make Okinawa Prefecture more attractive, it is essential to make Naha, which is the gateway to Okinawa, more attractive, Naha Port (the passenger vessel wharves in the Tomari Wharf area and the adjacent areas) was considered as a case study, and concrete measures to make the model area more lively were proposed.</p>
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## Studies on port use and management

Study	Fiscal year when study was conducted	Study outline
Study on Measures to Promote Goods Movement in the Hokuriku Region	2005	<p>The Hokuriku region is the Sea-of-Japan side gateway to the Far Eastern region of Russia, China, East Asia and Southeast Asia. It is believed that in the Hokuriku region, ports greatly contribute to the regional economy as centers of goods movement and have a wide range of economic benefits including direct socio-economic contributions of the ports themselves to the local community and an extensive ripple effect.</p> <p>This study was conducted, therefore, to estimate the direct and indirect economic effects from the existence of ports and port facilities, explore the possibilities of physical distribution efficiency improvement and goods movement promotion, and devise measures to achieve them, in order to verify the roles that the ports in the Hokuriku region play as centers of goods movement.</p> <p>The economic effects brought about by the existence of ports and port facilities were evaluated through a case study of Kanazawa Port. In the case study, not only the economic effects of quaywall construction but also other effects such as other economic effects and the job-creating effect and tax-revenue-enhancing effect after the quaywall goes into service were measured through industry-related analyses, and the results were documented as data for public relations purposes.</p> <p>Concerning the possibilities of physical distribution efficiency improvement and goods movement promotion in the Hokuriku region and measures to achieve them, the Physical Distribution Measures Study Group (Chaired by Prof. Tsuneo Nagayama, Faculty of Economics, Niigata University) was formed. The study group met twice this fiscal year and documented the results of the deliberations.</p>

<p>Study on Project Appraisal for Niigata Coast (West Coast Area)</p>	<p>2005</p>	<p>The efficiency of public works projects is being subjected to rigorous scrutiny. In order to increase the transparency of public works projects, project appraisal methods based on cost–benefit analysis are being employed.</p> <p>In this study, various effects (prevention of erosion, protection from inundation, conservation of the coastal environment, prevention of traffic interruption) of coastal projects for the Niigata Coast (West Coast area and the Agreement Coast) were evaluated from the economic point of view, The effects thus determined were regarded as the benefits of coastal projects, and these benefits were evaluated in a cost–benefit analysis in comparison with the costs of coastal projects calculated as the cost of coastal project implementation and the cost of the maintenance of coastal facilities.</p>
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<p>Study on Project for Niigata Port and Niigata Coast</p>	<p>2005</p>	<p>Niigata Port consists of the West Port Area, which has developed as an old port of the Shinano River, and the East Port Area, which has been developed as an excavated port. As the international container routes to and from Southeast Asia, Pusan and China have opened over the years, the East Port Area has become a physical distribution center mainly for foreign cargo. A berth (-14 m) is now under construction to enable first port entry of a 55,000-ton-class grain transport ship at the quaywall (-14 m) currently operated at a provisional depth (-13 m).</p> <p>In the study, the effects of the berth project at Niigata Port (East Port Area) were evaluated mainly through cost-benefit analysis, and a policy for the subsequent stages of the project was drawn up.</p>
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<p>Study on Public Involvement Type Management Plan for Coastal Conservation Facilities</p>	<p>2005</p>	<p>The purpose of this study is to collect information on examples of public works projects for coastal conservation facilities that are implemented by building consensus through communication between the people concerned including local residents (communication-oriented projects).</p> <p>As public concern about coastal environments grows, there is a growing need for communication-oriented projects that seek to build consensus among the people concerned, but literature in the field of coasts is limited compared with literature in other fields. However, even when a communication-oriented project needs to be carried out, currently available literature may provide information on viewpoints and ideas that are inconsistent or unrealistic, and obtaining such literature may be very time consuming.</p> <p>In order to solve these problems, information on examples of efforts to implement communication-oriented projects is collected and collated.</p>
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## Studies on long-term port schemes and regional revitalization

Study	Fiscal year when study was conducted	Study outline
Study on Long-term Port Schemes in Aomori Prefecture	2005	<p>This study was conducted to draw up a "Vision for Ports in Aomori Prefecture" for ports (a total of 13 ports, excluding Mutsu Ogawara Port and Sekinehama Port, consisting of two important points and 11 local ports) and their hinterland areas in Aomori Prefecture that defines the roles to be played by the ports and the direction and purposes of port-related efforts in order to contribute to the revitalization of local industries and economy and the enhancement of convenience in daily life and of the living environment.</p> <p>This year, two committee meetings were held, and community conferences were held once. At the same time, the ideal role and future images of ports in Aomori Prefecture and measures that need to be taken to achieve the goals were defined, and the results were incorporated into the Vision for Ports in Aomori Prefecture.</p> <p>The future images and the measures to be taken to achieve the goals were considered from the viewpoint of not only physical distribution but also port community planning closely related to environmental conservation, industry, tourism, disaster prevention and hinterland planning, and a set of measures to make multipurpose use of ports to meet citizens' needs were proposed.</p>

<p>Study on Regional Revitalization by Use of Existing Port Infrastructure</p>	<p>2005</p>	<p>From olden times, the ports in Shikoku have been serving as centers for the movement of people and goods, cultural and other information depots, and centers for community activities. In recent years, there has been growing demand not only for the use of ports for goods movement, which has contributed to the industrial prosperity of Shikoku for many years, but also for the restoration of centers for regional revitalization efforts including the enhancement of information depot functions and the promotion of people's movement by making effective use of existing infrastructure such as passenger terminals.</p> <p>In this study, measures to make effective use of the ports and adjacent facilities were considered and proposed with the aim of restoring such ports as centers for regional revitalization efforts, and regional revitalization measures were considered and proposed through the verification of social experiments focusing on nonstructural measures to be implemented mainly by local residents.</p>
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<p>Study on Requirements for Physical Distribution Systems in the Kanto Region</p>	<p>2005</p>	<p>The aim of this study was to identify the port goods movement problems facing the ports in the Kanto region and define goods distribution requirements that the ports in the Kanto region should aim to satisfy in the coming years. As the first step, the latest data and statistics were collected and analyzed, the problems facing the ports in the Kanto region were identified, measures to address these problems were devised, and policy goals were set. Concrete measures that can be taken to achieve these goals were considered, and outcome indicators showing the degree of achievement of the policy goals were considered. As the final step, seven indicators, namely, the direct transportation ratio of containers handled at ports in the Kanto region, the number of international liners serving the ports in the Kanto region, the number of European or US routes (loops) served by the world's top class of containers ships, the number of prefectures more than half of whose cargoes to and from major European or US routes pass ports in the Kanto region, the number of congestion spots in the ports in the Tokyo and Yokohama areas, the quantity of Tokyo/Yokohama port container cargo transported by rail, and the area of advanced physical distribution facilities located along the Tokyo or Yokohama coast, were proposed.</p>
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<p>Study on the Scheme for Utilization of the Agreement Coast Section of the Niigata Coast (West Coast Area)</p>	<p>2005</p>	<p>The purpose of this study was to draw up a scheme for utilizing the Yoriihama area (Agreement Coast section) of the Niigata Coast (West Coast Area) in accordance with the intent of new coastal administration measures and community beach creation efforts while seeking to building consensus among local residents before constructing facilities in the Yoriihama area. This study builds on the Basic Study on the Scheme for Utilization of the Agreement Coast Section of the Niigata Coast (West Coast Area).</p> <p>In this study, first, the Scheme for Utilization of the Yoriihama Coast based on the Scheme for Utilization of the Yoriihama Coast (Provisional Policy) (Figure 2) drawn up as the result of the 2004 study was drafted while seeking to build consensus among local residents. Second, in preparation for the planning and implementation of facilities improvement project in the Yoriihama area, citizens' meetings were held and questionnaire surveys were held to establish a system based on the consensus reached through a public involvement (PI) process.</p>
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<p>Study on Regional Revitalization by Use of Existing Port Infrastructure</p>	<p>2005</p>	<p>Ports have long supported Japan's key industries in the area of physical distribution. Social changes in recent years, however, are changing the functions required of ports from merely centers for goods movement to stages of community revitalization efforts. This study considered ways to make effective use of existing port infrastructure and promote regional revitalization projects.</p> <p>Concrete measures being taken to achieve these goals include conducting social experimentation involving the ports that have applied for registration for the Minato Oasis program, holding meetings of the Minato Oasis Council (provisional name) through the cooperation of those ports, and proposing measures to promote regional revitalization according to the characteristics of each port.</p>
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<p>Study on Siting Feasibility for Complex Port Facilities</p>	<p>2005</p>	<p>The purpose of this study was to consider the siting feasibility of complex port facilities for CIQ and other public organization functions, welfare, business attraction, port promotion, etc., in order to accelerate the delayed improvement of user convenience and functional efficiency at Tamashima Harbor Island where efforts are underway to improve and upgrade physical distribution functions.</p> <p>In the study, the present states of the study area and the port were investigated first, and interview and questionnaire surveys of CIQ-related administrative organizations and the businesses concerned were conducted to identify problems and needs. On the basis of the information thus obtained, a committee deliberated on siting feasibility, functional requirements and improvement policies.</p> <p>This study considered the local and user needs and the possibility of siting complex port facilities at the port to upgrade it as a center for international goods movement and a hub of industrial activity. To achieve the goals, it was proposed that public organizations such as national organizations and port authorities, port information depots, welfare facilities, and educational facilities such as visitors' facilities be provided.</p>
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Study on Port Tourism in Shikoku	2005	<p>In view of the growing local demand for port-based tourism development, this study was conducted for social experimentation for evaluating the feasibility of port tourism in order to define the concept of "port tourism" reflecting Shikoku's characteristics and verify the quality of ports in Shikoku as tourist-attracting spaces.</p> <p>For the purpose of tourism potential evaluation, questionnaire surveys concerning port tourism were conducted of citizens living near nine ports in Shikoku. For two (Takamatsu Port and Yawatahama Port) of those nine ports, the members of the Conference on the Creation of Attractive Ports in Shikoku conducted field investigations and questionnaire surveys for tourism potential evaluation and analyzed the differences between the investigation results and the results of evaluation by local residents.</p> <p>This study revealed the differences between the results of evaluation of Shikoku's port tourism potential by local residents and the results of evaluation by outsiders. In view of the findings of this study, a generalized format of a port tourism potential evaluation sheet and requirements for effective public relations related to evaluation results were proposed.</p>
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<p>Study on Measures to Promote Inland Sea Cruise Tourism</p>	<p>2005</p>	<p>Because of its outstanding seascapes, the Inland Sea has now become a popular cruise route for large cruisers, but the number of tourists visiting coastal and inland tourist spots is not as large as expected in recent years. This study was conducted, therefore, to design cruising routes that will contribute to an increase in the number of people visiting the area, regional revitalization and the utilization of ports including the ports of isolated islands, verify the degree of attractiveness of the routes and the convenience of port facilities through social experimentation, and propose concrete measures that can be taken for project implementation.</p> <p>In this study, data research and interview and questionnaire surveys of Shodoshima (Shodo Island), Naoshima (Nao Island) and the Seto Bridge (Seto Ohashi Bridge) area in Kagawa Prefecture were conducted to collect basic information mainly on the present state, convenience and popularity of tourist facilities and port facilities. On the basis of the information thus obtained, social experiments on cruising skirting the isolated islands of the Inland Sea were conducted, and citizens' needs were determined from the results of questionnaire surveys of the participants.</p> <p>From these study results, conditions were determined for the realization of new cruising programs, and concrete measures to be taken were proposed.</p>
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<p>Study on Community Beach Creation</p>	<p>2005</p>	<p>The Ports and Harbors Bureau of the Ministry of Land, Infrastructure and Transport has been considering the possibilities of community beach creation as a means of realizing the concept of beach creation by "the creation of a new beach culture." This study was conducted with the aim of identifying ways to bring the methods that have been practiced for community beach creation in various parts of Japan into more widespread use throughout the country and ways to upgrade local efforts to the desired level of community beach creation efforts.</p> <p>In the study, detailed document reports were prepared by conducting deep boring surveys at selected community beach project sites. At the same time, methods for addressing the problems and challenges encountered by the organizations that carried out community beach model projects last year and concrete measures to be taken to do so were determined. On the basis of these results, a handbook titled "A Guidepost for Community Beach Creation" describing check points and important considerations was compiled to draw public attention to community beach creation and to help them initiate their efforts and realize the ideal of community beach creation.</p> <p>As a result, not only details of advanced projects but also "ideas" and "the roles the administrative organizations are expected to play" were documented.</p>
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<p>Study on Port Community Planning for Naze Port</p>	<p>2005</p>	<p>Naze Port has long supported the lives of the people and the industries of Amami Oshima Island and served as a center for the movement of passengers and goods. In recent years, however, Naze Port has been increasingly isolated from the people living there mainly because of the increase in the use of aircraft.</p> <p>In 2004, a large passenger ship berth went into service, and a landscaped hinterland will go into service. Thus, Naze Port's assets that can be used effectively have increased.</p> <p>This study was conducted to help promote the "Amami's Port Community Creation" project involving a variety of citizens participating in exchange activities to make Naze Port a more comfortable port and a more useful port for the local community and to contribute to the creation of an attractive port town by public involvement.</p> <p>Two similar conferences were held in the past, and the wishes expressed at the conferences mainly concerned a Naze Port improvement project. This study was conducted, therefore, with the aim of drawing up a concrete plan for Amami's Port Community Creation to be implemented mainly by citizens and establishing a council.</p> <p>Although the study is titled "Study on Port Community Planning for Naze Port," the conference was named "the Conference on Amami's Port Community Planning" partly because Naze City became part of Amami City in April, 2006, as a result of the merger of the municipalities and partly because Naze Port is a port that supports the entire Amami Oshima Island.</p>
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<p>Study on the Contribution of Kanto's Coastal Areas to People's Lives</p>	<p>2005</p>	<p>In recent years, a growing number of landscaped areas, parks, beaches, tidal flats, and other lively-activity facilities including commercial facilities have been sited in coastal areas including natural coasts in the Kanto region (hereafter referred to as "Kanto's coastal areas"). Since the period of rapid economic growth, coastal industrial areas have been formed through land reclamation. These coastal areas have served as the driving force behind Japan's economic activities in those days, and there are still high concentrations of manufacturing and other industries in those areas. Thus, Kanto's coastal areas are closely related to people's lives by not only providing places for leisure and recreation activities of the people in the Tokyo metropolitan area and beach sightseeing but also contributing in local employment, income and local economic growth. In addition, in the Kanto region there are a number of islands, such as the Izu Islands and the Ogasawara Islands, with scenic landscapes and unique historical and cultural heritage. The ports of these islands have contributed to people's lives on isolated islands and local economy including the tourism industry.</p> <p>In view of these, this study was conducted for the purpose of identifying requirements and goals for Kanto's coastal areas and developing numerical indicators (items) by analyzing the role and contribution of Kanto's coastal areas, mainly through literature research, from the viewpoints of "people's lives," "employment and income" and "isolated island."</p> <p>Because of space limitation, this paper focuses mainly on "people's lives" in Kanto's coastal areas.</p>
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<p>Study on Measures for Port Integration</p>	<p>2005</p>	<p>This study considered measures for port integration for five ports of Omi Island and Okajima Island located in Ibamari City, Ehime Prefecture, and local ports in Kagawa Prefecture. Port integration refers to a series of efforts to integrate a number of ports that have been operated independently in order to eliminate investment redundancy for more effective and efficient port investment and operation.</p> <p>In this study, the Port Integration Plan describing the requirements for the integration of the five ports in Ehime Prefecture and measures to promote and support such port integration was drafted in order to contribute to port integration planning in the coming years. For Kagawa Prefecture, integration areas were proposed, and preliminary study results were documented in preparation for further port integration efforts.</p>
<p>Study on Measures to Promote the Use of Sukumo Port</p>	<p>2005</p>	<p>Since its designation in 1986 as an important port for promoting the development of the southwestern part of Shikoku, Sukumo Port has been improved through various projects including the development of an industrial and distribution park and the construction of large quaywalls. The Katashima area serves ferry services to Kyushu (Saeki) and regular lines to Okinoshima and has a passenger terminal. The number of visitors has decreased in recent years, and a decline in the vitality of the area has become a problem.</p> <p>In view of these circumstances, this study explores ways to make effective use of existing port-related facilities at Sukumo Port and consider community improvement measures with port area residents through workshops and report meetings.</p>

## Port EDI projects

### Projects for supporting port EDI system operation

Study	Fiscal year when study was conducted	Study outline
Management and Operation of Port EDI System	2005	<p>The Port EDI (Electronic Data Interchange) System has been in operation since fiscal 1999 as an effort to simplify and computerize port-related procedures to be performed by port masters and port authorities. In fiscal 2003, quarantine, which is a task to be performed by the Ministry of Health, Labour and Welfare, was added as an additional task to be performed. The system was then interconnected with the customs information processing system (Sea-NACCS) operated by the Ministry of Finance, etc., and the Ministry of Justice's foreigner entry and departure information system to create a single-window environment for providing one-stop services so that users can access other systems as part of the export/import or port-related procedures. System modifications were also made for the standardization and simplification of the port entrance/departure report forms under the Convention on Facilitation for International Maritime Traffic signed in November, 2005, and the standardization and simplification of the forms for the pre-entrance/pre-departure procedures. This study concerns the management and operation tasks, such as monitoring system operation and providing assistance to system users, so that electronic information for procedures performed by the system on a daily basis can be processed smoothly and efficiently.</p>

<p>Assistance and enlightenment for the implementation of the Port EDI System</p>	<p>2005</p>	<p>The Port EDI System went into experimental operation in 1999 as an electronic application system for port procedures required by port masters and port authorities. Since then, the scope of electronic application procedures handled by the system has been gradually expanded. In July, 2003, a system interconnecting the systems operated by the ministries and agencies concerned went into operation. System modifications were also made for the standardization and simplification of the vessel entrance/departure report forms under the Convention on Facilitation for International Maritime Traffic (a convention signed in 1965 concerning the simplification of procedures related to international maritime traffic) concluded in November this year, and the standardization and simplification of the forms for the pre-entrance/pre-departure procedures. By the end of fiscal 2005, system modifications (modifications for convenience improvement) including modifications to meet user needs and modification items specified in an optimization plan were made so as to improve the user environment. In this study, therefore, a series of tasks related to the assistance and enlightenment needed for system implementation in order to familiarize users with new system operation procedures, enable a smooth changeover, and assist new users in participating in electronic application.</p>
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## Studies on the use of information technology for ports

Study	Fiscal year when study was conducted	Study outline
Study on improvement of efficiency in port authority tasks for port-related procedures	2005	<p>The Port EDI System went into experimental operation in 1999 as an electronic application system for port procedures required by port masters and port authorities. Since then, the system has undergone various modifications to enhance the convenience for applicants including the implementation of a single-window environment, modifications to achieve conformity to the Convention on Facilitation for International Maritime Traffic and modifications under an optimization plan. The port authorities are responsible for some of the port-related procedures handled by the Port EDI System and perform those tasks as authorizing organs. Many authorities receive applications and perform tasks such as compiling statistics and collecting facility use fees. In order to improve the efficiency of the port-related tasks, it is necessary to study the relationship among related tasks and necessary items systematically.</p> <p>This study aims to investigate the tasks performed by port authorities in connection with port procedures and other related procedures and the state of applicants and develop guidelines for improving the efficiency of the tasks performed by port authorities so that the Port EDI System can be made more convenient for its users.</p>

<p>Study for the development of a standardized port survey evaluation system</p>	<p>2005</p>	<p>In fiscal 2003, the Japanese government announced a new policy for statistical administration, stating that the government aimed to achieve efficient and smooth implementation of statistical surveys and take up various challenges such as reducing the workload for reporters.</p> <p>For port surveys conducted for compiling designated statistics, with the aim of reducing the workload of shipping companies and other applicants and simplifying and streamlining statistics-related tasks, it is required that necessary data be extracted from the existing data in possession of certain organizations such as Nippon Automatic Cargo Clearance System Operations Organization (NACCS) and used effectively for survey purposes.</p> <p>In this study, the basic design and detailed design of a port survey evaluation system for compiling port survey statistics by using Sea-NACCS and other data in electronic form and domestic and international shipping data in nonelectronic form were developed on the basis of the results of the port survey and the Sea-NACCS data accuracy analysis and the design and analysis results for the port survey evaluation system performed as part of the Fact-finding Survey on the Promotion of Electronic Data Collection in Port Surveys conducted in fiscal 2004.</p>
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<p>Study on Simplification of Port Procedures</p>	<p>2005</p>	<p>Since the forms for the "sea-side" port procedures such as port entrance/departure report forms and the form for applying for the use of mooring facilities have been simplified and standardized following the signing of the Convention on Facilitation for International Maritime Traffic, this study considers the simplification and standardization of the forms for the "land-side" port procedures such as the form for applying for the use of cargo-handling equipment in order to further enhance the convenience for port users.</p> <p>In this study, the integration and elimination of forms and items, the standardization of names, the integration of multiple procedures, and a reduction of the number of applications by extending the period for which permission is granted were considered, and an interview survey of port authority members was conducted. The study showed that it is possible to simplify the land-side port procedures such as the procedure for applying for permission for the use of cargo-handling equipment.</p>
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II Study projects related to the port environment and environmental ISO  
 Studies on environmental policies, environmental education and  
 environmental restoration technology

Study	Fiscal year when study was conducted	Study outline
Study on the Development of a Marine Environment Database	2005	<p>This study was conducted for the purpose of constructing and making effective use of Tohoku Coastal Environment Information Center, an organization for sharing and disseminating environmental information necessary for the conservation, restoration and creation of the excellent environment of Tohoku's coastal area. In this study, a committee of researchers and local government personnel met to discuss ways to make effective use of the information center, the standardization of environmental information, maintenance in the coming years, and the environmental education function to be added as a new function, and an information sharing guideline (information sharing rules) was drawn up. In addition, the information sharing function (a clearing house of information on Tohoku's coastal environment) was improved, and the capability to register information on results achieved by using the information center was added in order to increase the advantages for the persons who have provided meta data (study outline data).</p>

<p>Study on Restoration Methods for Muddy Tidal Flats</p>	<p>2005</p>	<p>This study was conducted for the purpose of integrating existing knowledge about muddy tidal flats gained through on-site demonstration experiments and develop an effective method for restoring a muddy tidal flat in order to establish a muddy tidal flat creation technology that can be used to restore muddy tidal flats such as the Ariake Sea and Yashiro Sea tidal flats by utilizing dredged material.</p> <p>In this study, which was started in fiscal 2003, existing knowledge about muddy tidal flats has been reviewed, problems and challenges concerning the muddy tidal flat environment have been identified, and plans for tidal flat experimentation and monitoring have been drawn up. In fiscal 2005, tidal flat experiment facilities were constructed, and, on the basis of monitoring survey results obtained after an experiment began, the effectiveness of the tidal flat experiment cases and the tidal flat experiment plan were evaluated.</p>
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<p>Validation Study on Algal Bed Creation at Omaezaki Port</p>	<p>2005</p>	<p>In a scheme for algal bed creation by using environmentally cooperative breakwaters, the Master Plan for Algal Bed Creation at Omaezaki Port aims to create new algal beds in breakwater zones by using algae growing in still water zones as spore sources.</p> <p>In the multiyear study which began in fiscal 2000, large-scale transplanting of mother algae into still-water zones was carried out and feeding-damage control measures were taken, and a monitoring study was conducted. The monitoring revealed the existence of newly generated algae outside the still-water zones, indicating that slit-type caissons are capable of functioning as spore supply devices.</p> <p>In fiscal 2005, monitoring was continued, and it confirmed the coexistence of the mother algae transplanted in 2003, the second-generation algae that germinated in 2004, and the third-generation algae that germinated in 2005, and the formation of small-scale algal beds in the still-water zones.</p>
<p>Study on Nature Restoration Techniques</p>	<p>2005</p>	<p>In this study, information was collected on examples of advanced nature restoration projects that are also advanced in terms of places of activity other than seashores and of mechanisms to develop practical restoration techniques. For the purposes of this study, a committee composed of the representatives of the organizations implementing different projects was formed to discuss the examples selected, and the results were made available to the public.</p>

<p>Study on Ways to Utilize Existing Breakwaters</p>	<p>2005</p>	<p>The Action Plan for the Restoration of Osaka Bay formulated in March, 2004, positions the Nishinomiya Breakwater as an appealing feature of the Nishinomiya area. Because the Nishinomiya Breakwater is a very long (about 4 km long) structure and its coast-side face and ocean-side face are vertical, <i>wakame</i> (edible seaweed) culture has been continued experimentally since fiscal 2004 as an advanced project in the Osaka Bay area.</p> <p>The main focus of the monitoring conducted for the purposes of this study was on whether or not a new generation of wakame is produced from the wakame planted in December, 2004. In fiscal 2005, therefore, the wakame seaweeds planted in 2004 were monitored to observe their growth and consider methods of cutting and using wakame.</p>
<p>Study on the Marine Environment of the Ariake and Yashiro Seas</p>	<p>2005</p>	<p>In this study, the results of the routine environmental study conducted in 2004 were documented to make them available to the public, and the contents of the study were reviewed. Prior to making recommendations (fiscal 2007) on conservation and restoration projects that can be implemented in the two sea areas, a special environmental study was also conducted focusing on siltation and oxygen-deficient water, which are among the important themes for studies on the environmental changes occurring in the two sea areas. The results thus obtained were evaluated from the technical viewpoint, and a plan for fiscal 2006 was drawn up. At the same time, items to be incorporated into the 2007 recommendations were identified.</p>

<p>Study on Management Method for Algal Beds in the Wake Area along the Matsuyama Port Beach</p>	<p>2005</p>	<p>In the Wake area of the Matsuyama Port Coast located in the northern part of Matsuyama City, the habitat of the algal species <i>Zostera japonica</i> (<i>koamamo</i> in Japanese) is in danger of being buried in silt. It was therefore decided to transplant the algae to an adjacent area of the sea and protect them until the artificial nourishment of the beach is completed and, after the completion of the beach nourishment, transplant the algae back to their habitat so that the algal beds can be restored. Conducted with the aim of re-establishing the <i>Zostera japonica</i> communities on an artificially nourished beach, this study focused on methods for conserving the algal communities by transplantation.</p>
<p>Study on Nature Restoration in Urban Coastal Areas</p>	<p>2005</p>	<p>In this study, a monitoring study of <i>amamo</i> (<i>Zostera marina</i>) in Tokyo Bay was conducted in cooperation with citizens and NPOs with the aim of restoring algal beds. At the same time, in the study, the method of raising common awareness and building consensus among the people concerned toward the realization of a nature restoration project in an urban coastal area through <i>amamo</i> seeding events and monitoring, and public involvement methods were considered, and standard methods were documented.</p>

<p>Study on Marine Environmental Technology for the Inland Sea</p>	<p>2005</p>	<p>This study aimed to propose a concept for an engineering study on methods for creating a tidal flat bed in the Ebi area based on site investigation results. In the Inland Sea area, there is growing demand for a new type of tidal flat fill material to be used in place of sea sand (hereafter referred to as "sea sand substitute") because the extraction of sea sand in the Inland Sea area has been banned for environmental conservation. In order to consider, through various opportunities for exchanging views, the possibilities for creating an institutional framework for providing assistance for efforts to promote the use of a sea sand substitute, many people in various positions were asked how they thought about the present problems and the direction of future efforts, and the results were studied.</p>
<p>Study on Dissemination of Information on the Inland Sea Environmental Remediation Plan</p>	<p>2005</p>	<p>In this study, a symposium for providing information on the Inland Sea Environmental Remediation Plan drawn up by the Chugoku Regional Development Bureau, etc., was planned and held in order to help the administrators and citizens interested in improving the environment of the Inland Sea gain a better understanding of the necessity of environmental remediation. The results of the symposium were put together, and a Web site plan by which to disseminate information was proposed.</p>

Study on Methods for Networking in the Kyushu Region	2005	In this study, a number of case studies were conducted, in the Kitakyushu Port area managed by the Kitakyushu Port and Airport Development Office, to investigate the methods of cooperation between groups engaged in various activities in coastal areas and administrative organizations and the methods of networking among those groups. In the study, groups engaged in environment-related activities that were considered to be essential for networking were selected and classified, and concrete activities necessary for networking were identified. Then, a case study was conducted on one activity in each set of networking activities to identify and consider achievements and problems, and methodologies of networking were proposed.
Study on Verification of Environmental Improvement Measures for a Semi-enclosed Coastal Sea through Public Involvement	2005	The purposes of this study are problem identification and verification to accomplish the marine environment remediation efforts using <i>Mytilus galloprovincialis</i> (moule) that are underway as part of a government–public partnership to promote a close relationship with the beach in daily life.
Seaweed Environment Study for the Yatsushiro Port Environmental Improvement Project	2005	This study was conducted to obtain information needed to select an appropriate seaweed bed creation method needed to make up for the seaweed bed that will disappear as a result of the seawall construction being carried out on the south side of Yatsushiro Port (Otsukushima area). In this study, therefore, seaweed bed creation testing (suspended sediment control) to be conducted on an existing seawall was considered, and a seaweed environment study was conducted in the Otsukushima area and at the seaweed establishment test site.

<p>Study on Methods of Coral Reef Friendly Port Improvement</p>	<p>2005</p>	<p>This study was conducted for environmental conservation in port improvement. Focusing on coral reefs as places for ecosystem conservation, this study reviewed the past efforts of Okinawa General Bureau and past studies on coral reefs conducted by universities, research institutions, etc., and identified coral reef friendly port improvement methods.</p> <p>In fiscal 2005, the data used for the 2004 and 2005 reports were reviewed, and the latest trends in coral reef research were studied. Then, on the basis of Coral Reef Survey Handbook compiled in 2004 as a result of the past studies, the results of monitoring being conducted at each office in the administrative district were diagnosed and evaluated, and the practices prescribed in the handbook were examined at a committee of experts.</p>
<p>Study on the Development of a Handbook of Rare Species in the Awase Area of Nakagusukuwan Port</p>	<p>2005</p>	<p>In this project, in order to create a manual of environmentally considerate practices for a public water reclamation project in the Awase area at Nakagusukuwan Port and obtain reference data for future environmental studies, a study was conducted, on the basis of existing environmental study results and literature, to develop a handbook on the physical features of and ecological information on the rare species found in the project area.</p>

<p>Study on Methods of Utilization of Coastal Environment Information</p>	<p>2005</p>	<p>The Chubu Regional Development Bureau of the Ministry of Land, Infrastructure and Transport pointed out "the development of a database of information on the environment of the Inland Sea" as a means of implementing environmental remediation under the Inland Sea Environmental Remediation Plan. In order to contribute to the implementation of the environmental remediation, Hiroshima Port and Airport Technical Investigation Office has been conducting a study since fiscal 2004 to create the Inland Sea Environmental Information Center (provisional name), an organization capable of disseminating and sharing information such as the outlines and locations useful data stored at different organizations.</p> <p>This study was conducted in preparation for the construction of the information center that will open partially in fiscal 2007.</p>
<p>Creation of the Osaka Bay Environmental Information Network</p>	<p>2005</p>	<p>In this project, the Osaka Bay Environment Restoration Information Council (provisional name) was set up for the environmental monitoring for Osaka Bay restoration efforts under the Action Plan for the Restoration of Osaka Bay (Osaka Bay Restoration Council; adopted on March 26, 2004). The council deliberated on the collection and dissemination of information and monitoring and research involving the general public. Programs for monitoring and other activities involving the general public were developed, and a platform for the participation of and cooperation with citizens and NPOs was created. In addition, the Osaka Bay Environmental Database was improved to provide information on Osaka Bay to a wide variety of people including administrators, citizens and researchers.</p>

<p>Study on Environmental Restoration Technology for the Nakagawa Canal</p>	<p>2005</p>	<p>This study was conducted for the purpose of considering the purification of the water and bed material of the Nakagawa Canal at Nagoya Port in order to implement environmental conservation and restoration measures for Ise Bay effectively and efficiently.</p> <p>In the study, field reconnaissance was conducted on the right and left banks and at the upstream end of the Nakagawa Canal in autumn and winter, and information on examples of water quality and bed material quality improvement measures and the technology for water and bed material purification was collected and collated, in order to investigate the present state of the canal. As a result, the study revealed the present state of the functions of the canal and the conditions of water quality and bed material quality in autumn to winter. The next step is collect information on the rest of the year by investigating the conditions surrounding water and bed material in spring to summer, identify the characteristics of the canal, and set numerical goals for each area. This study also proposed a set of technical measures to restore the water quality and bed material quality environment of the Nakagawa Canal.</p>
<p>Study on Method of Public Involvement Type Environmental Restoration for the Inland Sea Area in Yamaguchi Prefecture</p>	<p>2005</p>	<p>This study was conducted to collect and classify representative cases of public involvement type environmental restoration in the Inland Sea area centered around Yamaguchi Prefecture and propose a method for implementing the restoration project effectively.</p>

<p>Commissioned Supervision of Sea Grass Bed Study for Public Port Coastal Environment Improvement and Restoration</p>	<p>2005</p>	<p>In fiscal 1998, the Kojima Port Coast (Karakoto Area) Eco-coast Planning Committee drew up a plan for using the integrated coastal protection method by means of artificial beach nourishment for coastal improvement that harmoniously combines disaster prevention, environmental conservation and coast utilization and restoring (transplanting) the sea grass beds lost as a result of the beach nourishment work on a newly nourished beach.</p> <p>In the project area, a transplanting test area was set up in 1999, a transplanting test area and a seeding test area in 2001, and a medium-size pilot project area in 2001 and 2002 for continued monitoring.</p> <p>In this year, an attempt has been made at adaptive management of restored sea grass beds including the acquisition of new knowledge in view of existing knowledge and the present state (e.g., restored sea grass beds, surroundings) of the Karakoto area. In this study, the adaptive management was checked at each stage.</p> <p>In this project, adaptive management was performed at each stage of the sea grass life history (growth, decline) was performed, and the Plan for Sea Grass Restoration Following the Changes in the Coastal Improvement Plan was drawn up.</p>
<p>Osaka Bay Environmental Study</p>	<p>2005</p>	<p>With the aim of establishing technologies to solve the environmental problems of Osaka Bay including a decline in the amenity-oriented quality of waterfront, a decline in biodiversity, the degradation of water quality, and the deterioration of landscapes, this study was conducted to elucidate the mechanisms of those problems, paying attention to such factors as coastal and submarine topography, tidal currents, seawater exchange and pollutant loads.</p>

Study on Methods for Improving Osaka Bay's Marine Environment	2005	This study was undertaken to contribute to the Osaka Bay restoration project by conducting demonstration experiments to establish environmental improvement technologies for the restoration of Osaka Bay.
Study on Methods for Conservation and Utilization of the Natural Environment at Hirara Port	2005	The direction of the conservation and utilization of the natural environment of the Toriver district at Hirara Port was considered in a study conducted in 2004. This year's study considered concrete measures such as holding nature experience events and carrying out ecotourism activities for local residents and visitors while conserving the natural environment of the Toriver district. By evaluating the progress of improvement in the Toriver district and the results of the nature experience events held to promote utilization, short-term problems were identified, and measures that can be taken by the people concerned were considered.

<p>Study for the Plan for Conservation of the Marine Environment at Naha Port</p>	<p>2005</p>	<p>The Urasoe Pier area in the Naha Port area has diverse ecosystem components including rare algal species such as <i>kasanori</i> (<i>Acetabularia ryukyuensis</i>) and <i>hosoegasa</i> (<i>Acetabularia caliculus</i>), coral reefs and tidal flats. The Ministry of the Environment and the Department of Cultural and Environmental Affairs of the Okinawa Prefectural Government require that the port plan be further developed after conducting even more detailed surveys and studies to make sure that the environment is protected. To meet this requirement, the designation of a marine environment conservation zone has been planned so that the project can be implemented while protecting the animals and plants.</p> <p>In this study, necessary surveys were conducted and a total of eight committee meetings were held over three years since fiscal 2003 so as to carry out concrete marine environment conservation plans. It was decided to draw up a concrete marine environment conservation plan by (1) investigating the present state, (2) conducting experimental tank cultivation of <i>kasanori</i> and <i>hosoegasa</i>, (3) developing utilization measures and (4) conducting committee activities.</p>
<p>Study on Methods of Assistance for Environmental Learning</p>	<p>2005</p>	<p>As a means of promoting the creation of a port and marine environment in the Inland Sea coast area with the involvement of cooperation with the general public, the Ube Port Office compiled "Tidal Flat Environmental Learning Handbook" to assist in learning about the nature in the Inland Sea area.</p> <p>The purpose of this study is to consider methods for making more effective use of Tidal Flat Environmental Learning Handbook compiled in 2003 and 2004 and, in view of the results thus obtained, develop methods for marine environmental learning for the general public and elementary and junior high school students.</p>

<p>Study on the Conservation of the Environment of Nakagusukuwan Port (Awase Area) Artificial Island</p>	<p>2005</p>	<p>This study was conducted to identify an area in which an artificial island can be constructed.</p> <p>As the first step, the conditions and habitat requirements of <i>tokagehaze</i> (<i>Scartelaos histophorus</i>) and <i>kubiremidoro</i> (<i>Pseudodichotomosiphon constricta</i>) were investigated through literature research and cases studies from adjacent coasts.</p> <p>Bottom shear stress and Shields number under high wave conditions in the areas currently inhabited by <i>tokagehaze</i> and <i>kubiremidoro</i> were calculated to investigate the relationship between external force and bottom sediment in habitats subjected to high waves.</p> <p>By using sediment rain size, ground level, etc., as given conditions, bottom shear stress and Shields number distributions in the case of artificial island construction were calculated, and a site suitable for artificial tidal flat construction was selected.</p>
<p>Study on Methods of Wide-area Monitoring for Ise Bay's Marine Environment</p>	<p>2005</p>	<p>The Ise Bay Restoration Committee is deliberating on measures to be taken to restore the water environment and the ecosystem as part of the environmental conservation and restoration measures taken in order to restore Ise Bay. Among the measures being considered, monitoring is positioned as an important element. In this study, therefore, as a follow-up measure after the implementation of the Ise Bay restoration measures, ways to make effective use of wide-area monitoring of Ise Bay and Mikawa Bay using high-frequency radar, which will be started in fiscal 2006, was considered.</p>

<p>Study on Methods of Artificial Tidal Flat Stabilization</p>	<p>2005</p>	<p>This study was conducted for the purpose of selecting an artificial tidal flat stabilization method most suitable for the artificial tidal flat in Mikawa Bay's Nishiura area created in a marine environment creation project by comparing and evaluating landform stabilization methods that do not impair the water purification function.</p> <p>As the first step, requirements for a tidal flat having an excellent water purification function were identified by examining the results of the monitoring conducted, focusing mainly on water quality, bottom sediment quality, benthos and sounding, in the Nishiura area on a continual basis from fiscal 1999 to 2004. Then, topographic requirements for an artificial tidal flat were identified, the local meteorological and oceanographic conditions were determined, and the causes of landform changes were identified.</p> <p>Literature research was also done to identify commonly used tidal flat stabilization methods, and after evaluating their applicability to the project site from the viewpoints of nurturing of life, landform change control and beach utilization. As a result, the list of the methods considered was narrowed down to three methods: (1) the beach nourishment method (without appurtenant facilities), (2) the detached breakwater method and (3) the submerged breakwater method.</p> <p>The cross sections created by these methods were estimated. Then, constructibility was evaluated, the quantities of work were calculated, and the construction cost was estimated.</p>
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## Studies on harmful substances, recycling and wastes

Study	Fiscal year when study was conducted	Study outline
Study on Supply of On-shore Power to Ships	2005	<p>After coming alongside a pier and getting moored, a ship stops its main engine. Since, however, electric power is needed for cargo handling, internal lighting, ventilation, air conditioning, etc., it is common practice to continue to operate a diesel engine for power generation after berthing. It is generally said that the method of stopping the diesel engine after berthing and supplying electric power from an on-shore power supply system (on-shore power supply method) is one way to reduce emissions of harmful substances contained in diesel exhaust gas, such as sulfur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>) and particulate matter (PM), and carbon dioxide (CO<sub>2</sub>), which is the main component of greenhouse gases, into the atmosphere.</p> <p>In Japan, on-shore power supply has been practiced on a small scale. If, however, it is to be practiced widely and on a larger scale as an environmental conservation measure, it is necessary to introduce large-capacity on-shore power supply systems as in other countries.</p> <p>In this study, with the aim of estimating the amount of reduction in carbon dioxide emission, identifying economic and technical problems and proposing ways to realize large-scale on-shore power supply, questionnaire surveys, fact-finding surveys using site visits, interviews and literature research, and case studies using a on-shore power supply model were conducted.</p>

<p>Study on the Bottom Sediment Quality Improvement Effect in a Semi-enclosed Coastal Sea</p>	<p>2005</p>	<p>The Technical Guideline for the Control of Dioxins in Bottom Sediments in Port Areas (hereafter referred to as "the Technical Guideline") developed in 2003 lists sand covering as a means of blocking the routes for indirect human intake of dioxins from bottom sediments. The Technical Guideline states that sand covering is a method for blocking the routes of movement of polluted bottom sediments by covering them with a layer of nonpolluted sand or other material, and that the method is inexpensive and does not require final disposal. The guideline also states, however, that since the polluted bottom sediments are not removed, stability of the sand cover against waves and other disturbances and continual monitoring are required.</p> <p>Sand covering is an effective method of containment because it is generally said that dioxins are insoluble and strongly adhere to soil particles. Very little is known, however, about the effectiveness and long-term stability of sand covering.</p> <p>In this study, the effectiveness of covering with recycled materials was verified. For that purpose, a laboratory experiment plan was drawn up and numerical analyses based on experimental results were conducted to consider an appropriate cover thickness, long-term stability, etc.</p>
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<p>Commissioned Study on Treatment and Disposal of Sludge Dredged In the Hamarikyū Area</p>	<p>2005</p>	<p>A preliminary survey conducted in preparation for the dredging of the Tsukiji River revealed that the dioxin concentrations in the bottom sediments exceeded the criteria for bottom sediment quality in some areas. This made it necessary, therefore, to study measures that can be taken in connection with the bottom sediments polluted with dioxins.</p> <p>In the study, the scope of treatment or disposal and the volume of material to be treated or disposed of were determined, and a work plan was drawn up. It was decided to draw up a work plan in accordance with the applicable laws and regulations and the Revised Technical Guideline for Control Measures for Dioxins in Bottom Sediments in Port Areas (December, 2003, Ports and Harbors Bureau, Ministry of Land, Infrastructure and Transport).</p>
<p>Study on Marine Pollution Control Measures in Port Areas</p>	<p>2005</p>	<p>In this study, the actual occurrence and usage of dredged material were investigated in connection with the Act on Prevention of Marine Pollution and Disasters, a law enacted to enforce the London Convention Protocol 1996; the guideline for the procedures for applying for permission for marine disposal of dredged material under the abovementioned law was reconsidered for conformity with the revisions of the related systems after the guideline was drafted in fiscal 2004; and the Technical Guideline for Marine Disposal and Utilization of Dredged Material was newly developed by reference to the opinions of experts.</p> <p>This study also included the collection and collation of information on the state of the art and capability of ballast water treatment systems, interview surveys of manufacturers, the estimation of the volume of residues left after filtration, and the evaluation of the environmental impact of discharged residues.</p>

<p>Study on Maintenance Methods for Sea-based Waste Disposal Sites</p>	<p>2005</p>	<p>This study involves a series of studies needed for future manual compilation for the purpose establishing a maintenance system necessary for proper and safe land use after the closure of a sea-based waste disposal site.</p> <p>In this fiscal year, prior to a study on the maintenance method, which is the main focus of the manual, information on maintenance methods for final disposal sites was collected and collated, and requirements for a disposal site at different stages from the construction the disposal site to its decommissioning were determined.</p> <p>The next step is to assume concrete situations to which maintenance methods that satisfy the abovementioned requirements to some extent. In this fiscal year, possible problems in those situations were identified.</p>
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## Studies on landscape development, green space planning and environmental impact assessment

Study	Fiscal year when study was conducted	Study outline
Study on Landscape Planning for Tomari Wharf at Naha Port	2005	<p>Focusing on the passenger ship terminal and the terminal area planned in the Wakasa area at Naha Port by Naha Port Authority, this study evaluated the present state of the passenger terminal area and future landscapes estimated based on a future plan by following the procedures described in the Guideline for Port Landscape Planning. This study also performed a future landscape simulation by using a Naha Port virtual reality system and obtained guidance and advice from a committee of experts.</p> <p>The study results were compiled into a report titled "Landscape Planning for Passenger Terminal Projects: Considerations and Challenges in the Coming Years" so that planners can refer to the report in the subsequent years for information on considerations in detailed planning and expert opinions.</p>
Study on Verification of the Economic Benefits of Port Green Space Development	2005	<p>This study was conducted to verify the economic benefits of the creation of Nagasaki Seaside Park and identify ways to make effective use of the study results for other green space development projects. The evaluation of the benefits of the creation of Nagasaki Seaside Park was also made in fiscal 2000 before the park was created by the Nagasaki Prefectural Government. The results obtained at that time were compared with the results of this study.</p>

<p>Model Case Study on Usability of the Guideline for Port Landscape Planning</p>	<p>2005</p>	<p>This study verified the port landscape evaluation method described in the recently published Guideline for Port Landscape Planning (March, 2005, Ports and Harbors Bureau, Ministry of Land, Infrastructure and Transport) by conducting case studies of port landscape evaluation.</p> <p>As in the preceding year, the results of this study were reflected, after committee deliberations, in the follow-up activities for the Guideline for Port Landscape Planning.</p>
<p>Study on Maintenance Methods for Port Green Space Maintenance</p>	<p>2005</p>	<p>This study was conducted for the purpose of encouraging citizens' groups to participate in the maintenance of port green spaces. In the study, a questionnaire survey of port managers was conducted concerning maintenance practices. The object and scope of management and the roles of managers were also determined, and ways to involve citizens' groups and utilize the designated manager system were considered.</p>

<p>Study on Vegetation at New Kitakyushu Airport</p>	<p>2005</p>	<p>This study was conducted for the purpose of investigating the initial growth condition of the vegetation planted at New Kiyakyushu Airport, which was under construction for completion in March, 2006, and conducting growth surveys and greening goal achievement evaluation in order to obtain basic data needed to achieve and maintain the green space function in the coming years.</p> <p>The greening works at the airport are designed to achieve maintenance cost reduction; introduce greening technology that takes into consideration the characteristics (e.g., rubble) of the foundation ground peculiar to the airport site and the environmental conditions imposed by offshore construction; and create green spaces by stages, taking into account the construction schedule and the planned opening date of the airport, in order to achieve the greening goal.</p> <p>In this study, the degree of achievement of the greening goal before the opening of the airport was checked, the progress of greening work was evaluated in terms of the possibility of achieving future goals defined according to growth predictions after the opening of the airport, and measures to be taken in connection with maintenance were identified. The study included laboratory tests on turf grass strength and the possibility of vegetation recovery in addition to conventional germination and growth surveys.</p> <p>This study confirmed that it was possible to achieve the initial goal of creating greenery before the opening of the airport (early greening by use of cold-resistant turf grass) even under the constraints imposed by the necessity of autumn construction and spring opening of the airport. In order to achieve the ultimate greening goal (forming green spaces by use of short, ground-crawler grass), areas in which post-planting care such as mowing in and</p>
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		after spring is needed and concrete measures to be taken were identified.
Comparative Analysis of Landscapes for Revitalization of an Area along a Canal	2005	A case study was conducted of the area along the Nakagawa Canal assuming the case in which a canal with a mainly industrial hinterland is redeveloped. A new landscape conceptualization approach based on a quantitative analysis of field investigation results concerning important landscape planning considerations was developed.

## Studies on environmental management system

Study	Fiscal year when study was conducted	Study outline
Study on the Maintenance of an Environmental Management System	2005	This study was conducted to provide technical assistance in connection with the maintenance and operation of KALD's environmental management system, including assisting in revising documents and manuals in accordance with the 2004 revision of ISO14001, compiling educational materials for general education and contractor education, carrying out educational programs, assisting in internal auditing, witnessing periodic examinations, and providing assistance for corrective measures taken in response to problems pointed out.
Study on Environmental Load Reduction Measures at Nagoya Port	2005	This study involves establishing an environmental management system for Nagoya Port Office and conducting studies and research for acquiring ISO14001 certification. In this study, the scope of activity, facilities and equipment of Nagoya Port Office were identified, a plan was drawn up, and operational practices were inspected in order to acquire ISO14001 certification in fiscal 2006. In fiscal 2005, an environmental impact study of Nagoya Port Office is conducted, manuals are compiled and educational programs are carried out so as to prepare for full-scale operation beginning in fiscal 2006.

<p>Study on the Establishment of an Environmental Management System</p>	<p>2005</p>	<p>This study was conducted to provide technical assistance in connection with the maintenance and operation of KALD's environmental management system, including assisting in revising documents and manuals in accordance with the 2004 revision of ISO14001, compiling educational materials for general education, carrying out educational programs, and providing assistance for corrective measures taken in response to problems pointed out in internal audits and examinations for the extension of ISO certification, in addition to expanding the scope of application from office work to include port improvement projects and marine environment improvement projects.</p>
<p>Improvement of the Environmental Management System at Niigata Port and Airport Technical Investigation Office</p>	<p>2005</p>	<p>The purpose of this study is to improve the environmental management system of Niigata Port and Airport Technical Investigation Office and acquire ISO14001 certification in fiscal 2006. In fiscal 2005, various documents were revised as Niigata Port and Airport Technical Investigation Office moved to a new building, manuals were revised according to the revision of ISO14001, and manuals for beginners were compiled to start operation so that ISO certification could be acquired in fiscal 2006.</p>