

Collection of summaries of WAVE studies and research

(Fiscal 2002)

October 2003

Waterfront Vitalization and Environment Research Center

Major studies conducted by WAVE are described below.

I Studies and research projects concerning port policy, planning and information

(Studies on port policy)

Improvement of physical distribution efficiency

Study	Fiscal year when study was conducted	Study outline
<p>Study on container haulage services (Kinki Regional Development Bureau)</p>	<p>2002</p>	<p>In Osaka Bay (at Osaka and Kobe Ports), an increasing number of 45-foot-long marine containers has been handled.</p> <p>This study aimed at grasping the future developments in the handling of containers of that size, reviewing the infrastructure systems required and enhancing the serviceability of Osaka Port. As a result of the study, it was found that no immediate action was required at Osaka Port despite the increasing size of container worldwide because traffic routes shifted to other countries. It was, however, suggested that data on the designated roads should be stored in a database for information dissemination while monitoring the move of the national government for deregulating the use of special vehicles or other purposes.</p>
<p>Study on wide-area management systems (Tohoku Regional Development Bureau)</p>	<p>2002</p>	<p>Most of the international marine containers produced or consumed in the Tohoku area were imported or exported through Keihin Ports. To correct the condition, a study and review was made to identify physical distribution systems and build a wide-area container management system. As a result, an experimental open website was constructed and thus a foothold was established for providing physical distribution information, promoting the use of ports in the Tohoku area and increasing the efficiency of physical distribution.</p>

<p>Study on the physical distribution in the Sea of Japan corresponding to the changes in wide-area distribution (Hokuriku Regional Development Bureau)</p>	<p>2002</p>	<p>The Port Subcommittee of the Transport Policy Advisory Committee recommended the "construction of a domestic maritime transport network providing for intermodal transport" for the future at a meeting in July 2002. The goal is to promote modal shift and increase the efficiency of physical distribution through smooth connection between sea and land transport.</p> <p>In the shipping routes in the Sea of Japan mainly between the Hokuriku and Hokkaido areas, steps have been taken to build new marine distribution service systems. Shin-Nihonkai Ferry Co., Ltd. launched the operation of a new ship between Niigata and Otaru Ports in April 2002 and Kinkai Yusen Logistics Co., Ltd. started operating roll-on roll-off vessels between Tsuruga and Tomakomai Ports in June the same year.</p> <p>This study was conducted against such a background to seek an optimal ferry route between Hokuriku and Hokkaido or Kyushu based on the potential volume of cargoes, and to propose port improvement measures required for establishing the route.</p> <p>In the study, present cargo transport, and changes in physical distribution needs and in distribution services between Hokkaido or Kyushu and Honshu were identified. Then, several patters were developed for routes from ports in the Hokuriku area constituting a marine transport network and for service levels. Demand was forecast in each pattern.</p> <p>It was concluded that two routes, one between Kanazawa and Tomakomai and the other between Fushiki-Toyama and Tomakomai, could be made available simultaneously with the existing route in the Sea of Japan.</p>
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<p>Study for collecting basic data for port facilities improvement (Kyushu Regional Development Bureau)</p>	<p>2002</p>	<p>A study was made of marine cargo transport in the Kanmon area of Kyushu to obtain basic data for future port facilities improvement and to supplement the study of fiscal 2001. Use of ports were examined and analyzed and future direction was considered for such bulk cargoes as lumber, finished vehicles, scrap materials and recycled materials, which are expected to be transported in larger quantities, and for containerized cargoes produced or consumed in the Kyushu area.</p>
<p>Study to analyze the marine transport of cargoes along the main route (Kobe Research and Engineering Office for Port and Airport)</p>	<p>2002</p>	<p>In order to use physical distribution data stored in a database at the Research and Engineering Office when developing port facilities improvement plans, data were identified, lacking data were collected and a review was made of the method of building the database. In the study, Professor Kuroda of Kobe University played a central role in identifying an optimal system and building the system concept.</p>
<p>Basic study on the supply chain management centering around ports (Chubu Regional Development Bureau)</p>	<p>2002</p>	<p>In this study, functional requirements for transport via ports were examined now that an increasing number of businesses have been adopting the supply chain management (SCM) as a strategic management process. An outline of SCM as at present was grasped, and methods for support at ports were organized.</p>

Reorganization and new way of use of waterfront areas

Study	Fiscal year when study was conducted	Study outline
<p>Study for establishing wide-area disaster prevention bases and developing measures for coordination among the bases in the Kinki area (Kinki Regional Development Bureau) (Kinki District Transport Bureau)</p>	2002	<p>In this study, a check was made of a wide-area disaster prevention system that was considered necessary after the Great Hanshin-Awaji Earthquake Disaster of January 1995. Damage was assumed that was likely to be caused by several conceivable earthquakes. The need of major wide-area disaster prevention bases was evaluated for various relief activities such as the wide-area transport of relief goods and seriously wounded people and the deployment of support squads. Zones in which wide-area disaster prevention bases should be located were identified, and the size of each base was assessed. Structural and procedural measures required at each base and how to coordinate among the bases were also identified.</p>

<p>Study on the industrial trend in waterfront areas in Shikoku (Shikoku Regional Development Bureau)</p>	<p>2002</p>	<p>In the Shikoku area, paper manufacturing, chemicals, shipbuilding and other manufacturing industries grew on the side of the Seto Inland Sea throughout Japan's high economic growth period. On the coast of the Pacific Ocean, mining and ceramic industries including limestone and cement production developed. The industrial development made great contributions to the local economies in Shikoku. The conditions surrounding the existing industries have, however, changed. The recent mining and manufacturing indicators attest to the stagnation of growth of existing industries. The stagnation also has a great impact on ports because most of the industries are located in waterfront areas. Port facilities and land have been used less or unused because of the reduction in cargoes handled. Environmental industries, on the other hand, have been gathering attention because of their growth potential. Recycling industries in particular have been popular as emerging industries with high growth potential in waterfront areas.</p> <p>In this study, field and questionnaire surveys were conducted on the recycling businesses operating in waterfront areas. Based on the survey results, developments in recycling industries in Shikoku, their use of ports and problems involved were identified. At the same time, a study was made of ports in Shikoku to build resource recycling society through structural measures (port improvement) and procedural steps (port management and operation, and deregulation).</p>
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<p>Study for developing seaside areas through the creation of seaside culture (Ports and Harbors Bureau)</p>	<p>2002</p>	<p>In this study, the present conditions of seashores in Japan were assessed from a viewpoint of "creation of seaside culture" based on the awareness of the question of whether or not Japanese seashores are truly beneficial to the country and regional society. Then, how to create seashores in the future was discussed. To identify the awareness, the "research council for creating a new seaside culture" was organized that was composed of experts not only in engineering but also in civilization theory, education, sports and landscape, and members of municipalities and NPO (non-profit organizations). The research council had a series of discussions.</p> <p>The results were compiled into a "declaration for seashore creation".</p>
<p>Study for port improvement on remote islands (Kyushu Regional Development Bureau)</p>	<p>2002</p>	<p>A study was made of physical distribution routes and schedule, port facilities and other required facilities to optimize the cost of transport of used materials and waste on remote islands of Kyushu.</p> <p>There has been growing awareness of resources recycling since the Recycling Promotion Law went into effect. Illegal dumping of waste has been becoming an issue on remote islands because of increasing costs of collection and transport of recycled materials. In this study, a system was developed for selecting optimal route and schedule for transport of used materials and waste on remote islands. The relationships of the size of container stock yard to shipping route and schedule and to the collection and transport costs of recycled materials were effectively and quantitatively calculated. Basic data were prepared for minimizing the costs of collecting and transporting recycled materials produced on remote islands. Issues to be handled in the future were also identified.</p>

Efficient port improvement, use and management

Study	Fiscal year when study was conducted	Study outline
<p>Basic study for facilities management in ports and fishing ports (Atami Public Engineering Office, Shizuoka prefecture)</p>	<p>2002</p>	<p>Angling has recently been very popular as an easy marine recreation. Anglers never stop entering off-limits port or fishing port facilities. Numerous anglers fall off the breakwater all over the country. Breakwaters, facilities at ports or fishing ports, play an important role in protecting the port from waves. At the same time, breakwaters and other port facilities serve various purposes of visitors such as angling, commanding a view and taking a rest. The operators of ports and fishing ports have been constructing facilities for people to enjoy themselves in the port or surrounding area in safety getting close to the sea. Some of the breakwaters conventionally off-limit to visitors are now available to anglers or walkers. There is a demand that ports and fishing ports be used not only as a base for physical distribution or fishing but also as a place of maritime recreation. Port management methods should be improved accordingly.</p> <p>In this study, the methods of safety management at port and fishing port facilities, which are public structures, were reviewed based on the past records of accidents at ports involving anglers or other port visitors and on the existing literature. Basic data were collected for port managers to ensure safety management.</p>

Long-term vision and regional development

Study	Fiscal year when study was conducted	Study outline
<p>Study for creating a bustling place around the port (Chugoku Regional Development Bureau and Shikoku Regional Development Bureau)</p>	<p>2002 ~</p>	<p>In this study, a check was made of measures for creating a "port oasis", a base for regional exchange. Workshops involving local residents were held and field trials were made in three ports under the control of the Chugoku and Shikoku Regional Development Bureaus. It was concluded based on the study results that the port oasis should be created by basically taking a bottom-up approach through public involvement and making effective use of existing facilities. To support and promote the move, establishing a "port oasis system" through public-private cooperation was reviewed.</p>

Other

Study	Fiscal year when study was conducted	Study outline
<p>Study for building an ocean cruise network in Okinawa (Okinawa General Bureau)</p>	<p>2002</p>	<p>Okinawa, endowed with characteristic natural environment and culture, has a great potential as a tourist attraction. The beautiful sea of Okinawa can be used as a tourist resource. Domestic unscheduled cruise ships frequently make a call at a port in Okinawa. Overseas shipping lines started operating scheduled cruise ships in 1997. Thus, numerous foreign tourists now visit Okinawa. Against such a background, ocean cruise has been positioned as a major means of developing tourism in Okinawa. Okinawa is likely to accept a rapidly increasing number of tourists from China as one of the nearest resorts. It is then necessary to develop action plans to attract tourists from China, Taiwan and other east Asian countries by making a maximum use of the geographical position of Okinawa.</p> <p>In this study, measures were examined for building a cruise network in east Asia using the geographical benefits of Okinawa prefecture as a means of winning tourists. Then, action plans were developed.</p> <p>As a result of the study, it was found that such facilities were required as wharves, berths and passenger terminals as bustling or resting places, that such procedural measures were important as port sales, port services and hospitality, and that customs, immigration and quarantine procedures should be handled more quickly. To meet the requirements, the establishment of a council was suggested. The suggestions will be followed up by a "coordination council for promoting cruise shipping in Okinawa prefecture" organized in March 2003 by the Okinawa Convention & Visitors Bureau.</p>

<p>Study for promoting urban development centering around the port (Ports and Harbors Bureau)</p>	<p>2002</p>	<p>Urban development using the port has recently been observed everywhere. Characteristic regional communities have been created, and tourism and other regional industries have been revitalized. In this study, the basic idea for future systematic urban development was defined based on the collected examples of urban development based on the port, responses to questionnaires and answers in interviews with the public.</p>
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Study for planning
Development of physical distribution infrastructure

Study	Fiscal year when study was conducted	Study outline
Study on the strategy for enhancing the management of Naha Port to serve as an international distribution port (Naha Port Authority)	2002	<p>In Okinawa prefecture, it is hoped that Naha Port will grow as an international distribution port handling transshipment goods to contribute to the future industrial development and sustainable economic growth of Okinawa. This study was conducted following the "study on measures for developing Naha Port as a port for international physical distribution" of the previous fiscal year. Strategies for Naha Port to grow as a port for international physical distribution were evaluated.</p> <p>(i) Networks of shipping routes were considered. (ii) Economic benefits were grasped and methods of container terminal management and operation were assessed. (iii) A review was made of an outline of a Naha Port information system. Forums were held to collect comments on the review results. Seminars were also organized for port-related staff of the Okinawa prefectural government.</p> <p>As a result of the study, items in the management contract requiring adjustment with the other party were identified such as the method for selecting the management system, the guidelines for application and the main features of the contract.</p>

<p>Study for promoting the use of Nakagusukuwan Port to help increase physical distribution efficiency (Okinawa prefectural government)</p>	<p>2002</p>	<p>Nakagusukuwan Port is a key port located on the east coast of the mid-south section of the main island of Okinawa. The new port area of the port is being improved as a distribution and processing port contributing to distribution and production. Land development has been completed. The port is now being improved. In the land developed in the first phase, business entry has nearly been completed. The volume of cargoes handled at the west pier has been steadily increasing. Some cargoes are, however, transported on land because of inadequate port facilities or poor transport services. The land to be developed in the third phase has been designated as a free trade zone (FTZ). In order to attract businesses to the industrial land or FTZ, reinforcing port functions is important. Efforts are required to develop a new cargo transport route from Nakagusuku Port to prevent an excessively large volume of cargoes from being concentrated at Naha Port and to reduce cargo transport cost for the businesses that have entered the new port area of Nakagusuku Port.</p> <p>In this study, as well as in the study in the previous fiscal year, questionnaires were sent to businesses and discussions were made in the meetings of a research committee composed of intellectuals, to solve the problems described above. Verification tests were conducted to develop a shipping route to Nakagusuku Port for regularly scheduled liners.</p> <p>As a result of the review, new roles of Nakagusuku Port new port area in the future were suggested: (i) base for handling automotive products, (ii) base of processing and assembly, and food industries, (iii) base for supplying farm and marine products and (iv) base for transport of used materials and waste. Specific measures and action plans for implementing the measures were developed.</p>
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<p>Study on physical distribution through ports in Shikoku (Shikoku Regional Development Bureau)</p>	<p>2002</p>	<p>The "vision for ports and airports in Shikoku" developed in October 2001 defines ports in Shikoku as the base for domestic physical distribution using ferry and intermodal transport in the area. It also recommends further modal shift and functional enhancement. No detailed investigations have, however, been made on ferry cargoes in Shikoku although per capita volume of ferry cargoes handled is highest in Shikoku throughout Japan. In order to discuss how to improve ports for ferry cargo transport, an asset to Shikoku, facts should be found in greater detail.</p> <p>For handling containerized cargoes for foreign trade, the vision suggests the formation of an efficient trunk line between Shikoku and Asia as the demand has recently been increasing for the transport between these areas. At present, however, transport depends mainly on large ports in the Hanshin (Osaka and Kobe) area. To overcome the handicap for the industries of Shikoku, the roles that the ports in Shikoku should play should be considered.</p> <p>Under the circumstances, operators and freighters involved in the transport of ferry and foreign trade containers were interviewed and discussions were made in committee meetings. In the process, measures to enhance the benefits of physical distribution through ports of Shikoku were evaluated.</p>
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Creation of general port space

Study	Fiscal year when study was conducted	Study outline
<p>Study for reorganizing and revitalizing the waterfront area of Onahama Port (Tohoku Regional Development Bureau) (Fukushima prefectural government)</p>	<p>2002</p>	<p>In Onahama Port, 70% of the <i>Port Renaissance</i> plan has been implemented. The plan should be reviewed to complete the implementation of the remaining 30% under the present conditions because of subsequent social changes. The space for exchange on piers 1 and 2 that was created according to the <i>Port Renaissance</i> plan is now a bustling place. Thus, the objective of construction has been achieved. The plan concerning the use of the land for a warehouse on piers 1 and 2 requires a review under the present social conditions. It has also been pointed out that a group of warehouses and the land for waterfront railways separate the bustling space from the urban district.</p> <p>To promote the project so that local people may use facilities, building a system providing for public involvement is becoming more important. Under such conditions, this study focused on the plan for using the warehouse site on piers 1 and 2. At the same time, views were collected from the Onahama Town-making Citizen Conference, quasi non-profit organization acting over a wide area in Onahama, for reflection in related measures. The "University of Onahama Port-town" was established to collect opinions of the general public and the opinions obtained were reflected in specific measures.</p>

<p>Study for developing a tram-based transport system in waterfront areas (Niigata Port and Airport Construction Office, Hokuriku Regional Development Bureau)</p>	<p>2002</p>	<p>Investigations and studies have been continued since fiscal 1998 about the possibility of introducing a new urban transport system in the Niigata metropolitan area. In fiscal 2000, a comparative analysis was made of small monorail and light rail transit (LRT) systems. In order to accelerate the move, proposals were made to introduce the transport system as an integral part of city planning including the improvement of streets, construction of transit malls and roadside development; to reduce systems costs, to adopt a system of public construction and private operation or PFI system for project implementation; and to build a public consensus. The Niigata municipal government has been actively annexing surrounding municipalities to grow into a central hub city in a zone of exchange around the Sea of Japan. The Niigata-minato Tunnel was partly placed into service in May 2002. In the areas around the Bandai Island redevelopment site, flow of vehicles and pedestrians has changed drastically. Surrounding areas are now being improved while continuous grade separation structures with elevated railway tracks are being constructed at Niigata Station. Then, a review should urgently be made of the new urban transport system. This study assessed the directions of public transit system development around Niigata Port based on the existing literature, investigated and organized advanced examples of light rail transit systems overseas, and evaluated the possibility and preconditions of tram-based system implementation in the Niigata metropolitan area including the area around the port. As a result, it was found necessary to introduce the transport system not only in the waterfront but also in urban areas and to adopt traffic demand management (TDM).</p>
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Long-term port improvement plan and regional development measures

Study	Fiscal year when study was conducted	Study outline
<p>Study on the network of distribution of used materials and waste using the ports of Okinawa (Okinawa General Bureau)</p>	<p>2002</p>	<p>In Okinawa, an island prefecture, recycling scarce resources is important. Recycling facilities are, however, not sufficiently available. No marine transport system has yet been established for materials recycled in the prefecture. Illegally parked bicycles have been a social issue in the prefecture is oriented toward tourism.</p> <p>For efficient recycling in Okinawa, recycling costs should be reduced by locating recycling bases and the cost of transporting recycled materials should also be reduced.</p> <p>This study aimed at building a network of transport of used materials and waste using ports in the Nakagusuku Port new port area by making maximum use of potential of the waterfront area for using existing facilities such as wharves and stockyards. A review was made of the present conditions of recycled resources in Okinawa, examples of handling of recycled resources in ports, transport of recycled resources along the shipping routes for regularly scheduled liners between ports and the possibility of recycled resources transport. Then, action plans were developed for constructing a network of distribution of used materials and waste. Based on the study results, recommendations were submitted to the governor of Okinawa prefecture concerning the "construction of a network of transport of used materials and waste in Okinawa". Nakagusuku Port has been designated as a second-phase recycling support site.</p>

<p>Study on Sakata Port long-term development plans (Sakata Port and Airport Construction Office, Tohoku Regional Development Bureau)</p>	<p>2002</p>	<p>This study was conducted in response to the changes in economic environment in Yamagata prefecture and Japan. A long-term Sakata Port development draft plan was evaluated to obtain basic data for identifying the direction of the plan at the time of revision scheduled for March 2005 and the possibility of developing wharves with a great depth. Members of the businesses concerned were interviewed, and basic data were collected on the trend in distribution. The volume of cargoes was estimated and the effect of the preparation of facilities layout plans was assessed. As a result, it was suggested that recycling-related industries including those using biomass energy resources, livestock industry and related industries should be developed and located while continuously handling cargoes at the same level as at present.</p>
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Other

Study	Fiscal year when study was conducted	Study outline
<p>Study for landscaping the port space in Okinawa (Okinawa General Bureau)</p>	<p>2002</p>	<p>Tourism-oriented ports of Okinawa should preferably form landscapes with regional characteristics. At present, however, ports look highly functional but not always fit as a gateway to Okinawa. Some hope that ports will serve as a space for regional revitalization as people have been becoming more aware of improving the quality of the environment and life. Ports are also required to provide living space closely related to the hinterland. There has been increasing demand for better landscape around the port. At the "women's forum on ports of Okinawa" of fiscal 2001, it was suggested that more consideration should be given to the landscape of port.</p> <p>Against such a background, this study was conducted for Naha Port as an example based on the idea that it was important for the residents in the hinterland to be able to use the port space as part of the region. The present landscape and environment were grasped based on how regional residents and tourists were using the port and the images of landscaping and environmental goals were evaluated. The study aimed at developing landscaping plans providing for the participation of regional communities by examining measures to achieve the goals and the roles to be played by stakeholders such as the public and private sectors and businesses located in the vicinity of the port. In fiscal 2002, studies were conducted based on the results of interviews at the "women's forum on ports of Okinawa" and of questionnaire surveys involving the public.</p>

<p>Study on the economic ripple effect of Nagasaki Port (Nagasaki Port and Airport Construction Office, Kyushu Regional Development Bureau)</p>	<p>2002</p>	<p>At present, cost effectiveness (cost-benefit) analysis is made for adopting a port project. The regional economic effect produced in the area where investments are made in ports is not examined in cost-benefit analysis because the regional effect is likely to be offset in national accounting. Investments in ports, however, have a great effect on the region. Calculating port investments is therefore significant from a viewpoint of regional economy.</p> <p>Nagasaki has grown since the Edo Era when the city was designated as a sole gateway to Japan for foreign trade. Major industries such as shipbuilding, fisheries and tourism are all closely related to the port. Thus, Nagasaki Port has various economic effects according to the function or role of the port.</p> <p>In fiscal 2001, the effects of investments in projects in Nagasaki Port were estimated. In fiscal 2002, the effects of use of various port functions such as physical distribution, exchange and urban improvement were evaluated. Thus, basic data were collected for evaluating the significance of improvement of Nagasaki Port and the general role of the port.</p>
<p>Study for creating attractive ports in Shikoku (Shikoku Regional Development Bureau)</p>	<p>2002</p>	<p>The Shikoku Regional Development Bureau established a "council for creating attractive ports in Shikoku" to discuss the conditions of ports as exchange space and how to create attractive ports. Examined in this study were methods of port creation to promote "port-based tourism" in Shikoku for attracting tourists from outside Shikoku.</p>

<p>Study on operation support in Ishigaki Port (Ishigaki Port Construction Office, Okinawa General Bureau)</p>	<p>2002</p>	<p>This study was conducted after the finalization of a revised plan for Ishigaki Port, and aimed at building application programs collectively referred to as the "virtual reality (VR) system, which would be used for realizing the contents of the plan using virtual reality, and creating and verifying the basic data for those concerned to evaluate the project for implementation or to build consensus of the local residents. The study was conducted following another study carried out the previous fiscal year. The basic data created last fiscal year were updated this fiscal year. The VR system was completed reflecting the latest plan. A series of studies were completed this fiscal year.</p> <p>It was found that the hazardous materials facilities in the new port area would pose landscaping problems. The tanks and other facilities might deteriorate the landscape when seen from ocean liners. Plans that took landscaping into consideration were therefore comparatively analyzed on the VR system.</p> <p>Computer graphics animation programs were also produced based on the VR data created for disseminating information at briefing sessions in the regions concerned.</p>
<p>Study on port planning in Wakayama (Wakayama Port Construction Office, Kinki Regional Development Bureau)</p>	<p>2002</p>	<p>In Wakayama-Shimotsu Port, the port was re-evaluated from a residents' viewpoint and studies were conducted to create the port while building a consensus. Questionnaires were sent to approximately 1,500 residents to grasp their need and organize the problems. Adjustments were made for coordination with local businesses, universities, non-profit organizations and other organizations. Municipal elementary school officials were educated on the integrated study on ports in cooperation with the prefectural education committee.</p>

<p>Study on the partnership with regional residents in ports in Chubu area (Chubu Regional Development Bureau)</p>	<p>2002</p>	<p>There has recently been a growing momentum for port city planning through port improvement not led by the administration but through cooperation between the administration and regional community, focusing on the relationship between the port and people's livelihood. Public participation in port planning has been more important even in the phase of planning for port improvement, management and use.</p> <p>Against the above background, this study reviewed the partnership between the administration and local residents through the activities of a council (inspections and exchange of views) to seek the way how the administrative authorities should cooperate with non-profit organizations or civic groups for solving the problems related to the environment, landscape, safety and culture. The council was staffed with the women actively involved in civic groups in the Chubu area to conduct studies from women's viewpoint. The activities of the council took place under certain themes at Shimizu and Nagoya Ports. Views were aired that a network for exchange was required among nodes in the Chubu area and that the facilities providing people with access to water should be designed to present a story.</p> <p>Studies will be continued in fiscal 2003. Finally, recommendations will be submitted concerning the partnership between the administration and local residents and port city planning.</p>
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Information research projects
Port EDI

Study	Fiscal year when study was conducted	Study outline
<p>Operation and management of port EDI system for submitting applications to port administrator or port commander (Port administrator and Maritime Safety Agency)</p>	<p>2002</p>	<p>The port EDI system has been developed by the Ministry of Land, Infrastructure and Transport and the Maritime Safety Agency in cooperation with port administrators to accelerate the digitization of administrative procedures for submitting applications or reports to the port administrator or port commander. WAVE started developing the electronic application system in fiscal 1998 and started system operation on a trial basis in October 1999.</p> <p>In fiscal 2002, the work for managing system operation included the provision of services to systems users, maintenance of the equipment and the control of various databases.</p> <p>The number of applicants using the EDI system has been increasing year by year. As of March, 2003, 25 organizations have filed applications at the port administrator and 86 ports (all of the specified ports) have filed applications at the port commander. A total of 680 offices have file applications. Approximately 27,300 applications have been submitted as of March 2003. As many as 1,400 applications were filed on a peak day. The number has been increasing. Inland and international shipping accounted for 70 and 30%, respectively. The launching of the one-stop-service system in July 2003 led to increased use of the EDI system for international shipping. The number of applications is expected to increase considerably.</p>

<p>Study for developing a one-stop-service system for import and export and other port-related procedures (Ports and Harbors Bureau)</p>	<p>2002</p>	<p>To improve the competitiveness of Japanese ports in global markets, increasing the service level is important. Administrative agencies demand that port users submit various documents related to import and export and other port-related procedures at the time of entry into or departure from the port. The need to prepare large volumes of forms thus places heavy burden on applicants.</p> <p>To solve the problem, the one-stop-service system will be implemented for import and export and other port-related procedures. The one-stop-service system enables the user to file applications at multiple administrative agencies by inputting and transmitting necessary data only once. To that end, digital application systems of various agencies namely NACCS port EDI and crew landing permit system will be linked to one another for coordination. Then, the administrative agencies concerned will be able to share information.</p> <p>In this study, check was made of the connection and coordination between the port EDI system and the systems of other agencies. As a result, it was decided to adopt SMTP (simple mail transfer protocol), which was free from any specific processing method, as a protocol for sending or receiving digital messages between administrative systems, and IP-VAN (Internet protocol-virtual private network) method for data transmission via a network.</p>
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Port information

Study	Fiscal year when study was conducted	Study outline
<p>Study on the methods for using information on physical distribution through ports (Ports and Harbors Bureau)</p>	<p>2002</p>	<p>Improving port facilities and enhancing the service level are important for international ports to increase their competitiveness in global markets. Ship entry to or departure from the port and the transport of cargoes to the owner necessitate various complicated public-to-private or private-to-private procedures at multiple administrative agencies. In this study, examinations were made of the basic conditions for building an "information platform for port-based physical distribution", which could enable all the administrative authorities and private operators involved in the transport of goods from the ship to the owner to share physical distribution information. An advisory panel of intellectuals had meetings four times to discuss the requirements for using information on physical distribution through ports. A working group composed of working-level members was established under the panel to have specific discussions. As a result, the information platform for port-based physical distribution was defined as "information infrastructure providing for free exchange of information among participants". The need to develop a uniform MIG (message implementation guidelines) for information exchange among various systems such as NACCS, POLINET and private systems was suggested and approved by the advisory panel.</p>

<p>Study concerning the verification test of a land-sea intermodal distribution information platform (Ports and Harbors Bureau)</p>	<p>2002</p>	<p>Japan relies mostly on marine transport for foreign trade. Increasing the efficiency of marine transport has a great impact on the entire economy. Information has, however, not been exchanged smoothly among the operators concerned. It is then urgently required to exchange information smoothly by building a system for exchanging marine transport information among those concerned smoothly, simply and quickly (land-sea intermodal distribution information platform). The system digitizes a series of processes for handling imported and exported goods by electronically sharing port-based distribution information among the owner, shipping line and port-based physical distributor. In this study, an application process model was developed that could enable the operators involved in port-based physical distribution such as the owner, shipping agent, carrier, terminal operator and shipping line to securely share a series of information in the upper through lower processes real-time. The instructions of the owner concerning imported goods such as the advice of arrival to the customer and customs clearance and delivery instructions are disclosed in advance. The effect of the application process model was confirmed in verification tests. As a result, the shortening of lead time and the effectiveness of the verification test under secure conditions using the Internet and mobile equipment were confirmed.</p>
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<p>Study for using ITS (intelligent transport systems) technology for port-based physical distribution (Kinki Regional Development Bureau)</p>	<p>2002</p>	<p>Check was made of measures for using ITS technology when implementing an EDI system for port-based physical distribution using the functions of EDI and ITS technology. Scenes of use of information technology were imaged.</p> <ul style="list-style-type: none"> -Use of information technology is unlikely to contribute to the increase of operation efficiency because only a small volume of information is shared by administrative organizations and because multiple systems are in place and input of duplicate data is necessary. -Only a small volume of information is processed because many of the distribution operators are of small scale. There is not much incentive to apply information technology because few benefits are expected. <p>Direction of system development</p> <ul style="list-style-type: none"> -Data should be shared using XML (extensible markup language) technology currently under development that makes possible free processing of data that all the operators involved in physical distribution through ports can use. -Security should be guaranteed. -An open network based on the Internet should be used in which even medium to small operators can build systems at low cost. -Mobile communications and DSRC (dedicated short range communications) should be used that provide for collecting digital data at all phases (ordering, transport, steps required at the port, etc.). <p>Roles of the administration</p> <ul style="list-style-type: none"> -Defining a clear vision -Strengthening the coordination among administrative organizations -Determining the policy for standardizing the form
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<p>Basic study for promoting exchange along the coast of the Seto Inland Sea using information and telecommunications technology (Chugoku Regional Development Bureau)</p>	<p>2002</p>	<p>The basic study aimed at selecting shipping routes and collecting data for the coastal areas of the Seto Inland Sea with numerous routes to examine methods for effectively disseminating information to promote exchange through the use of ports.</p>
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II Study and research projects concerning the port environment and environmental ISO

Environment-related projects Research on environmental policy

Study	Fiscal year when study was conducted	Study outline
Environmental impact assessment for ocean dumping of dredged material (Nippon Foundation)	2002	In order to assess the actions for ratifying London Protocol 1996, domestic and overseas developments were identified and analyzed. Case study methods were also used based on the idea of "WAG (waste assessment guidelines) for dredged material".
Study for improving the marine environment in the Sea of Ariake (Kyushu Regional Development Bureau)	2002	Data were collected on the present conditions of the Sea of Ariake, and effective methods for improvement were sought. In this fiscal year, practical methods for controlling floating mud and the effects of the methods were reviewed.
Study for environmental creation in the waterfront area of Tokyo Bay (Kanto Regional Development Bureau)	2002	This study aimed at examining long- and short-term measures for improving the marine environment throughout Tokyo Bay. Specific review was made of the ideas for and problems in the implementation of environmental creation measures.
Study for regenerating the Tokyo Bay ecosystem including the tideland (Ports and Harbors Bureau) (Ministry of Environment)	2002	Environmental and social changes in Tokyo Bay were identified and comprehensive measures were examined for restoring the ecosystem of the bay including the tideland based on the latest research results. Studies were made of how to protect or restore the tideland, seaweed beds and shallow sand beaches, and how to build a network of tideland in the ecosystem.

<p>Study for project implementation with public involvement (Hiroshima Research and Engineering Office for Port and Airport)</p>	<p>2002</p>	<p>In order to regenerate the nature smoothly and effectively in the ports and waterfront areas in the Seto Inland Sea, check was made as to how diverse players such as non-profit organizations, non-governmental organizations and volunteers should be involved, participate or cooperate with one another in the project planning through post-implementation monitoring.</p>
<p>Preparation of materials concerning the Tokyo Bay renewal project and other program (Kanto Regional Development Bureau)</p>	<p>2002</p>	<p>The Ministry of Land, Infrastructure and Transport has been taking various measures to have the public understand the facilities related to the ministry and reflect public views and requests in administration. The objectives are to "increase the transparency of administration" and to "promote communication-based administration through dialogue with the public". In this study, materials were prepared for "on-site lectures" that have been conducted as a measure to meet the above objectives. Materials and photographs concerning the "Tokyo Bay renewal project" and "Tokyo Bay environmental protection program" were collected and organized. Then, PowerPoint documents were prepared for advising the general public of the objective, details and effects of the projects in a plain format.</p>

<p>Study for preparing materials for environmental education (Tokyo Port Office, Kanto Regional Development Bureau)</p>	<p>2002</p>	<p>The Central Council for Education (July 19, 1996) and Curriculum Council (July 29, 1998) recommended "hours for comprehensive studies" to equip children with a "zest for life" and the "capacity and capability to respond to social changes on their own". The Central Council for Education has listed as the themes for comprehensive studies (i) education on the economy and industry, (ii) education on health, (iii) vocational education and guidance, (iv) education on the environment and (v) civic education. The specifics have been left to the people actually engaged in education, namely schoolteachers.</p> <p>Children have been educated on river environment or environmental issues. Environmental learning has, however, taken place rarely in relation to ports and waterfront areas.</p> <p>One reason is the availability of few materials suitable for marine environmental learning.</p> <p>In this study, supplementary textbooks were reviewed that could help students have better understanding of the environment in Tokyo Bay. It was assumed that hands-on training would take place on the beach during the hours for comprehensive studies at elementary and junior high schools in the vicinity of Tokyo Bay.</p>
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Environmental creation planning and technology (ecosystem)

Study	Fiscal year when study was conducted	Study outline
Ecological study in the breakwater of Kashima Port (Kashima Port and Airport Construction Office, Kanto Regional Development Bureau)	2002	Investigations were made of the life of species in underwater foot protection blocks with horizontal voids for the central and south breakwaters in Kashima Port. The investigations focused on migratory and non-migratory octopuses.
Excavation of sediment purification material and verification of the effect (Hiroshima Research and Engineering Office for Port and Airport)	2002	Marine bacteria living in the bottom sediment in Hiroshima Port were screened to extract bacteria that were highly capable of dissolving organic matter and had high adhesion. The bacteria proved to have high degradative activity in relation to organic matter such as nitrogen and phosphorus.
Technical study for protecting aquatic life in the Shimonoseki man-made island (Shimonoseki Research and Engineering Office for Port and Airport)	2002	In order to establish technologies for developing seaweed beds in port structures facing the open sea, the results of field verification tests conducted since fiscal 2000 on a man-made island off the city of Shimonoseki were organized. Technical studies were made of the species, basic cross section, method of transplant and maintenance.
Miike Port environmental impact assessment (Hakata Port and Airport Office, Kyushu Regional Development Bureau)	2002	In order to obtain basic data for evaluating the environmental impact of the widening and reinforcing of navigation channels in Miike Port, the present conditions of the environment were investigated based on the existing materials. Methods were examined for preparing plans for conducting field investigation of items considered requiring check and for assessing the environmental impact.

<p>Public relations activities concerning the technologies for making the Kansai International Airport friendly to the environment (Kansai International Airport Co., Ltd.)</p>	<p>2002</p>	<p>Presentation was given of environmental data on the technology adopted for seaweed bed development in the second-phase land development at the Kansai International Airport, at the 30th Permanent International Association of Navigation Congresses conference held in Sydney in autumn last year. An exhibition was planned and held concerning the second-phase land development and the seaweed bed development technology.</p>
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Environmental creation planning and technology (waste, recycling and hazardous materials)

Study	Fiscal year when study was conducted	Study outline
Study of the feasibility of a system of transport of used materials and waste mainly through ports (Ports and Harbors Bureau)	2002	The "committee for feasibility study of a system of transport of used materials and waste mainly through ports" discussed how to implement the system of transport of used materials and waste and how to support project implementation mainly at the recycling ports designated in the first phase.
Study for developing bases for wide-area waste disposal and recycling in the Kita-Kyushu area (Ports and Harbors Bureau)	2002	Check was made of the measures for organically coordinating projects such as the wide-area waste disposal and the development of recycling bases in the Kita-Kyushu area in Fukuoka prefecture, and the measures for ensuring smooth transport of recycled resources. A master plan using ports was developed.
Study on the role of ports in a system of transport of used materials and waste in the Kinki area (Kinki Regional Development Bureau)	2002	The present physical distribution routes for items to be recycled in the Kyoto, Osaka and Kobe regions were identified. Then, studies were made of the future direction of a system of transport of used materials and waste and the roles that Kobe, Osaka and Sakaisemboku Ports, which are under the control of the bureau, should play in the physical distribution network.

Projects related to environmental ISO

Study	Fiscal year when study was conducted	Study outline
<p>Study for constructing an environmental management system (Kobe Port Construction Office, Kinki Regional Development Bureau)</p>	2002	<p>Based on the results of the study of fiscal 2001, studies were made to obtain ISO14001 certification through the construction of an environmental management system (EMS), enlightenment and solution of problems specified during system operation and examination. As a result, ISO14001 certification was obtained on March 19, 2003 after the examination by SCOPE-MS, an ISO certification agent. This was the second case of certification for an office under the direct control of a port after Chiba Port Construction Office. In addition to clerical work, environmental improvement and port improvement projects will be controlled under the system in fiscal 2005.</p>
<p>Technical support for environmental management (Chiba Port Construction Office, Kanto Regional Development Bureau)</p>	2002	<p>Technical support was provided for Chiba Port Construction Office to obtain certification of an environmental management system. SCOPE-MS, an ISO certification agent, granted certification in December 2002.</p>
<p>Study for building an environmental management system (Kansai International Airport Land Development Co., Ltd.)</p>	2002	<p>Technical support was provided to continuously maintain and operate an environmental management system registered by Kansai International Airport Land Development Co., Ltd. (KALD), and to conduct studies for continuously enhancing the system as required by ISO14001 standards.</p>