

Ship & Ocean Newsletter

Selected Papers

No. 1

Institute for Ocean Policy, SOF

Director's Message

As mankind moves into the 21st century, integrated policies of ocean governance are necessary for the sustainable development and use of our oceans and their resources and the protection of the marine environment.

Towards this end, the Ship & Ocean Foundation has launched an "Institute for Ocean Policy", with the mission statement "Living in Harmony with the Oceans".

The Institute for Ocean Policy aims to coordinate research in ocean related issues in order to initiate debate on marine topics and formulate both domestic and international policy proposals.

We publish a Japanese-language newsletter called the "Ship & Ocean Newsletter" twice a month. The "Ship & Ocean Newsletter" seeks to provide people of diverse viewpoints and backgrounds with a forum for discussion and to contribute to the formulation of maritime policies to achieve coexistence between mankind and the ocean.

Our Institute believes that the Newsletter can expand effective communication on these issues through its function as an editor as well as intermediary, publishing timely research and welcoming responses from readers, which might then be published in turn.

"Ship & Ocean Newsletter Selected Papers" will contain English-language versions of papers from the Japanese Newsletter editions, published from No.1(2000.8.20) to No.16(2001.4.5).

It is our sincere hope that these Selected Papers will provide useful insights on policy debate in Japan and help to foster global policy dialogue on various issues.

Hiroshi TERASHIMA

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The Grand Plan of Our Oceans for the 21st Century

Hironobu HASHIGUCHI

Senior General Manager of the Technology Group and Managing Director, Kawasaki Heavy Industries, Ltd.
Chairman, Integration Department, Marine Development Board, Japan Federation of Economic Organizations

The Japan Federation of Economic Organizations has put together a proposal in regard to the future of Japan's marine development, recommending it to government and distributing it to related parties. It is a network formation plan for the practical use of Japan's 200-mile zone through the concepts of "understanding", "wisely using" and "protecting" our ocean and coastal resources.

In July 1998, I was appointed chairman of the Integration Department, a body that reports to the Marine Development Board (Hiroshi Ohba, Chairman) of the Japan Federation of Economic Organizations ("the Federation"). Since my appointment I have held many discussions with a wide range of related parties regarding directions for Japan's marine development. In March 2000, related government ministries and agencies formulated the "National Strategies for Industrial Technology" for marine development, on which occasion I listened to the opinions of officials from the various ministries and agencies and academic leaders entrusted with the careful study of these Strategies. The Opinion listed in the title above was compiled on the basis of those views by the Integration Department. Following the deliberations of the Marine Development Board, the Board of Directors of the Japan Federation of Economic Organizations formally adopted this Opinion on June 20, 2000 and distributed it to various circles as a proposal.

The origins of the Federation's efforts in marine development date to 1968, when the Marine Development Discussion Group was launched to begin the examination of approaches to marine development. In 1971, the Japan

Marine Science and Technology Center (JAMSTEC) was established, in response to a proposal by the Federation. Through the efforts of this body, Japan acquired and began operating a range of necessary hardware, including deep-sea research-vessel systems, committing resources to the pursuit of marine scientific research and making a meaningful contribution even internationally. The Marine Development Discussion Group was reorganized in 1981 and renamed the Marine Development Board, and has continued since then to table a steady stream of proposals to promote marine development.

Additional efforts are conducted under the auspices of the Council for Ocean Development. The Council for Ocean Development, a consultative body reporting to the Prime Minister, deliberates and gathers proposals on general, fundamental issues regarding marine development. In 1998, the Marine Development Commission proposed four core themes for marine development: resources (living things, energy and minerals), use of space, environment, and science and technology, advocating development in each of these areas. At the present time, however, ongoing marine development activities are largely confined to the

● An Outline of the Opinion by the Federation of Economic Organizations

The need for a Grand Plan of Our Oceans

- Establishment of a strategy for Japan's maritime industries in the 21st century
- Effective use of Japan's "second national territory," its vast and diverse oceans
- Promotion of marine science and technology, training of researchers, vitalization of marine industries, international contributions

Formation of a Grand Plan for Our Oceans

<Basic approach>

[Enriching the 200-mile zone]

- Three key perspectives: Understanding, using and protecting the sea
- Comprehensive utilization of the ocean surface, upper seas and deep seas
- Partnership among industry, academia and government, including all relevant ministries and agencies

<Directions for progress in marine development>

- Focus on effective use of sustainable resources (Marine life, energy resources, etc.)
- Maintenance of limited resources (Manganese fields, cobalt-rich crust, methane hydrides, etc.)
→ Surveys will be conducted for the time being, with a view to future development and use
- Surveys and use of oceans in response to the characteristics of each ocean region

Construction of an ocean development network that responds to the characteristics of each ocean region

Examples that can be presented at the present phase regarding surveys of each ocean region and concepts for resource development bases

Implementation of feasibility studies for the selection of pilot projects

establishment of plants in coastal areas through land reclamation and upgrading of ports and fishing harbors.

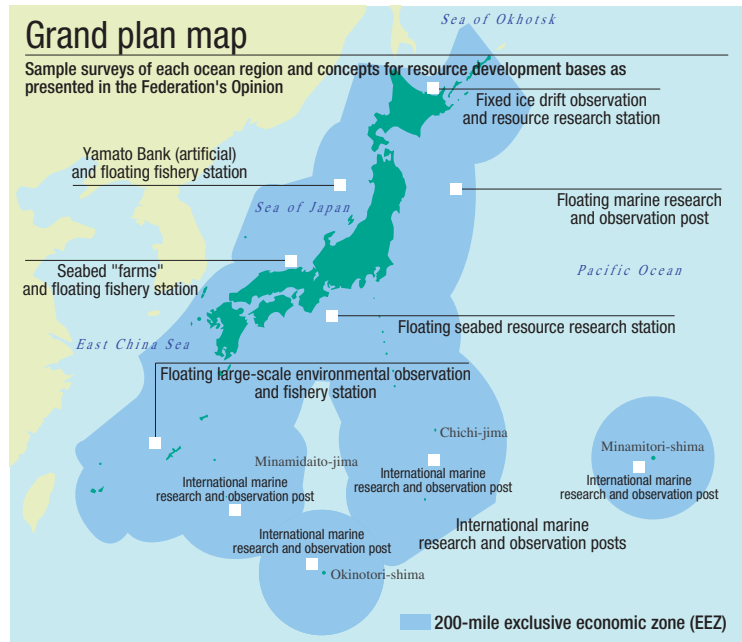
Japan is dependent on imports for 80% of its energy and 60% of its foodstuffs. Yet although Japan's land area is only 380,000 square kilometers, the nation boasts a 200-mile exclusive economic zone (EEZ) encompassing 4,470,000 square kilometers—the sixth largest in the world. The purport of the present Opinion of the Federation of Economic Organizations is that the nation must examine ways of putting this 200-mile maritime zone to more effective use in the 21st century.

The first problem is Japan's fisheries resources. Although Japan has crafted an advanced position for itself in the development of its coastal fishing industry, this industry is said to be reaching the upper limits of possible development, due to the deteriorating quality of water. If the area in which this fishing industry is cultivated could be extended to the full 200-mile limit of the EEZ, fisheries resources could be used as a renewable resource, leading to a significant increase in the volume of resources. This development would also contribute significantly to the solution of Japan's food supply problem, as well as the problem of feeding the earth's swelling population. Thanks to recent technological developments, the technology required to fix large-scale structures in remote-sea locations is being established. Moreover, renewable energy sources such as solar and wave power can be used to enrich sources of nutrients. By raising clean, cold water from the ocean depths to the surface, new fishing grounds can be formed.

The next important area is the environment. Cultivating seaweed, to complement afforestation and other "green" efforts on land, can increase the absorption of carbon dioxide; this seaweed can also be used as biomass for clean energy generation. By placing fixed-point observation posts at several locations in the ocean, a network can be formed with satellites to transmit data in real time. Such information may prove invaluable in the search for a solution to the problem of global warming.

Another valuable initiative would be to install resource-survey bases that can survey the potential for use of methane hydrates, cobalt-rich crusts and other mineral resources. In addition, seismic monitoring stations and ocean-current observation posts can contribute to Japan's security.

To provide conceptual examples, the Opinion selects seven maritime regions and lists examples of specific potential bases. The Opinion proposes that a feasibility



This map was created by the Editing Department based on the Grand Plan Map published by the Federation of Economic Organizations.

study be conducted with respect to these bases, followed by the selection of a suitable pilot project on which to conduct demonstration tests.

To invest astutely in Japan's stock for the future, the Federation believes that a part of the national budget must be applied to the effective use of the 200-mile zone. Moreover, if Japan can succeed in leading the world in technology for the effective utilization of marine resources, the results would contribute significantly not only to Japan but also to the entire world.

Other means of harnessing marine resources exist as well. Some parties have proposed the location of waste-processing facilities and nuclear power-generation facilities on the ocean; however, it is the Federation's view that merely shifting these problems from land to sea is not tantamount to solving them, so these suggestions are not reflected in the Opinion. Other projects for use of coastal regions are provided for in the budget and are already well under way. In these cases, the Opinion advocates "extending the purview of these projects to include the oceans as well as the coast, promoting comprehensive management that embraces development, use and preservation."

The preceding table offers an outline of the Opinion. The entire text of the Opinion can be viewed in Japanese from the Federation of Economic Organizations website. The URL is as follows: <http://www.keidanren.or.jp>

The Federation is holding continuing discussions on the basis of the Opinion and hopes that joint national projects can be launched with the agreement of the industrial, government and academic sectors.

(Ship & Ocean Newsletter No.1, 20 August 2000)

Japan's Ocean Concern

The changing colors of the Pacific Ocean

Shuhei KONNO

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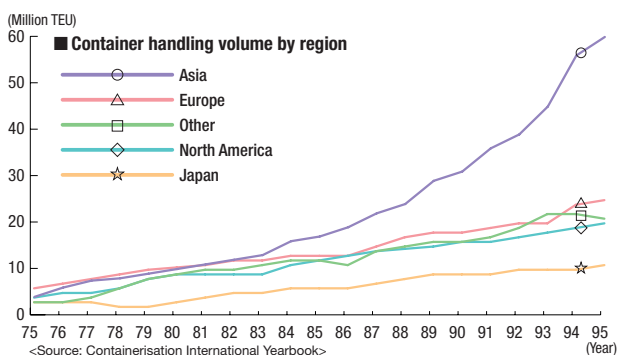
Japan, the country quickly losing its position amongst the world's marine transporting countries. Formerly, the Pacific saw only the coming and going of American and Japanese merchant ships. Now, however, there has been a "changing of the guards" as Asian NIES countries; China and Panama have taken over the reign of the Pacific. This can't be a good sign for Japan in the 21st century.

Changes in the Pacific economic region

A century after its great modernization drive in the Meiji era, Japan stands as one of the world's foremost economic powers. Throughout that period to the present day, the nation's industrial expansion has been firmly underpinned by trade, particularly with the United States and the rest of Asia. For this reason the establishment of a merchant fleet was one of the nation's early priorities. Before World War II, Japan had come to dominate maritime shipping in the Pacific Ocean. The archipelago's main ports of Kobe and Yokohama flourished as hubs of trade with the United States.

With the redrawing of the political map after World War II, Japan was long shut off from trade with China, leading the nation to depend crucially on trade with the United States. This trade supported brisk expansion in the postwar years, establishing the Pacific Ocean as one of the world's great trade arteries.

The 1970s were an era of rapid industrialization for the newly industrializing economies (NIES) of Asia, accompanied by impressive growth in trade among Asia ex-Japan, Japan and the United States. In the 1980s, China joined in with the launch of liberalization and reforms, preparing the ground for full-fledged industrialization in China's coastal areas, along with surging maritime shipping volumes, in the 1990s. Because relatively little of this trade consisted of raw industrial feedstocks, container shipping accelerated, so that today the world's busiest container ports are located in Asia. The largest customer for these goods is the United States, followed by Japan. Postwar Pacific shipping routes became clearly established as a triangle of East Asia-Japan-North America.



A changing of the guard in Pacific shipping

As a new economic map replaced the old, the structure of shipping on the Pacific Ocean, formerly the preserve of developed countries such as the United States and Japan, underwent a significant shift. Armed with lower personnel and other costs, more abundant labor and more rapidly growing demand than the developed nations that had previously controlled the trade, a number of developing nations leveraged strong international competitiveness to make major advances into Pacific shipping. These countries took over from the high-cost, labor-poor developed countries, as global marine shipping companies emerged in the NIES, followed by newcomers such as China and the Philippines.

Japan's marine shipping companies began registering their fleets with "flag of convenience" countries and recruiting crews from the developing world. Along with the United States, Japan descended sharply in the league tables of global shipping, eclipsed by the NIES and China.

The latter gained an increasing share of their own countries' maritime trade with Japan and the United States, at the rich countries' expense.

As a result, Japan's ports are completely stripped of their former character as bustling hubs of trade with the United States, serving instead as mere ports of call for foreign ships.

In the Pacific Ocean, the lead role in shipping has passed from Japanese and American ships to those of the NIES, China and Panama. The changing of the guard is complete.

The Pacific Ocean after the changing of the guard

With the changing of lead roles in shipping, new shipping patterns quickly became evident. On May 23, 2000 the news broke of the first passage of a battleship of the Chinese navy through the Tsugaru Strait, which separates Honshu from Hokkaido and links the Sea of Japan with the Pacific Ocean. Although it was surmised that the purpose of the battleship's voyage was nothing more than oceanographic survey, the fact remains that such "survey activity" by Chinese vessels inside Japan's EEZ have become all too frequent recently, and the Japanese government lodged a formal protest as reported in Japanese newspapers on June 20, 2000.

No extensive study of historical precedent is required to see that merchant-fleet activity in a region of the sea is soon accompanied by the projection of military power. Anyone would recognize that the Japan Maritime Self-Defense Force has a clear primary duty to maintain the security of Japan's sea lanes.

The incident of May 23 marks the first case in 5,000 years of a Chinese military vessel entering the Pacific Ocean. The growing might of China opens a new chapter in the history of the Pacific Ocean.

Beyond doubt, the economies of Asia will continue to grow for some time. As these events unfold, what does the 21st century hold in store for the Pacific Ocean and the seas around the Japanese archipelago? This is an urgent ques-

tion that must be closely scrutinized from every possible angle.

Issues in the Japanese archipelago

Japan's dependence on foreign goods is growing briskly, with self-sufficiency in food dropping to alarming levels.

At the same time, the decreasing tonnage borne by Japanese ships leads naturally to a decline in cargo handling by Japanese vessels. In 1998 Japanese ships handled 1.7% of exports and 16.4% of imports. These numbers are a far cry from prewar years and even the 1960s, when domestic vessels carried between 50% and 70% of tonnage entering and leaving Japan by sea. This state of affairs raises mounting concern for the security of the state and the citizens.

The problem is compounded by Japan's great recession, which began around 1990 and continues today. This recession forces companies to cut costs, a trend to which the distribution industry is not immune. At the same time, regional development efforts are spurring the growth of regular, direct shipping routes between the major ports of Japan's various regions and numerous ports rapidly proliferating elsewhere in Asia. During the two-year period 1995-96, no fewer than 58 new shipping lanes were inaugurated, mostly linking China, South Korea and Taiwan. Japan is losing maritime shipping to other Asian countries not only in the Pacific Ocean but in the seas around Japan as well—regions where the Japanese flag is now almost never seen. The Japanese people must think hard whether this is the kind of Japan they want in the 21st century.

(Ship & Ocean Newsletter No.2, 5 September 2000)

■Commercial cargo volume by country of registration ('000 gross tons)

	1980	1990	1998	1998/1980
Panama	24,191	39,298	98,222	4.06
Liberia	80,285	54,700	60,492	0.75
Asian NIES	15,765	28,042	37,727	2.39
Bahamas	2,091	18,336	27,716	13.25
Greece	39,472	20,522	25,225	0.64
Cyprus	87	13,626	23,302	267.84
Norway	22,007	23,429	23,136	1.05
Japan	40,960	27,078	17,780	0.43
China	6,874	13,899	16,503	2.40
United States	18,464	21,328	11,852	0.64

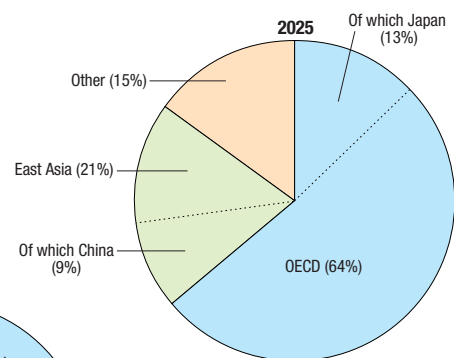
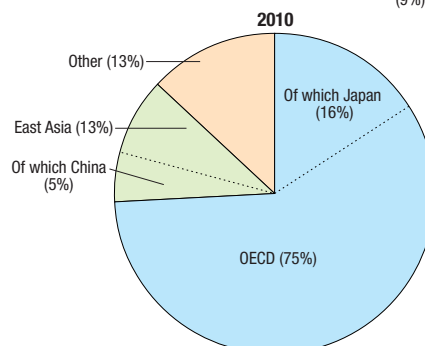
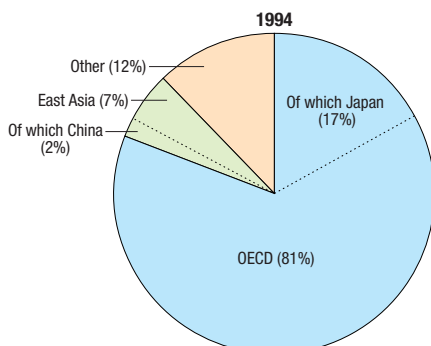
Compiled from Kaiun Tokei Yorun 2000, Japanese Shipowners' Association

■Foreign ships calling at Japanese ports, by country (top 10 countries)

	Number of vessels	Tonnage ('000 gross tons)
Panama	17,784	163,238
Russia	11,563	4,320
China	7,096	10,543
South Korea	6,515	10,919
Japan	2,971	50,073
Liberia	2,171	33,259
Singapore	1,716	24,362
Cyprus	1,202	7,788
Philippines	1,158	12,783
Honduras	984	686

Compiled from Kaiun Tokei Yorun 2000, Japanese Shipowners' Association

■A snapshot of the global economy: Share of GDP (1994 prices)



■Forecast of economic growth rates (%)

	1994-2010	2010-2025
OECD	2 ³ / ₄	2 ¹ / ₄
Of which Japan	2 ³ / ₄	1 ³ / ₄
Asia	7 ¹ / ₂	6 ³ / ₄
Other	3 ³ / ₄	4 ¹ / ₄
World total	3 ¹ / ₄	3 ¹ / ₄

<Sources: OECD National Accounts, World Bank World Tables Prepared by the Planning and Coordination Bureau, National Land Agency based on each country's statistics and other information>

Global Warming and the Circulation in the Sea of Japan

Jong-Hwan YOON

Professor, Dynamics Simulation Research Center, Research Institute for Applied Mechanics, Kyushu University

In the depths of the Sea of Japan, something unforeseen is occurring. The water temperature is continuing to rise, while dissolved oxygen decreases annually at an alarming rate. If things continue in this vein, there is concern that by 2350 the deep layer of the Sea of Japan may fall into a state absent of all oxygen. We immediately need to probe into the causes.

Is the Sea of Japan, the mini-ocean, changing?

Although nowhere near the size of the Atlantic or Pacific Ocean, nearly all of the phenomena that occur in the world's great oceans pertain to the Sea of Japan as well. In this sense the Sea of Japan is the "mini-ocean." One distinguishing feature of the Sea of Japan is the structure of its masses of water. In the south, the upper layer is warm and salty, heated by the Tsushima Warm Current, while the northern half is a subarctic zone, whose surface waters are cold and relatively salt-poor. Beneath the surface layers, most of the volume (from 300m down to the seabed) is a unique water layer found only in the Sea of Japan, characterized by a temperature of 0°C and a salinity of 34.07psu. Dissolved oxygen levels are considerably higher than those in the Pacific, as great volumes of oxygen-rich surface waters replenish (or have replenished) the lower depths. It is believed that the cooling of the northern half of the sea during the winter forms this deep-water layer.

Today, however, this deep-sea layer in the Sea of Japan is changing. Beginning in the latter half of the 20th century, the temperature of the waters at a depth of 2000-3000m has been rising some 0.02-0.03°C every decade, while its store of dissolved oxygen is disappearing at a rate of approximately 1μmol/kg per year (see diagram). This means that, for half a century, the deep waters of the Sea of Japan have not been supplied with sufficient dissolved oxygen to replace the dissolved oxygen consumed in the decomposition of organisms and other organic processes. If this layer's dissolved oxygen continues to be depleted at this rate, as early as 2350 the deep waters of the Sea of Japan could be completely devoid of dissolved oxygen. Oxygen-rich water from the surface is transferred to the lower depths in the winter, as the surface water cools, becomes heavy, and sinks. This sinking water has begun to rise up again, driving a vertical circulation that returns the water to the surface. The atmospheric and ocean conditions that block the sinking of oxygen-rich waters have grown significantly pronounced since the middle of the 20th century.

The factors preventing the sea surface water from growing dense and sinking is the increasing temperature of the

air and declining salinity at the surface. According to a recent report by the Intergovernmental Panel on Climate Change (IPCC), the change in air temperature reflects a rise in average air temperature of perhaps as much as 0.5°C over the past 20 years in the eastern Eurasian landmass at latitudes between 40°N and 70°N. Warming is particularly dramatic in the cities of the Russian coast on the Sea of Japan, where minimum temperatures in winter have been rising at a rate of 0.03-0.06°C per year. During the past 50 years, the temperature has risen 1.5-3.0°C, raising the strong possibility that global warming is the factor obstructing the sinking of surface seawater in the northern Sea of Japan. As for the loss of salinity at the surface level, lack of sufficient data precludes discussion at this time.

The importance of vertical circulation in the oceans

To understand why the formation of deep-water and concomitant sinking and vertical circulation are so important, it is useful to think in terms of global warming. In the Labrador Sea off the west coast of Greenland and the Weddell Sea on the Antarctic coast, the surface water cools and sinks, raising the world's deep waters to the top to effect a slow vertical circulation that gradually returns deep waters to the surface.

Deep waters carry nutrients to the sea surface from the deep sea. Phytoplankton form organic material from carbon dioxide and water by means of photosynthesis feeding nutrients. Some plankton also synthesize calcium carbonate at the surface level. When these organisms die, some of the dead matter sinks, changing to mineral carbonates in the deep seas. In effect, marine organisms carry carbon to the deep levels and expel them as minerals, serving to make the deep-water levels denser. If the surface waters were deprived of phytoplankton, the surface waters would only be able to absorb as much carbon from the air as supplied by passive solution equilibrium. Some researchers predict that this process would double the carbon dioxide in the atmosphere, causing drastic warming.

If, on the other hand, this vertical circulation and vertical mixing were to stop, the oceans would become rigidly

stratified. The phytoplankton would be starved of the nitrogen and phosphorus they need to propagate, since these would no longer be carried from the deep seas to the surface, killing off the phytoplankton. Condensation of the deep waters by mineral carbonates would cease as the level of carbon in the atmosphere rises. Normally the physical circulation of the seas interacts with the circulation of substances in which living creatures take part, regulating the volume of carbon dioxide in the atmosphere.

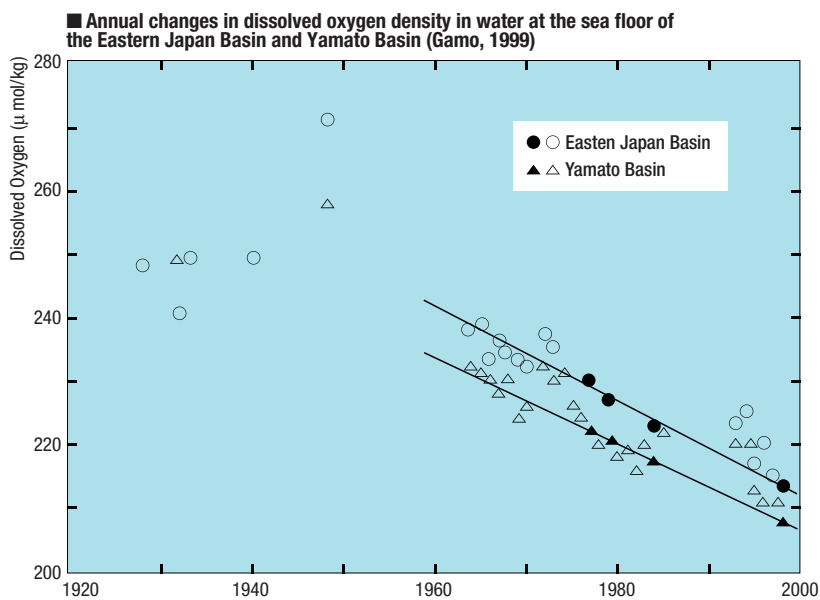
As stated in the opening paragraph, the bottom water formation may already have partially or completely ceased in the Sea of Japan. The nutrients phytoplanktons require to bloom may not be transported from the depths to the surface, severely impacting the fish population. Also, if the oxygen-rich surface waters are not transported to the deep layers, the creatures that live at those depths will suffer a murky death. Presently vertical mixing in the Sea of Japan in winter proceeds to a depth of about 1,000m. Although the numerical models and ocean observation data on which these conclusions are based are limited, it seems likely that further global warming would blunt this vertical mixing still further, placing the flora and fauna of these seas in calamitous straits. If global warming continues to progress on present trends, within 50 years the sea level the Sea of Japan could rise some 30-50cm. The Mamiya Strait, which separates Hokkaido and Sakhalin, would cease to freeze over in winter, causing fresh water from the Amur River to

preventing vertical mixing flood into the sea and drastically increase the volume of fresh water in the surface layer. Moreover, as the economies of East Asia continue to develop, large volumes of man-made pollution (agricultural chemicals, etc.) would be washed into the Sea of Japan, greatly exacerbating the pollution of these waters.

Establishing an international research system for the Sea of Japan is an urgent issue

The cessation of vertical circulation in the "mini-ocean" of the Sea of Japan would be an ominous portent of the cessation of vertical circulation in oceans on a worldwide scale. An immediate start of investigations to find out what is happening in the deep layers of the Sea of Japan and what is causing these phenomena is an issue of the utmost urgency.

With the end of the Cold War, in 1993 the coastal nations of the Sea of Japan-Japan, South Korea and Russia-launched a Circulation Research of the East Asian Marginal Seas (CREAMS) to investigate vertical circulation in the Sea of Japan. In 1998 the United States joined CREAMS, which is currently in the midst of a five-year, ¥1 billion-plus program of observation activities. Other observation activities are in progress in the Sea of Japan under international collaboration, with the participation of research agencies under the aegis of Japan's Ministry of the Environment and Ministry of Agriculture, Forests and Fisheries as well as the Japan Atomic Energy Research Institute. Moreover, a number of other international cooperative research bodies, such as the North Pacific Marine Science Organization (PICES) and the North-East Asian Regional Global Ocean Observing System (NEAR-GOOS) are conducting their own observation programs. At this point, however, observation and research in the deep waters of the northern Sea of Japan, where this deep-water formation and sinking occurs, is insufficient to shed light on these urgent questions. As apprehension grows over the rapid advance of global warming, the Federation of Economic Organizations urges the early formation of a framework to investigate circulation in the Sea of Japan.



(Ship & Ocean Newsletter No.5, 5 October 2000)

Why the Whaling Issue is So Important Now?

Joji MORISHITA

Deputy Director, Far Seas Fisheries Division, Fisheries Agency

In reaction to the "Japanese Whale Research Program in the Western North Pacific Ocean : Phase II" (JARPN II) that was started in July 2000, the United States Government has expressed its strong opposition by going as far as threatening to impose trade and other sanctions on Japan. Why have whaling issues become so controversial? In the background, there are multi-facet problems including science, international law, politics, and emotions.

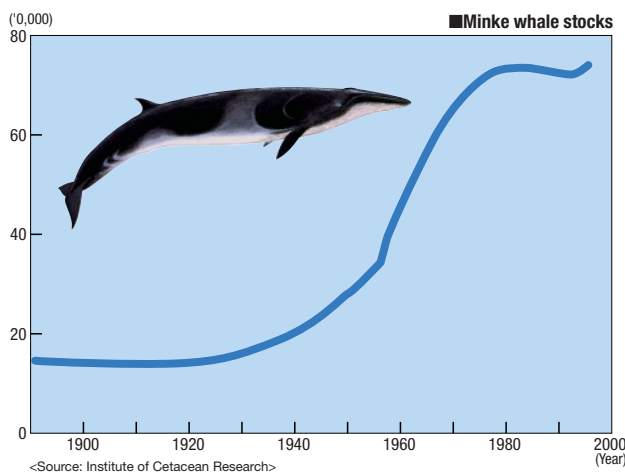
The problem of whaling can be interpreted in many different ways, but the most typical objections of the anti-whaling community are that whales must not be caught because they are in danger of extinction; whales must not be killed because they are special (highly intelligent) animals; resumption of whaling would inevitably result in unsustainable whaling levels; and no urgent need to eat whale meat exists. The problem is that many of these protestations are founded on errors of fact or are entirely politically motivated regardless of the facts. The strong objection of the United States and other nations to the "Japanese Whale Research Program in the Western North Pacific Ocean: Phase II" (JARPN II), otherwise known as "research whaling," is no exception.

Whale stocks are an abundant resource

Whale stocks, which had been over-harvested in the 1960s, have recovered in great numbers following the protection they received from the commercial whaling moratorium. This is recognized by the International Whaling Commission (IWC), whose website indicates that a million minke whales exist worldwide, while the humpback whale population is increasing at more than 10% per year. Some species, however, such as blue whale and bowhead whale, have shown little signs of recovery. The average citizen of the countries opposed to whaling is unaware of the current state of recovery, nor that over 80 species of whale exist. Most are opposed to whaling because they believe that all whale species are endangered. Countries in favor of resumption, including Japan and Norway, are interested only in hunting whale species that are plentiful and are committed to further protection of those that have not recovered.

The case for sustainable use of whale stocks

All creatures, including whales, have a certain rate of population increase. If these resources are used within the range of their rate of increase, they can be used in perpetuity, just as a principal on deposit at a bank will not decline if the account holder withdraws no more each year than the interest on the principal. This concept of sustainable use enjoys broad international support and was the central theme of the 1992 United Nations Conference on Environ-



ment and Development (UNCED), colloquially known as the Earth Summit or Rio Summit. In terms of whaling, the IWC's Scientific Committee completed the Revised Management Procedure (RMP), a system for calculating a quota for sustainable harvesting that ensures a sufficient margin of safety that will prevent negative impact on whale resources. However, because countries opposed to whaling dominate the plenary meeting of the IWC, which holds a final say over measures to protect and manage whale stocks, the IWC is prevented from putting the RMP into action. For this reason, Dr. Philip Hammond of the United Kingdom, who was the Chairman of the Scientific Committee when the RMP was completed, resigned in protest in 1993.

The original purpose of the past over-harvesting of whales that led to the moratorium on whaling was to harvest whale oil. Today demand exists only for whale meat, so the occasion for the massive overhunting that occurred in the past is unlikely. Furthermore, numerous safeguards exist today to prevent the unsustainable hunting that happened in the past, such as an international monitoring program and the RMP that was completed as a result of scientific progress. These facts render groundless the argument that "once whaling is resumed, overhunting would be inevitable."

Are whales special?

Much research has been done on the intelligence of

whales, but it is confirmed that the large whales that are commonly targeted for hunting have an intelligence level equivalent to that of cattle. Even so, treating animals differently on the basis of their imputed intelligence seems high-handed, related perhaps to the racial discrimination that people practice against each other. After all, it was humans who unilaterally decided to adopt "intelligence" as a criterion; all animals are gifted with the optimal mental and other faculties needed to survive in their own biological niche. Moreover, many cultures regard certain animals in special ways. Should the United States outlaw the consumption of beef because cows are sacred animals to the Hindus? The opposition to harvesting of whale species whose use is clearly sustainable smacks of just this sort of cultural arrogance.

Does the Japanese need to eat whale meat?

Article 8, Section 2 of the International Convention for the Regulation of Whaling states that whales killed for research purposes shall be used and sold in order to avoid waste. According to this provision, whale meat, which is a byproduct of research whaling, is available on the market but equals less than 20g per each member of the Japanese population per year. Of course, this is a result of the moratorium on commercial whaling, and is caused by a restriction of supply rather than a lack of demand. In the short term, whale meat is not likely to be viable as a staple source of animal protein. For this reason the anti-whaling nations assert that Japan's whaling policy represents only the vested interests of a small minority of restaurants and the whaling industry. In fact, ordinary households consume 80% of the whale meat supplied to the market. Apart from a few small-scale whaling concerns harvesting whale species outside the jurisdiction of the IWC from Japan's coasts under close Japanese government supervision, an organized "whaling

industry" scarcely exists. Proceeds from sales of the whale meat that is a byproduct of research whaling forms funds for the Institute of Cetacean Research, the non-profit organization that performs research whaling with government assistance. These funds are never sufficient to support the program, requiring the balance to be topped up by subsidies from the government.

Why the whaling issue is so important now

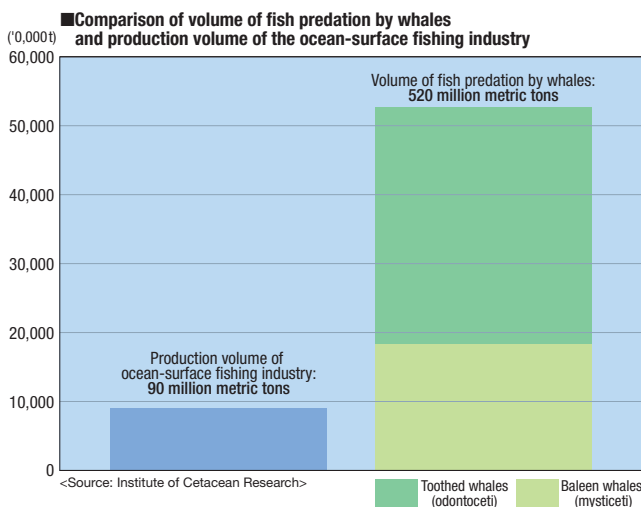
So why is the Japanese government so "stubborn" with the whaling issues, and why are the United States and other countries so vehemently opposed to whaling? The full explanation would fill reams of paper, but a few points can be briefly listed here. First, the whaling issue involves issues of sustainable use, an principle supported by United Nations Conference on Environment and Development (UNCED). The fact that utilization of whale stocks in a legally and scientifically appropriate way is ruled out on emotional and political grounds has an enormous impact on all living resources. It is often said that Japan's policies run counter to world opinion, but in fact this "world opinion" consists of the received opinion of certain Western countries as articulated on CNN and BBC. JARPN II research program is supported at the IWC not only by whaling countries such as Norway but by many other countries, including China, Russia and South Korea.

Second, the impact of the whaling moratorium on marine ecosystems is a cause for concern. It was once thought that whales eat only zooplankton, but Japan's research whaling program has revealed that minke whales eat a number of commercially valuable species of fish. Moreover, the quantity of fish predation is huge: The amount of fish stocks eaten by whales is estimated to be three to five times the human population's entire global fishing catch of 90 million metric tons. Just as deer and kangaroo populations have grown excessively in North America and Australia respectively and have to be culled, so the whale population needs to be managed.

To summarize, although the use and management of whale stocks is not only possible but also necessary, a powerful anti-whaling lobby applies pressure through animal rights and environmental protection organizations. Such organizations boast several million members in the United States alone, a voting block that politicians can ignore only at their peril.

In addition to the scientific, legal and political dimensions, the whaling problem goes to the heart of deeply rooted questions involving the clash of disparate cultures with different value systems. Solving this problem will require appropriate and effective diplomatic initiatives.

(Ship & Ocean Newsletter No.5, 5 October 2000)



The Road to the Restoration of the Bolsa Chica Wetlands

—Has California's "Sanbanze" Begun the Walk to Revival?—

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For over 10 years the seemingly drab wet sand of Sanbanze has pitted developers and citizens in a battle over Chiba's development proposal for the tidal flats. Of course this isn't the only deep-rooted battle of its kind. Indeed, under similar conditions to Sanbanze, there is a case overseas where the strong fight of local people and groups has seen a move towards the protection of the environment and the development of a restoration plan. In view of considering the future of Sanbanze Tidal Flats, California's Bolsa Chica story makes a valuable guide to the road ahead.

Earlier this year, Sanbanze Tidal Flats, a tiny, muddy corner of Tokyo Bay in Chiba, sparkled for a few minutes in the national spotlight as Japan's environment minister, Yoriko Kawaguchi, paid a visit. Since the early 1990's the seemingly drab expanse of wet sand has pitted developers and local citizens in a battle over one of Tokyo's Bay's last remaining natural areas—a home for migrating birds and other species. Developers want, among other things, a sewage plant. Local residents' concerns were echoed by the environment minister when she stated, "With nature like this located so close to a major urban area, we have an obligation to pass it on to our children and grandchildren."

Kawaguchi's visit and request for Chiba Prefecture to rethink their already scaled-down, yet still overblown, bubble-era plan offers new hope for one of the last bits of natural coastal environment remaining in the Tokyo Metropolitan Area.

As the minister and her charges at the Environment Agency formalize their suggestions to Chiba, and the prefecture reworks its development plan for Sanbanze, I would like to suggest that they take a look at a similar situation south of Los Angeles, California, which has become a local success story: The Bolsa Chica Wetlands in Huntington Beach.

Nestled between million-dollar marina homes and the world-famous beaches of "Surf City," the Wetlands at first glance don't look like much. Native vegetation with names

like "pickleweed" tend toward drab greens and dry browns for most of the year. An often-murky salt marsh has center stage in a loop trail that takes visitors on a short tour through the wetlands.

While strolling along the well-maintained boardwalk and paths on the trail, however, the hiker is soon impressed by the sheer number of bird and animal species that make this their marshy home. Snowy egrets plod carefully in the shallower portions of the marsh, while a variety of terns—some endangered—frolic and dive in the deeper areas. Brown pelicans are common, and lucky visitors may even spot a rare white pelican at the right time of the year.

Like Sanbanze, Bolsa Chica has been at the center of a developer vs. environmentalist controversy for over a decade. Fortunately, several recent events bode well for the maintenance and restoration of the Wetlands. Last November, the California Coastal Commission, the state's lead agency responsible for carrying out federally approved coastal management programs in both publicly and privately held areas, voted to accept a plan limiting development on a privately owned portion of the Wetlands. The developer, Hearthside Homes, saw its Orange County-approved plans for a new housing development reduced from 183 to 65 acres. The Coastal Commission's decision is now remanded back to the County Board of Supervisors. The fate of the disputed 183 acres is not entirely sealed, and more disputes are likely to ensue in typical litigious Ameri-



One of Japan's foremost grounds for migratory birds; this is the "Sanbanze Tidal Flats" of Ichikawa City and Funabashi City in Chiba Prefecture. The actions of environmental groups and other related parties against the reclamation of the tidal flats paid large dividends in June of 1999, when Chiba Prefecture announced a revised development plan of 101 hectares, in contrast to the original 740 hectare development for the wetlands. Remarks made by the Japanese environmental minister in favor of the tidal flats have also increased the chance of further revisions in the development plan. (Photograph by Satomi SANO)

The Road to the Restoration of the Bolsa Chica Wetlands

—Has California's "Sanbanze" Begun the Walk to Revival?—

can fashion. Nevertheless, tenacious supporters of the Wetlands, such as the nonprofit Bolsa Chica Conservancy, have a positive outlook now that the Coastal Commission is officially in favor of conservation in at least part of Hearthsides Homes' private claim.

Another victory for the Wetlands was the 1997 purchase of 880 acres of the Bolsa Chica Lowlands (title held by the California State Lands Commission), which, with an additional 367 acres, are now pending restoration. Last year, the CSLC, the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers released a Draft Joint Environmental Impact Report and Statement on restoration, nudging open the door for action.

The Bolsa Chica Wetlands have a checkered history, including stints as a duck-hunting club, a shore-defense station during World War II, and oil fields. Each of these incarnations left its mark on Bolsa Chica. The damage ranges from a severe restriction of the flow of seawater into the marsh, to the scars left by oil extraction facilities. Restoration projects would include dredging and the creation of an ocean inlet to bring much needed salt water into the wetlands.

Land ownership, an official plan and an environmental impact report are just the beginning of the restoration of the Wetlands. More planning, as well as dealing with opposition, are in store. Last summer, for example, surfers who frequent Bolsa Chica State Beach, which would be affected by the creation of a tidal inlet, began to protest the restoration plan.

If there is a moral for Sanbanze's supporters in the Bolsa Chica tale, it is that persistence pays off. In addition, wide-reaching engines of public policy, such as the California Coastal Commission, are able to view local concerns on a broader scale. Housing and other urban development projects may bring more tax revenues and other benefits to a city or county, but depending on their location, can threaten the natural balance of a state, a country, or the world.

High-ranking friends like Yoriko Kawaguchi and tenacious grass-roots organizations like the Bolsa Chica Conservancy help make message clear: More than fancy million-dollar homes and sewage plants, future generations need us to preserve and restore quiet places where they can commune with nature. Most of all, the plants and animals affected by coastal development, whether elegant migrating birds, or slimy, pop-eyed "mutsugoro," deserve to have their lives protected from passing human whims.

(Ship & Ocean Newsletter No.13, 20 February 2001)



Beverly Findlay-Kaneko spends several weeks each year in Huntington Harbor near the Bolsa Chica Wetlands, seen here to the left and in its entirety from an aerial photograph.



Japan's Port and Shipping Also Require Bold Policy Action

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Singapore, a country making the most of its huge hub port and still continuing its rapid economic growth. Learning from Singapore's success, Japan needs to rethink its priorities and create bold policy to revitalize its ports and shipping.

Free trade and attracting foreign investment

Of all the nations of Southeast Asia, Singapore, which has only been independent for 35 years, has achieved the most stunning economic growth. How has this tiny city-state accomplished such an extraordinary feat?

Simply put, with few natural resources and about the same land area as Awajishima, Singapore's only resource is her people. Its most talented people are concentrated in the government, which guides effective policy implementation. With a stable, powerful government, Singapore is able to promote trade liberalization, offer incentives to attract foreign enterprise and personnel, make English its official language and offer ports, airports, industrial zones and other infrastructure that is second to none in the world. Singapore's greatest engine of growth is her civil service, which tables and implements a steady stream of policies aimed at boosting the competitive position of the nation's economy.

Singapore is all but devoid of primary industries such as agriculture, fishing, forestry and mining. All foodstuffs are imported and a pipeline from Malaysia supplies almost all of the water her life depends on. If Singapore's supplies from neighboring states were cut off, its economy would be strangled in a heartbeat.

Singapore is therefore constantly dependent on the bold policymaking of its leaders. The first phase of Singapore's strategy was to leverage its favorable geographic location

as a transit port and become a free-trade zone with no tariffs. Its greatest policy for economic growth was to focus on attracting foreign investment-in sharp contrast with Japan, which nurtured and protected its domestic industries. Singapore recognized that, as a nation with no resources, a small labor pool and a tiny market, it was in no position to favor domestic industries. Through a wide range of measures from infrastructure development to tax and other incentives, Singapore created an environment that facilitated the entry of foreign enterprise.

Enhancing the function of port facilities

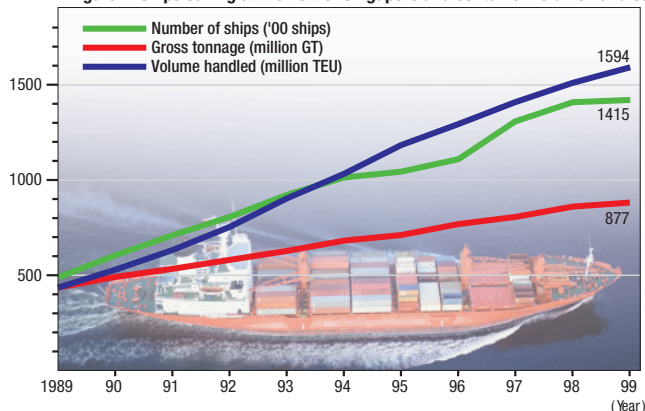
Singapore's greatest infrastructural asset is her port. Setting its sights on a leading role as a shipping hub, Singapore built up its port infrastructure and was quick to introduce computer systems to simplify port entry and exit procedures. In 1972 Singapore became the first country in Southeast Asia to implement container-handling facilities. The country is constantly improving its port services, acquiring tugboats, enhancing fueling and provisioning facilities, offering better support services and enabling 24-hour port operation. As a result of these efforts, 80% of the container cargo Singapore handles consists of transshipments to and from neighboring countries.

The Port of Singapore links 320 shipping companies and 738 ports around the world. In 1999, a total of 141,523 ships called at the port, which handled 877,130,000t of cargo that year (see Figure 1) the world's largest volume for the 14th year in a row.

Container cargo totaled 15,940,000TEU (a unit equivalent to a 20-foot container) in 1999, making Singapore the world's second largest container port by volume (only slightly behind the No. 1 container port, Hong Kong). Singapore became the world's leading container port for the first time in 1990, when it handled a container cargo volume of 5,220,000TEU, a figure that has tripled in the intervening years.

Of the world's top 10 ports, five (Hong Kong, Singapore, Kaohsiung, Busan and Shanghai) are in Asia. At one time

■ Figure 1 Ships calling at the Port of Singapore and container volume handled



Japan's ports ranked among this number; today Japan's ports handle only a sixth or a seventh of the volume that Singapore does (see Table 1).

In October 2000, in connection with a free trade agreement (FTA) signed between Japan and Singapore, the Port of Singapore welcomed Takeo Hiranuma, Japan's Minister of International Trade and Industry. Profoundly impressed by the port's computerized customs clearance system and its smooth container traffic, Mr. Hiranuma was reported in Japanese newspapers to have remarked, "it's like watching a video game! With the new free trade pact with Singapore, if Japan fails to implement advanced IT systems as Singapore has, our nation will be unable to compete."

Increasing number of ships registered in Singapore

In its bid to emerge as a distribution hub for Southeast Asia, Singapore not only enhanced its port facilities but also worked hard to increase the number of ships registered there. These efforts were highly successful: the number of commercial shipowners registered grew from 712, with total tonnage of 7,270,000t, in 1989 to 1,736m, with total tonnage of 21,780,000, in 1999. Today Singapore has grown to become the world's 7th largest maritime shipping nation (see Table 2).

According to the Maritime and Port Authority of Singapore (MPA), 3,360 ships with a total gross tonnage of 23,750,000GT are registered in Singapore as of the end of 1999. After the number of Singapore-registered ships passed the 10 million-GT mark in 1992, the figure grew at a rate of about a million GT per year for several years. In 1996 this growth accelerated sharply, so that Singapore reached its target of "20 million GT by 2000" far ahead of schedule, in October 1997. This impressive growth continues to this day, with the gross tonnage of registered ships surpassing 22 million GT in 1998 and 23 million GT in 1999.

The engine driving this brisk expansion in ship registration is a scheme called the Approved International Shipping Enterprise (AIS), introduced in 1991. Under this scheme, companies approved under AIS and registering at least 10% of their fleet in Singapore can obtain an exemption from taxes on their ships not registered in Singapore. The scheme also makes hiring crews easy, with no restrictions on the citizenship of crewmembers. These enticements are compelling reasons for shipowners to register their vessels in Singapore.

Table 1 World ranking of ports by container volume handled (1989 and 1999)

FY 1989			FY 1999		
Rank	Port	'0,000 TEU	Rank	Port	'0,000 TEU
1	Hong Kong	446	1	Hong Kong	1,610
2	Singapore	436	2	Singapore	1,594
3	Rotterdam, Holland	360	3	Kaohsiung	699
4	Kaohsiung	338	4	Busan	644
5	Kobe	246	5	Rotterdam	640
6	Busan	216	6	Long Beach	441
7	Los Angeles	206	7	Shanghai	421
8	New York/New Jersey	199	8	Los Angeles	383
9	Jilong	179	9	Hamburg	375
10	Hamburg	173	10	Antwerp	361
11	Long Beach	155	11	Tokyo	270
12	Yokohama	151	12	Yokohama	220
16	Tokyo	144	16	Kobe	220

<Sources: Containerisation International et al.>

Table 2 World rankings in size of merchant fleet (country of registration) in 1989 and 1999

FY 1989			FY 1999		
Rank	Country	Gross tonnage ('0,000t)	Rank	Country	Gross tonnage ('0,000t)
1	Liberia	4,789	1	Panama	10,525
2	Panama	4,736	2	Liberia	5,411
3	Japan	2,803	3	Bahamas	2,948
4	Greece	2,132	4	Malta	2,821
5	Cyprus	1,813	5	Greece	2,483
6	Norway	1,559	6	Cyprus	2,364
7	China	1,351	7	Singapore	2,178
8	Bahamas	1,157	8	Norway	1,980
9	Singapore	727	9	Japan	1,706
10	Malta	322	10	China	1,631

<Source: Lloyd's Statistics (Does not include non-autonomous ships and ships smaller than 100GT)>

Studying Singapore's economic growth strategy

JETRO often receives visits on "port sales" missions from managers of various and sundry ports, both prefectural and municipal, from every region of Japan. This helter-skelter approach seems an odd way to run a country's ports. Whatever the merits of devolving powers to the regions, such lack of coordination is surely in appropriate for the management of Japan's ports as they fight to attract business. Few of Japan's ports offer full service on a 24-hour basis. If Japan does not form a coherent vision for her ports, from the standpoint of a more unified, national perspective, the nation will become lost in the global competition for shipping business. Japan's merchant fleet of Japan-registered vessels will slip beneath a wave of competition from better-managed ports.

Lee Kwan Yew, Singapore's founder and Elder Statesman, has noted that Singapore was profoundly influenced by the example of the miraculous recovery and expansion of Japanese industry after World War II. Today, says Mr. Lee, Japan's real problem is not the economy, but policy.

(Ship & Ocean Newsletter No.15, 20 March 2001)