The Nippon Foundation

OPRF

# Ship & Ocean Newsletter

Selected Papers

No. 14
June 2011

Ocean Policy Research Foundation

# 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 for the protection of the marine environment.

Towards this end, the Ocean Policy Research Foundation (formerly: Ship & Ocean Foundation) orients its research on ocean issues in line with the mission statement "Living in Harmony with the Oceans".

The Ocean Policy Research Foundation aims to conduct cross-sectoral 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 conducive to coexistence between mankind and the ocean.

Our Foundation believes that the Newsletter can expand effective communication on these issues by introducing timely research to abroad and informed readership. It also welcomes to responses from readers, some of which appear in the Newsletter.

"Ship & Ocean Newsletter Selected Papers No.14" contains English-language versions of papers from the Japanese Newsletter edition, published from No.231(2010.3.20) to No.250(2011.1.5).

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 ocean issues.

Hiroshi TERASHIMA
Executive Director



■Publisher

**Hiroshi TERASHIMA**
*Executive Director, Ocean Policy Research Foundation*

**Ocean Policy Research Foundation**
Kaiyo Senpaku Building, 1-15-16 Toranomon, Minato-ku, Tokyo, JAPAN 105-0001
Tel. 81-3-3502-1828/Fax. 81-3-3502-2127
URL. http://www.sof.or.jp/en/index.php

# Contents




Ship & Ocean Newsletter
Selected Papers No.14
June 2011

# "Maritime Nation Japan" Goes Adrift

[KEYWORDS] Geopolitics / Remote islands / National strategy

**Yoshinori YASUDA**
*Professor, International Research Center for Japanese Studies*
(Ship & Ocean Newsletter No.231 March 20, 2010)

**The concept of "Maritime Nation Japan" has gone adrift because our national strategy lacks a geopolitical perspective.**
**For Japan to survive as an Asian maritime nation in the 21st century, it is absolutely vital that we propose a national strategy founded on geopolitics.**

## The decline of geopolitics

At university, I majored in geography. In Japanese geographical studies before and during the war, geopolitics was an extremely important field of research. The role of geographers was to provide a broad range of information on the areas into which the imperial army was advancing, from topographical and meteorological observations to their material produce, and to develop strategies for defending the national territory and building a world of peaceful coexistence. Geopolitics played an extremely important role in determining Japan's national strategy before and during the war.

That all changed, however, with defeat in the war.

Researchers who had specialized in geopolitics during the Second World War were purged, and in postwar geographical circles it was considered taboo to even mention the word "geopolitics". As a result, hardly any geographers researched geopolitics any more, and the level of research plummeted. However, this lack of geopolitical inquiry has begun to create a situation in which Japan's national interests are significantly compromised, faced as we are with the globalization of the 21st century. Japan's "going adrift" stems from this lack of geopolitics.

Jacques Attali, author of *A Brief History of the Future* (English translation to be released from Arcade in 2011. Provisional translation below is from the Japanese.), points out that "Japan's failure to become a central market for the Asia-Pacific region was due to the fact that it could not gain control of the oceans, or rather made no attempt to do so, despite having considerable hegemonic power in the form of its shipping industry and naval force, among others. For this reason, Japan was unable to create a peaceful, mutually reliant, unified and friendly community in Asia. This is solely because the Japanese have abandoned geopolitical thought." I could not agree more.

In the meantime, a number of myths have been exploded, including "Safety and water are free", "Our national borders are sacred, no one will violate them", and "We can always get resources and food from other countries".

In spite of this, notions of international politics completely devoid of geopolitics, and discourse on international harmony blurred by a surfeit of peace are still being reported in the media – even though the countries around Japan are greedily eyeing the resources in Japan's Exclusive Economic Zone as well as Japan's national territory and wealth.

## National frontiers protected by fishermen and inhabitants of remote islands

The people most keenly aware of this are the fishermen who ply their trade in the seas, the maritime workers and the inhabitants of remote islands. In fact, it is really these fishermen, sailors and other maritime workers who protect Japan's Exclusive Economic Zone and guard our national frontiers. And the people who inhabit these islands prevent aggressive action from other countries simply by the fact of living on the front line of our nation's borders.

In spite of this, structural reforms mean that people from South Korea can now travel to and from Tsushima freely without requiring a visa. This is because the economic structure of Tsushima now depends on income from Korean tourists. The result has been a veritable flood of South


Tsushima is a pair of islands in the western Sea of Japan. Stretching about 82km north to south and 18km east to west, Tsushima lies 138km across the sea from Fukuoka but less than half that distance (49.5km) from Busan in South Korea. (Source: Tsushima City official website)

Koreans coming across to snap up important tracts of land in Tsushima.

I raised this problem of Tsushima's land being bought up by South Koreans from quite an early stage, but the ears of our nation's leaders were completely deaf to my appeals.

On August 2nd, 2008, I was giving a lecture at the Training Center for National Public Employers in Saitama Prefecture as part of a training course for high-ranking officials.

"Did you know that important tracts of land in Tsushima have already been bought up by South Koreans?" I asked the assembled group of high-ranking bureaucrats from Kasumigaseki, seat of Japan's government ministries. With the exception of a senior uniformed official from the Ministry of Defense, not one of them was aware of that fact. The other section-manager level bureaucrats from central Japanese ministries (including senior career officials from the Ministry of Defense), men who should be responsible for the nation of Japan, knew nothing of it either.

I wondered how they could call themselves the Ministry of Defense when they couldn't even defend the proper territory of the Japanese people.

Three months after that, the Sankei newspaper at last gave this problem extensive coverage (Oct. 21st, 2008, morning edition), and the nation at large finally came to know of it.

This carefree attitude on the part of Japan's bureaucrats and politicians, coupled with a nation lulled into apathy by an excess of peace, poisoned by the dogma of market principles and material greed, will undoubtedly destroy the Japanese people and lead to the ruin of the Japanese state.

The sale of Japan's territory poses a crisis for the Japanese state and is a serious matter that could impact the very survival of the Japanese people. In spite of that, Japan's leaders, prisoners to their own greed for money, merely commented that it was "the same as when Japanese bought up skyscrapers and theme parks in New York during the bubble era" – even though a bi-partisan "Demand for the Return of Tsushima" signed by 50 South Korean lawmakers had already been put forth in South Korea, and claims that "Both Dokdo (Liancourt Rocks/Takeshima) and Tsushima are South Korean territory" had already started to appear.

## To re-launch the concept of Maritime Nation Japan

Japan's leaders, prisoners to their own greed for material wealth, showed no enthusiasm for acquiring geopolitical rights over our Exclusive Economic Zone and remote islands. What's more, given the advance of economic policies centered on Tokyo through structural reform, the livelihoods of people who inhabit our remote islands have become endangered.

Even though the inhabitants of remote islands are the very defenders who protect the Exclusive Economic Zone and guard Japan's national territory, the leaders of the Japanese government have been so blinded by moneymaking that they implemented a policy of effectively cutting off these remote islands.

How can a country that cannot even protect its own Exclusive Economic Zone hope to defend peace in Asia?

On December 1st, 2009, the Hatoyama government drew up "Basic Principles on the Conservation and Management of Remote Islands for the Management of the Oceans," with the aim of protecting and managing the Exclusive Economic Zone and remote islands. With the change in administration, now even the government has at last started to put serious effort into conserving and managing the Exclusive Economic Zone and protecting remote islands. For the sake of Japan's future, this is a matter for celebration.

Today, with our little planet earth becoming inhospitably cramped owing to problems of the global environment and the exhaustion of resources, competition for resources and land will soon become a matter of course. Disputes over water resources and food will proliferate. Whether we like it or not, the world is bound to enter an inhospitable era in which conflicts are commonplace. When it does, theories of diplomacy and resources that lack a geopolitical perspective will be like pie in the sky.

Unless we develop theories of international politics and research with a firm grounding in geopolitical perspectives, situations in which Japan's national interests are significantly compromised will start to arise. Both the problem of gas fields in the East China Sea and the problem of Takeshima are examples of failed policy by Japanese leaders who lacked a geopolitical strategy.

To re-launch the concept of "Maritime Nation Japan," we need to develop a national strategy founded on geopolitical perspectives in future. ■

# A Database to Handle Information on Marine Biodiversity and Distribution

[KEYWORDS] database / marine life / biodiversity

**Katsunori FUJIKURA**
*Senior Researcher, JAMSTEC*
(Ship & Ocean Newsletter No.234 May 5, 2010)

**The astonishing progress of information technology based on computers and the Internet has spawned databases that can house, analyze and share massive volumes of data. Oceans, the largest biosphere on earth, are home to an enormous number of living species, and a huge amount of data is produced by research on marine life. Marine life has a considerable impact on humans in terms of fishery resources, leisure, and material cycling functions. Databases are powerful tools for furthering an understanding of the relationship between marine life and human beings and setting directions for the future.**

## Introduction

We hear the word 'database' more and more these days. Databases have the function of gathering large quantities of data on specific themes in computers, where their content can be searched or otherwise processed with great efficiency. Various databases have also been created and used in the field of biological research. In particular, the International Nucleotide Sequence Databases, which handle information on genes, are used by many life scientists for phylogenetic analysis of species, cataloging of microbe species, and gene function analysis, among other purposes.

The urgent problems of the global environment today have set off alarm bells over the loss of biodiversity and changes in ecosystem functions. To solve these problems, we need to gather and analyze data from a wide spectrum of academic disciplines, including taxonomy, ecology, and environmental studies, and reflect the results in policies. For this reason, databases on species diversity and distribution information are now being rapidly created. Here, I would like to describe how databases on marine life diversity and distribution information can be used, and what kinds of databases are being used around the world, as well as trends in Japan.

## How they are used

When marine life researchers use databases on species diversity and distribution information, they do so to evaluate basic information such as a target specie's taxonomic classification and its distribution environment, to make comparisons with related species when recording a new species, to specify sampling points when wanting to obtain material, to understand migratory patterns of the target species, the species composition of a given ecosystem, the structure of food chains, and material cycle functions involving species. This then allows them to forecast future fluctuations in the structures and functions of ecosystems accompanying environmental change.

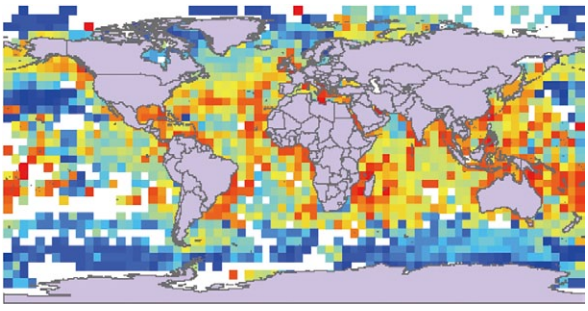
When related to policy decisions, for example, they provide useful data for selecting marine protected areas and endangered species, predicting the impact and variance of exogenous species, assessing environments and making sustainable use of water resources. These lead to a healthy coexistence of human beings with marine life. Besides this, they can also be used by scuba divers and anglers for identifying species and learning about ecosystems, and as educational materials by schoolteachers and pupils.

## Databases used around the world

The world's largest-scale database dealing with information on marine biodiversity and distribution is the Ocean Biogeographic Information System (OBIS), created by an international joint research network called "Census of Marine Life (CoML)". As CoML is due to conclude in 2010 [1], it was decided at the Assembly of the UNESCO Intergovernmental Oceanographic Commission (IOC) in 2009 that OBIS would continue as a project under the aegis of the IOC. As of April 2010, some 112,000 species from all oceans had been registered and a total of 22.2 million distribution records accumulated in OBIS. Since the total number of already known marine life species is around 230,000, this means that information on nearly half of all species is available. On analyzing this massive volume of data, we find that species diversity in all the world's oceans is greater at higher latitudes than at lower ones (Fig. 1).

Accurate scientific appellation is indispensable for data on biodiversity. A database that accumulates scientific

■Fig.1



Levels of species diversity in the world's oceans, created from OBIS. Areas where diversity is highest are marked in dark red, those where it is lowest are in dark blue.

names and their taxonomical positions, the World Register of Marine Species (WoRMS), is also linked to OBIS. Valid names of about 170,000 species are registered in WoRMS. In order to analyze global biodiversity and ecosystem fluctuation, both terrestrial and marine information have to be treated in an integrated fashion. The Global Biodiversity Information Facility (GBIF) plays this role, and OBIS is the largest provider of information for GBIF.

## Trends in Japan

Japan's Exclusive Economic Zone (EEZ) is home to nearly 40,000 known species alone, but a search of OBIS for species within Japan's EEZ produces no more than 3,900 species. This results in an underestimation of the situation around Japan, as shown in Fig. 1. To add data to international databases like GBIF and OBIS, we need to write in English and add scientific appellations in accordance with an international standard format (such as Darwin Core). Although there has been an increase in small-scale databases in Japan, those created in English or using a standard format are regrettably few. Nor has there been an integrated database that would provide information on species diversity and distribution of marine life in areas around Japan.

OBIS works by gathering data from "nodes" set up in each country and region, with additional information from other databases. The fact that OBIS has so little information from the area around Japan is because there used to be no node in Japan. Ocean-related information from inside Japan is provided to the IOC by the Japan Oceanographic Data Center (JODC). It provides high-level physical information, as well as information on species, consisting mainly of plankton information. However, there are those who say that providing quality-controlled information on marine life would be difficult, in terms of both manpower and budgets. Species information is also economic and policy information. At the 10th Conference of Parties to the Convention on Biological Diversity (COP10) held in Nagoya in 2010, marine protected areas were discussed. For a location to be made a protected area, it would have to be a sea area rich in diversity or inhabited by rare species, a place where specific ecosystems are formed, and so on. In the area around Japan, however, there is not enough of the information needed to select locations that would meet these conditions. It goes without saying that Japan needs to develop a proper database.

■Fig.2


Example of a search for *Shinkaia crosnieri* on BISMaL. The page displays images, characteristics and a distribution map. The data can also be downloaded and displayed on Google Earth.

At JAMSTEC, we use the Biological Information System for Marine Life (BISMaL), a database that gathers information on marine biodiversity, distribution, samples, images, characteristics of each species, literature, etc., in the area around Japan (Fig. 2). Beginning with the cataloging of deep-sea organisms, about 500 species and around 2,200 video images can currently be seen, but the aim is to gradually catalogue all marine life in the area around Japan. I would like BISMaL not only to maintain its own data, but also to accept data from related research institutions, researchers, organizations, and others. It should serve as a marine life core database, portal, and OBIS node for the area around Japan, and contribute to solving the social problems faced by marine ecosystems as well as conducting research.

## Conclusion

While it is important that marine life databases contribute to current research and solving social problems, it is also important that data be archived, considering that they may also be used 50 or 100 years hence. Meanwhile, the function of conveying species information to society in intelligible forms and making the oceans more familiar to the general public should also not be forgotten. ■

1) See " the 'Census of Marine Life' Project as an Example of Providing Research in Public Outreach, "Ship & Ocean Newsletter, No.227(1.20.2010), by Yoshihisa Shirayama

# The Environment Surrounding Whaling

[KEYWORDS] Taiji / commercial whaling / sustainable use

**Yoji KITA**
*Schools Superintendent, Taiji Board of Education, Wakayama Prefecture*
(Ship & Ocean Newsletter No.235 May 20, 2010)

**The town of Taiji in Wakayama Prefecture where I live has for many years been subjected to groundless persecution, slanderous abuse and attacks tantamount to human rights discrimination by opponents of whaling and environmentalists.**
**The Japanese have eaten whale meat for at least a thousand years. Each country has its own diversity of diet, and it is important that we acknowledge and respect each other's traditions. It should not be permitted for one nation or group of nations to unilaterally impose its own values on another, or to engage in propaganda campaigns that border on self-seeking malice and infringement of human rights.**

## The history and culture of the 'birthplace of whaling' in Japan

Japan's relationship with whales is said to have started in the Jomon era of prehistory. People in that distant age would catch whales that had come too close to the shore or become stranded on beaches and use them as a precious source of food. It was our forebears in Taiji, however, who first formed an organization for actively hunting whales.

The pioneer of this industry was Wada Chubei Yorimoto, from an influential local family. He joined forces with an experienced fisherman called Denji, from the village of Morozaki on the Chita Peninsula, and a man called Iyemon from Sakai in Senshu Province, who had a wealth of seafaring knowledge. Together, they developed ways of catching whales, and in 1606 assembled local fishermen to form five "whale-catching teams". With this, the practice of "whaling" started in earnest. Catching giant whales in open seas using the primitive methods available at the time was certainly not easy. But in 1675, Yorimoto's grandson Yoriharu devised a method of spreading nets and driving whales into them, leading to an improvement in the catch rate and helping to put Taiji on the map. It is even said that the lord of the local domain allowed Yoriharu to use "Taiji" as a surname in recognition of his feat. The whale meat and other products from whaling catches were transported to Kyoto, Osaka and Edo by sea, causing "whale meat-eating culture" to spread. In the Edo era, whaling was hazardous work that claimed many lives. Admirably, a system of social welfare, including compensation for surviving families and relief for those no longer able to do heavy work owing to their injuries, was established in the Edo era as a result. Perhaps this spread a sense of a "common destiny" in sharing responsibility for the lives of the villagers, and a spirit of mutual orderliness towards subsequent regional autonomy has been perpetuated as a tradition; and perhaps that explains why Taiji still exists as an independent autonomy today, when the merging of municipalities is being pursued as a national policy.

## The Japanese diet and problems with whaling

Japan's dietary culture is one of the most diverse and varied in the world. Environmentalists and others who oppose whaling have claimed that "the Japanese custom of eating whale meat cannot be more than a thousand years old, as it only started after the war." But this is not true. Making such claims in full knowledge of the truth is nothing but gross malice.

This is because, when GHQ permitted whaling activities in the Antarctic Ocean as a way of solving postwar food shortages in 1946, it implied recognition that the Japanese already had a custom of eating whale meat. Today, traditional cuisine based on whale meat is still prepared on special days in certain parts of the country. It is also true that many of these existed before the war. Between the period of postwar recovery and the peak years of the whaling industry, the Japanese public were united in sending off whaling fleets to the Antarctic in eager expectation of their catches, and welcomed them back warmly on their return in April.

As Japan's postwar recovery advanced at an unexpectedly brisk pace, our economic activity came to be valued internationally, the food supply improved, and Japan came to acquire a richer dietary lifestyle. At the same time, however, our awareness and understanding of foodstuffs

Taiji Whale Museum

declined and we stopped feeling a sense of "life" in any food. With the increased popularity of beef and pork, in particular, we are gradually shifting from a "fish-eating culture" to a western-style "meat-eating culture", and now health problems are beginning to emerge as a result. Whether an animal is wild or domesticated, the fact is that precious life is still being sacrificed in order for humans to live. The argument that it is wrong to take the lives of wild animals, but acceptable if they are farmed, is nothing but hypocrisy. There should be no shame in exploiting wild animals as food. All cultures do so with the animals and fish nearest to them. What we need to consider, however, is not different categories of "life", but that excessive fishing on economic grounds alone is an act of which we should be ashamed.

There are no global standards in food culture. In his book *Nikushoku Bunka* to *Gyoshoku Bunka* (Meat-Eating Cultures and Fish-Eating Cultures, 1994), the late Dr Fukuzo Nagasaki describes the characteristics of food culture in pro-whaling and anti-whaling countries. Many anti-whaling countries are meat-eating cultures; many pro-whaling countries are fish-eating cultures. Every country in the world has a diverse food culture, and it is important that we acknowledge and respect each other's traditions. Unilateral imposition of values or propaganda activity that borders on self-seeking malice and infringement of human rights should under no circumstances be tolerated. What should be tolerated is objective, scientific evaluation.

## The whaling problem and a little town's struggle

In 1982, the Annual Meeting of the IWC passed a resolution for a moratorium on all commercial whaling. In the following year, Taiji announced its opposition to the moratorium, and started campaigning for the withdrawal of the resolution that disregarded scientific evidence. The resolution came with an addendum to the effect that it would be reviewed based on scientific surveys by 1990. Japan's scientific surveys were highly praised by the scientific committee. But this praise was almost totally ignored by the Annual Meeting; the addendum is merely a sham and there is no sign of any intention to review the original resolution.

The IWC has now become dysfunctional and can no longer be regarded as an international body. A recent proposal by the Chairman was that "Japan's coastal commercial whaling be permitted, but not commercial whaling in the Antarctic Ocean." I hope the Japanese government will judge this proposal accurately from the perspective of food security.

Just before the IWC Annual Meeting in Kyoto in 1993, a large contingent of staff from the embassies of western anti-whaling countries in Japan visited Taiji for a preliminary survey. One moment during that visit left a lasting impression on me. It was when the secretary responsible for fisheries from Britain, the leading anti-whaling country, said "Britain has abandoned its coal industry and gone over to oil. Japan should also stop whaling and use whales as a tourist attraction, particularly through whale watching." I argued that "Japan's whaling industry is not designed to meet the demand for oil, as was your country's whaling, but to provide food. Abandoning the coal industry as part of an energy revolution is in no way comparable to whaling by Japan. After all, humans have to sacrifice the lives of other animals in order for humans to survive; no one lives by eating underground resources."

Taiji has for many years been subjected to groundless persecution, slanderous abuse and attacks tantamount to human rights discrimination by opponents of whaling and environmentalists. Recently, the town has been exposed to even more attacks after a documentary called "The Cove" won an Academy Award. We do not see this film as a documentary. We see it as an anti-whaling propaganda film made out of self-seeking malice. I have heard media reports that everything in the film was not filmed in Taiji but somewhere else, or that the location is unknown, and that the people appearing in it claimed they were misrepresented. Footage filmed some years earlier gives the mistaken impression that it presents the current situation. The result is an emotional and emotive rejection of whaling that appeals to the eyes and ears of people who know nothing of the true situation.

The fishermen of Taiji engage in fishing operations under license from the national and prefectural governments, based on the principle of making sustainable use of marine life; they are doing nothing illegal. For people engaged in anti-whaling campaigns, I can only surmise that, to stop whaling in Japan, they think the best tactic is to make Taiji give up its long history of whaling. ■

# To Enhance Public Interest in and Understanding of the Oceans

[KEYWORDS] Marine Day / ocean-related legislation / promoting maritime education

**Yoshiaki TAKAKI**
*Member, House of Representatives (DPJ)/Chief Facilitator of the Basic Act on Ocean Policy Follow-up Study Group*
(Ship & Ocean Newsletter No.239 July 20, 2010)

**Initiatives by the public and private sector are being called for to promote ocean education, including in the schools, on the value of the ocean and the importance of ocean-related workplaces. As well as enhancing our policies on the oceans, it is also important that we increase public interest in and understanding of the oceans, develop human resources, and make the maritime industry more competitive.**

## Coming up to the 15th "Marine Day" national holiday

First "launched" in 1996, the national public holiday known as *Umi no Hi* or "Marine Day" will be celebrated for the 15th time this July.

When a proposal was put to the National Diet that we amend the Act on National Holidays to make Marine Day a national holiday (Lower House Cabinet Committee, December 6th, 1994; Upper House Education Committee, February 28th, 1995), the explanation given was that "To nurture appreciation for the blessings of the oceans and the spirit of treating the oceans with care, we propose to add July 20th, which has already long been familiar to the people as a day to celebrate the oceans, to our national holidays as Marine Day." Marine Day was later changed to the third Monday in July as one of the "Happy Monday" long weekends.

Oceans occupy 70% of the earth's surface and border Japan on every side, making it one of the countries that receive the most benefit from the oceans. Our forebears in ancient times depended on the blessings of the seas, fishery produce and resources for much of their sustenance. They also carried out cultural and other exchanges using seaborne transport and built the foundations of our modern nation while maintaining a close relationship with the seas. On the other hand, there are many challenges facing Japan as a maritime nation, including (1) marine pollution, (2) frequent occurrence of accidents at sea and shipwrecks, (3) marine interests, (4) illegal fishing, and (5) a decline in Japanese seafarers. These problems must be addressed urgently and in a concerted effort by the nation as a whole. Protecting the marine environment and developing marine resources are important, in that they will lay the groundwork for the further advancement of mankind.

## Significance of the "Basic Act on Ocean Policy" in setting comprehensive and integrated measures

It would be no exaggeration to say that making "Marine Day" a national holiday played an important role in fostering public interest in the oceans, and, following our ratification of the United Nations Convention on the Law of the Sea (UNCLOS), also led to the enactment of the "Basic Act on Ocean Policy".

■Table 1

**Basic Plan on Ocean Policy**
(Cabinet Decision of March 18th, 2008)

**[ 6 Basic Principles ]**

1. Harmonization of the Development and Use of the Oceans with the Conservation of Marine Environments
2. Securing the Safety and Security of the Oceans
3. Improvement of Scientific Knowledge of the Oceans
4. Sound Development of Ocean Industries
5. Comprehensive Governance of the Oceans
6. International Partnership with Regard to the Oceans)

**[ 12 Basic Measures for the Oceans ]**

1. Promotion of the Development and Use of Ocean Resources
2. Conservation of Marine Environments, etc.
3. Promotion of the Development of the Exclusive Economic Zone, etc.
4. Securing Maritime Transport
5. Securing the Safety and Security of the Oceans
6. Promotion of Ocean Surveys
7. Promotion of Research and Development in Oceanography and Technology, etc.
8. Promotion of Ocean Industries and Strengthening International Competitiveness
9. Integrated Management of Coastal Zones
10. Conservation of Remote Islands, etc.
11. Securing International Coordination and Promotion of International Cooperation
12. Enhancement of Citizens' Understanding of the Oceans, etc.

The "Basic Act on Ocean Policy" was promulgated on April 27th, 2007 as Japan's 33rd Basic Law, coming into effect on July 20th (Marine Day) that year. The Act provides a legal framework for comprehensive and integrated efforts by the government to address various issues concerning the oceans. It also provides that Headquarters for Ocean Policy should be set up, with the Prime Minister as the Director, the Chief Cabinet Secretary and Minister for Ocean Policy as Deputy Directors, and all other Cabinet Ministers as members. The Headquarters would be responsible for planning, proposing and generally coordinating policies related to the oceans, as well as drawing up a Basic Plan on Ocean Policy. Before the Act became law, many ministries and agencies were involved in administration concerning the oceans, and each promoted its own policies. Sea bed resources were the domain of the Ministry of

Economy, Trade and Industry, fisheries that of the Ministry of Agriculture, Forestry and Fisheries; sea transport was under the Ministry of Land, Infrastructure, Transport and Tourism, oceanography was under the Ministry of Education, Culture, Sports, Science and Technology, and marine environments were under the Ministry of the Environment. Beyond these, moreover, the Foreign Ministry, Ministry of Defense, Ministry of Justice, Japan Coast Guard and others were also involved in the vertically divided structure.

With the enactment of this law, a system was created whereby the Headquarters for Ocean Policy would undertake comprehensive and integrated management of ocean policy, as a control center for various ocean-related measures that had previously been the domain of these different ministries and agencies.

In particular, Japan as a maritime nation needs to make concerted efforts on issues such as developing and using marine resources, protecting marine environments, developing, using, protecting and managing the Exclusive Economic Zone and continental shelf, R&D on oceanography and technology, promoting maritime industries, comprehensively managing coastal areas, protecting remote islands, and promoting education on the oceans.

Following the enactment of the Basic Act on Ocean Policy, a "Basic Plan on Ocean Policy" was decided by the Cabinet on March 18th, 2008, indicating 6 Basic Principles and 12 Basic Measures for the Oceans (see Table 1).

There are, nevertheless, still many issues to be resolved.

During the Diet debate on the Basic Act on Ocean Policy, the Lower House Infrastructure and Transport Committee passed a resolution on "Promoting the Establishment of a New Maritime Nation" on April 3rd, 2007. This consisted of five topics, including "Domestic legislation regarding UNCLOS is insufficient, and needs to be addressed urgently" and "As well as furthering the seamless protection of our national territory, we should also create a new order on the oceans".

In addition, it is also vital that we secure Japan's sovereign rights in our EEZ and continental shelf, secure sea bed resources and energy, and form a system for promoting marine development including gas fields; these also need to be addressed urgently. They are, after all, closely entwined with Japan's national interests as a maritime nation.

## The government should lay the groundwork for promoting maritime education, including school education

In developing ocean policy, the one thing that must not be overlooked is manpower. In particular, the immediate task is to develop the human resources necessary for maritime transportation, both domestic and international, and to make the maritime industry more competitive. In 2008, a year after the enactment of the Basic Act on Ocean Policy, a "Bill for Partial Amendment of the Maritime Transportation Act and the Seafarers Act" was passed. The content of the new law was closely related to the problem of Japanese seafarers, including (1) Securing the requisite number of Japanese ships, (2) Securing and training Japanese seafarers, (3) Introducing a system of taxation based on standard tonnage, and (4) improving working conditions for seafarers, among others. On July 17th of that year, the Ministry of Land, Infrastructure, Transport and Tourism announced its "Basic Principles for Securing Japanese Ships and Seafarers".

Securing the necessary Japanese ships, and training and securing Japanese seafarers is indispensable if we are to make maritime transportation more stable. What is particularly important is that we always have workers who are engaged in the maritime industry. That is to say, the first step in concerted cross-sector efforts to solve the decline in these workers is for people to feel close to the sea and become familiar with the sea from childhood. The government must strive to lay the groundwork for maritime education, including school education, and to promote it. In a supplementary resolution to the Act, a request is made from this perspective, namely "To enhance public understanding of the oceans and nurture human resources, as indicated in the Basic Act on Ocean Policy, we should attempt a radical revision of the way maritime affairs are publicized, making this a state initiative under the leadership of the Headquarters for Ocean Policy. We should also make active efforts to promote maritime education, in linkage with school education, concerning the value of the oceans and the importance of marine workplaces, in order to generate motivation towards ocean-related work among young people."

Of course, the Basic Act on Ocean Policy also includes a provision for "Enhancement of Citizens' Understanding of the Oceans, etc." (Article 28). As well as school and adult education, it requires that the government take necessary measures to train human resources who can respond accurately to policy tasks concerning the oceans, and to promote interdisciplinary education and research at universities and elsewhere. As this shows, the problems surrounding Japan as a maritime nation are still numerous. As well as follow-up work for the Basic Act on Ocean Policy, initiatives that increase its effectiveness are also required. Last November, I was appointed Chief Facilitator of the "Basic Act on Ocean Policy Follow-up Study Group," and I strongly feel this to be true. I would like to renew my approach to the oceans and reappraise my view of them. ■

# Seeking Energy from Wind Power at Sea

[KEYWORDS] ocean renewable energies / offshore wind turbines / demonstration trials

**Chuichi ARAKAWA**
*Professor, Faculty of Engineering, The University of Tokyo*
(Ship & Ocean Newsletter No.239 July 20, 2010)

**While the thrust of energy policies in Japan is aimed at solar energy, the rest of the world is shifting towards wind power, the premier renewable energy. Today, moves to install large-scale offshore wind turbines are underway not only in Europe but also in China and South Korea. Using the excellent ocean technology accumulated by the "ocean state" Japan, it should also be possible for offshore wind turbines to be developed in Japan as a state project aimed partly at nurturing large industries.**

## The current situation of offshore wind turbines

Just before landing at Copenhagen Airport, an arc-shaped formation of 20 offshore wind turbines can be seen rotating elegantly (Fig. 1) in the sea below the right side of the plane. The turbines started turning about 10 years ago, and have been described by an expert as "the most beautiful wind farm in the world". This line of offshore wind turbines not only looks good, but also supplies clean electricity at low cost, on a par with wind turbines situated on land. On Cape Roca in Portugal, the westernmost point in mainland Europe, there is a monument with the inscription "Here, where the land ends and the sea begins...", commemorating the seafarers who set sail from here in search of the New World in the 15th century. And now, Europe, a pioneer in wind power energy, is looking forward to a new age of departure as it moves from land-based to sea-based wind turbines.

The "Roadmap" published by the International Energy Agency sets a target of halving greenhouse gases worldwide by 2050. To meet this target, Japan and other leading industrialized nations are expected to cut their emissions by at least 80%. Of this reduction, 21% is to be furnished by renewable energies, with wind power attaining the same scale as hydropower and far surpassing the energy produced by solar power. As for offshore wind turbines, four thousand 4000kW turbines are expected to be installed every year. For comparison, the total energy currently supplied by wind power globally is 160 million kW, of which offshore wind turbines provide 2 million kW. In Europe, there are plans to introduce 20 million kW of offshore wind turbines by 2020.

■Fig.1

A seabed-anchored offshore wind farm in Copenhagen, dubbed "the most beautiful in the world"

But what of the situation in Japan? At the UN General Assembly last September, former Prime Minister Hatoyama declared the aim of reducing greenhouse gases by 25% by 2020. However, the priority in the current government's proposals is on cost-intensive solar power; wind power, although superior as a renewable energy, still does not occupy an important position here. Japan currently generates 2 million kW of energy from wind power, and even if this could be raised to the previous government target of 6 million kW, it would hardly be enough to meet the target for reducing greenhouse gases. Compared with standards in the rest of the world, we should be aiming for at least 20 million kW, but this would be extremely difficult to achieve with land-based wind turbines alone. Turning our attention to the seas, on the other hand, "sea-locked" Japan is blessed with an abundance of marine energy (as shown by the fact that our Exclusive Economic Zone is the world's 6th largest), and the possibility of developing offshore wind turbines is endlessly large. And while various different estimations have been attempted as to the actual potential, it would doubtless be in excess of 30 million kW using "seabed-anchored" wind turbines in shallow waters, and more than ten times this amount using "floating" turbines adapted to deeper waters.

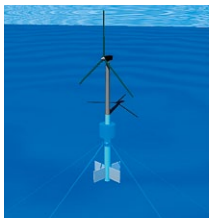
Japan currently has ten or more offshore wind turbines in harbor regions or locations very close to land, but none of them could be described as adequate. The Ministry of Economy, Trade and Industry and NEDO have started basic surveys on seabed-anchored offshore wind turbines in six locations, on the assumption of use in shallow seas, and launched wind condition observation projects in two locations last year. In the next fiscal year, they will invite public subscriptions for projects to site one wind turbine in each location. Compared to the large-scale offshore wind farm off Copenhagen and others mentioned above, however, it has to be said that we are lagging well over 10 years behind.

Elsewhere in the world, floating offshore wind turbines

■Fig.2

Norwegian floating offshore wind turbine installed in a deep sea area (Source: Oyvind Hagen / Statoil)

■Fig.3



Artist's impression of a spar-type floating offshore wind turbine (Source: Prof. H. Suzuki, The University of Tokyo)

(i.e., wind turbines that float in deep seas) are currently being earmarked as playing a central role in future marine energy. Last year, Norway stunned the rest of the world by installing, in a short time, a 2,000kW wind turbine in seas 200m deep, an event that is still fresh in memory (Fig. 2). In Japan, various basic research efforts have been undertaken, including one by a group consisting of Tokyo University, TEPCO, and others (Fig. 3), and another by a group led by Kyoto University and Sasebo Heavy Industries. However, these have yet to reach the demonstration trial stage, and my understanding is that the Ministry of the Environment will only start feasibility studies next fiscal year.

Both with a view to building a low-carbon society, and to fulfilling our duty as a leading industrialized nation, the development of advanced offshore wind turbines, pulling together all aspects of marine technology possessed by Japan, is a matter of some urgency. This would include the promotion of demonstration trials on wind power energy systems suited to Japan's environment, making use, for example, of its numerous outlying islands and the need to achieve harmony with fisheries, etc. Below, I will outline some concrete project proposals.

## Proposals for offshore wind turbine projects

**1) Fishery-friendly offshore wind turbines**

When introducing offshore wind turbines and other forms of marine energy in Japan, harmonizing with fisheries is an absolute prerequisite. When installing turbines in locations normally used as fishing grounds, we would develop fishery-friendly offshore wind turbines by ensuring that their use as fishing grounds can be resumed after the construction. Specifically, as well as making the structures that support wind turbines usable as fish reefs, we would also conduct research on various fish reef facilities, on the assumption that many more wind turbines will be introduced in future. Moreover, although the basic model would be the seabed-anchored type used in shallow waters, it would also be desirable to research and develop "jacket type" substructures [1] that can withstand water depths of around 50m, and other types suited to Japan's marine environment.

**2) "Local-for-local" offshore wind turbines in remote islands**

In remote island areas, expensive energy sources such as diesel power generation are still being used today. By introducing offshore wind turbines, we would aim to have carbon-free power generated locally for local consumption. These would be "local-for-local" offshore wind turbines, incorporating aspects of environment protection, tourism, and regional stimulation. Here, we propose a combination with floating offshore wind turbines in deep seas. Norway currently has the world's only large-scale floating offshore wind turbine, but by combining this with basic research in Japan, we could build a practical floating system that can function even under harsh natural conditions such as typhoons.

**3) Hybrid-type marine energy bases, and sites for demonstration trials**

Marine energy can be tapped in a number of ways, including offshore wind turbines, but also through wave power, tidal currents, temperature differential and other methods offering potential for the future. In particular, a combination of offshore wind turbines and wave power would have the advantage of sharing the same physical structures, and this is promising for the future. Two combined demonstration research sites have already been built in the UK, and it is to be hoped that the construction of larger-scale marine energy demonstration sites in Japan might also proceed from the above-mentioned demonstration trials of offshore wind turbines.

To build a low-carbon society and promote the use of the oceans, we have already reached the point at which we should start demonstration trials, with the aim of introducing offshore wind turbines in earnest. As well as Europe, pioneers of the offshore wind farm, there are clear now moves being made in China and South Korea towards large-scale installations. It is to be strongly hoped that the excellent marine technology accumulated by Japan, an "ocean state," will be used to develop these as national projects, partly to nurture large industries. ■

1) Jacket-type substructure: developed and built mainly as a substructure for marine platforms used in seabed oil and gas development. The jacket structure refers to a three-dimensional steel pipe truss formed by coupling prefabricated steel pipes with diagonal and horizontal members. The steel pipe truss, fixed to the seabed using steel pipe piles, enhances the rigidity of the structure. The main steel structure components of the jacket itself are factory-made, making it possible to erect large blocks in a single operation. This makes it possible not only to guarantee the quality but also to reduce construction time on site.

# Capacity Building in the World of the Sea

[KEYWORDS] United Nations / human resource development / UNCLOS

**Mitsuyuki UNNO**
*Director, Maritime Affairs Department, The Nippon Foundation*
(Ship & Ocean Newsletter No.241 August 20, 2010)

**We, the human race, are responsible for protecting the oceans, maintaining their order, keeping them in a sustainable condition, and passing them on to the future.
The Nippon Foundation, in collaboration with some of the world's leading marine research institutions and universities, governments of various countries, NGOs, and relevant bodies in the United Nations, is working on a project called "Capacity Building in the World of the Sea," designed to develop human resources who can take on important roles on a global scale. We expect the resultant linkage between people to become a force that will produce a new marine order for the 21st century.**

## Presentation at a UN Meeting

For five days from June 21st to 25th, 2010, the 11th Meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (UNICPOLOS) was held at UN Headquarters in New York. It was attended by about 400 representatives from 64 countries and the EU, 25 intergovernmental and expert bodies, and 11 NGOs, among others. UNICPOLOS, established by a resolution of the UN General Assembly in 1999, is the only opportunity for representatives of various countries and NGOs to gather under one roof to discuss ocean problems and the Law of the Sea. The matters discussed by its meetings are, with the consent of the countries represented, incorporated in Resolutions of the UN General Assembly. Held every year since 2000, this year's 11th meeting took up the themes of ocean-related capacity building, the Law of the Sea, and oceanography. Various opinions and proposals were presented by the participating countries and organizations and then discussed. The Nippon Foundation has long been closely involved with maritime capacity building as a private sector NGO, and this UNICPOLOS meeting presented a perfect opportunity for us to share our philosophy and track record with the participating countries and organizations. Therefore, we made our presentation in Segment 4, "New approaches, best practices and opportunities for improved capacity-building in oceans and the Law of the Sea". Here, I would like to introduce part of our presentation.

Scene at the UNICPOLOS Meeting (United Nations, New York)

## Content of presentation (partial excerpt)

"As you all know, with the coming into effect of the United Nations Law of the Sea in 1994, a new international framework came into effect, in which all countries could effectively integrate their ocean management, conservation, and use initiatives.

However, at this point, 16 years later, various problems continue to arise in the world's oceans, and no radical measures to solve these problems have yet been found. Our highly developed sciences have spawned a diversity of technologies and brought about dramatic progress in research in various ocean-related fields. Nevertheless, there is an undeniable sense that these scientific findings have not been adequately applied to the comprehensive management of the oceans. Furthermore, the future of over-specialized technology seems to be having a profound effect on the global environment, which after all exists as a composite agglomeration of multiple connections. If we are to solve global problems of the oceans, it is surely not enough to merely discuss them in specialized, closed discussion limited to certain fields only, as we have done until now. If we consider the entity we call the oceans, linked together beyond national borders through the medium of water, they cannot be adequately addressed by individual units of countries or organizations, or by an approach based on individual sectors; so much is clear if we look at the problems occurring in the world's oceans today. For example, if the development and exploitation of newly discovered deep sea bed resources throw up legal or policy problems not previously anticipated by man, we will have to tackle them using a fresh, flexible way of thinking that has not existed until now, together with the wisdom of the human race. Again, if human greed destroys the complex balance between depletion of fish stocks and marine ecosystems, we would have


The United Nations – Nippon Foundation Fellowship Program, Asia Region Alumni Meeting (Tokyo, 2008)

to address them beyond special domains or individual rights and interests, and devise ways of passing the oceans on to posterity while maintaining an ocean-derived perspective. It would be no exaggeration to say that the problems of the oceans in the 21st century are, for mankind, synonymous with serious problems affecting our very survival. Can we not discover a clue to solving these problems in a kind of "interlinkage" transcending individual disciplines such as politics, economics, laws, biology and engineering, or individual frameworks such as industries, NGOs, or countries? The cornerstone of this "interlinkage" is people, and I feel that finding ways of creating this "human interlinkage" is the very role incumbent on us as an organization dedicated to the public welfare. I think that if the Nippon Foundation can develop human resources who can approach problems from a broad perspective transcending individual fields, rather than the traditional capacity-building focused on fields of specialization that has been the case until now, it will be an effective means of solving problems related to the oceans. At the same time, I see it as important to support this kind of cross-sector "human interlinkage" by these human resources transcending individual interests. It will take time, but I feel the quickest way to solve the increasingly complex problems of the oceans lies in each individual having the broadest possible perspective, in creating opportunities for various opinions on those problems to be aired freely and, at the same time, in taking time to create "human interlinkage." With a view to developing human resources who can shoulder such a serious role on a global scale, the Nippon Foundation, in collaboration with some of the world's leading marine research organs and universities, governments of various countries, NGOs, and relevant bodies in the United Nations, is working on a project called "Capacity Building in the World of the Sea" (98 countries, 640 graduates). In future I hope we can extend this into "interlinkage" between programs and different fields, and create opportunities for capacity building projects to become intertwined in complex ways. And I expect this human interlinkage to become a force for producing a new marine order for the 21st century…"

## Comments from other countries

In addition to the above, we also introduced our scholarship programs with the UN Division for Ocean Affairs and the Law of the Sea (DOALOS), the World Maritime University (WMU), the International Tribunal for the Law of the Sea (ITLOS), and others. In our presentation, I stressed that our aims were, in particular, to develop human resources who can approach problems from a broad perspective transcending individual fields, and to build cross-sector "human interlinkage" by these human resources going beyond their individual organizations. Our presentation drew numerous comments from the participating countries and organizations, whose representatives praised the efforts and record of the Nippon Foundation and expressed hopes for further activity. The Bahamas, Brazil, the Comoros and others made positive comments about our capacity building, while the European Union praised our programs from the viewpoint not of a recipient but of a supporting organization. These comments were logged in the Chairman's Report, and are to be incorporated in a UN General Assembly resolution as well as in the Nippon Foundation's activities. We also received many comments of praise from representatives of more than a dozen countries outside the meeting. Above all, we were able to feel a real sense of achievement in our efforts so far, in that graduates from our aforementioned capacity building programs have now become responsible for marine administration in their own countries, and that 6 graduates from various programs took part in the meeting as representatives of their respective governments.

## Summary

Despite the fact that human life depends on the oceans, our marine activities today have become bloated to the point of destroying natural ecosystems, and are turning the oceans into dumping grounds of human greed. Our oceans are not unlimited, and if we continue to use them in this way, we could use them up within our lifetime. The seas are no longer something we can take for granted. If we accept that we, living in the here and now, must bear responsibility for protecting the oceans, maintaining order, keeping them in a sustainable condition and passing them on to the future, I think the key to this lies in our forward-thinking activities, and that our "Capacity Building in the World of the Sea" is one of them. ■

# A Reappraisal of $CO_2$ Ocean Sequestration

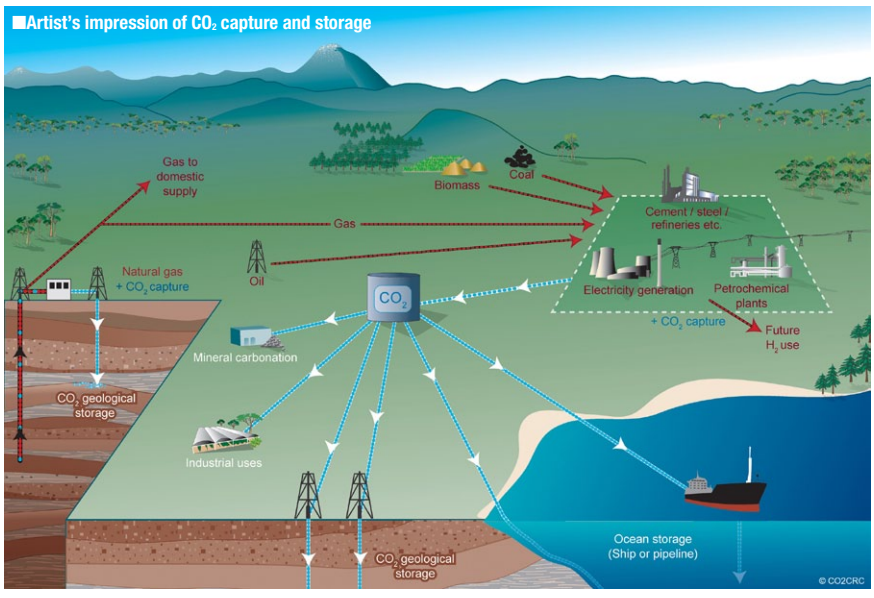
[KEYWORDS] risk management / social acceptability / environmental impact assessment

**Toru SATO**
*Professor, Department of Ocean Technology, Policy & Environment School of Frontier Sciences, The University of Tokyo*
(Ship & Ocean Newsletter No.242 September 5, 2010)

**CCS, widely recognized for its merits as a technology for the large-scale reduction of $CO_2$, is broadly divided into two methods – ocean sequestration and geological storage.**
**While other countries focus on onshore geological storage, Japan is currently investing heavily in demonstration trials of offshore geological storage. Considering the risks involved, however, I think we should promote ocean sequestration.**
**If Japanese technology were used, ocean sequestration would be safe, with no residual risk of impact on wildlife in future.**

## What is CCS?

CCS stands for "Carbon dioxide Capture and Storage" [1]. It was probably when it was described as an effective means of reducing $CO_2$, in the 4th Assessment Report approved by the 3rd Working Group of the Intergovernmental Panel on Climate Change (IPCC) in May 2007, that CCS first came to be generally regarded as a feasible technology. Since then, as a $CO_2$ "super" bulk reduction technology, the merits of CCS have come to be strongly recognized. The 'S' of CCS is broadly divided into two types, namely ocean sequestration and geological storage. The Ministry of Economy, Trade and Industry seems to have judged at quite an early stage that the ocean sequestration method, whereby $CO_2$ is dissolved in seawater in mesopelagic zones, is best suited to Japan, a country characterized by earthquakes and a plethora of stakeholders jostling around coastal regions. As a result, the Ministry started the "Development of environmental impact assessment technology on the ocean sequestration of carbon dioxide"program in 1997, five years before an R&D project on geological storage technology began. However, as other countries started counting geological storage among the numerical targets for reducing $CO_2$, from fiscal 2009 the Ministry's budget came to be concentrated in demonstration trials for offshore geological storage as a so-called "national project". Offshore geological storage is a method whereby $CO_2$ in a supercritical state is injected into aquifers at a depth of 1,000-2,000m below the seabed in waters around 100m deep.




## Difference in risk between ocean sequestration and geological storage

Sites of offshore geological storage are close to coasts, as the water depth is shallow there. This produces cost merits in terms of pipeline transportation. On the other hand, site selection is likely to prove tricky, as there are problems of acceptability by local communities, typified by the NIMBY (Not In My Backyard) attitude. Overseas, there has already been an accident, early in 2009, in which water and other matter sent underground leaked out in the Sleiper seabed oil field, where the Norwegian company Statoil has been carrying out experiments since 1990. As a result, Statoil quickly revised its potential capacity of $CO_2$ storage downwards. Again, in the Netherlands in 2008, the media reported that experiments on onshore geological storage had been made difficult owing to opposition from local residents. In the last few years, it has become clear that one major cause of the "death valley [2]" of CCS is the issue of social acceptability based on concerns over environmental risk.

To obtain social acceptability, environmental impact assessments are indispensable, but there is a big difference in nature between the environmental risks of ocean sequestration and geological storage. The main

concern with geological storage is not the storage itself, but leakage of stored $CO_2$ as a result of accidents or natural disasters such as earthquakes. The risk of $CO_2$ leakage due to earthquakes, etc., is said to be almost zero, but is difficult to quantify. And this kind of uncertainty makes the risk difficult to manage. For example, who would be responsible if a leak occurred several hundred years in the future? On the other hand, the main risk of ocean sequestration (i.e., dissolving $CO_2$ in seawater) is its impact on marine life near the point of discharge. Because ocean sequestration involves directly injecting $CO_2$, deep-sea ecosystems will inevitably be affected. With ocean sequestration, however, the concentration is highest at the discharge point, and it becomes diluted by the effects of turbulent diffusion. If the concentration near the point of injection was maintained below the level that would impact wildlife, there would be no residual risk of impacts on wildlife through "leakage", as with geological storage. If, in the near future, data on the $CO_2$ impact on various organisms can be accumulated and we learn the concentration of $CO_2$ that would have no impact on them, it would certainly not be difficult to develop technology for diluting the concentration to below that level. To put it simply, all we would have to do is reduce the injection rate.

## Legal barriers

So why has the rest of the world chosen geological storage over ocean sequestration? One major factor must be the London Convention (the "Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter"). It all started when, during a scientific meeting in May 2005, the UK delegation put forth the proposal, that legalizing the option of $CO_2$ storage in geological formation under the seabed should be considered. This met with the approval of some EU countries and British Commonwealth nations, and at a meeting of the Contracting Parties in November 2006, a list of substances that may be dumped in the oceans (including $CO_2$ injected into sub-seabed strata) was adopted together with Annexes. Then in March 2007, the Convention came into effect in 12 supporting countries (more than two-thirds of the 17 contracting countries). This all happened so quickly that the Japanese government, looking on from the wings, could not become a signatory as it had had no time to bring in line its domestic legislation. However, in May 2007 it amended the Marine Pollution Prevention Law and was at last able to ratify the Convention at a meeting of contracting parties that autumn. When it comes to ocean sequestration, however, methods involving dissolution in seawater were prohibited by the 2006 OSPAR Convention (Convention for the Protection of the Marine Environment of the North-East Atlantic), consisting of European nations, following a claim by Germany. The main reason why Germany and environmental groups opposed ocean sequestration in OSPAR is that "the impact on wildlife has not yet been determined". Ocean sequestration has not been on the agenda of the London Convention yet, and as the 1996 protocol listed only substances that may be dumped in the ocean, the implication is that $CO_2$ may not be injected into mesopelagic zones.

Thus, in terms of international law, as described above, it is not possible to commercialize ocean sequestration at the present time. Japan's present attitude is probably that, rather than go through the burdensome process of amending conventions to allow ocean sequestration, it would be better to follow other countries and proceed with offshore geological storage. But the UK was willing to pursue offshore geological storage even though it meant amending its laws. As is well known, when it can't win on its technological capability the West's strategy for science and technology is to impose international standards. Japan is weak in this respect, but perhaps the time has come to adopt this kind of strategy.

## The future of ocean sequestration

To enhance international recognition of the safety of ocean sequestration and to acquire social acceptance, we must first of all hold internationally open field experiments in Japan. We should hold sea trials as a national project, send invitations to a broad representation of research institutions in other countries and have them travel on board with us to the site, and, after making the observations of their own choosing, disclose the data to the rest of the world. Ocean sequestration should be implemented from around 2030, making up for the supply shortage vis-à-vis volume demand on offshore geological storage, which is earmarked for commercialization in 2020.

It will be possible to reduce $CO_2$ by about 200 million tons per year in the period from around 2030 to around 2050, enabling Japan to reduce $CO_2$ by a vast amount without paying out unnecessary sums in foreign currency. The government would be able to take ocean sequestration to the international negotiating table as a trump card in numerical targets for bulk reductions of $CO_2$, raising Japan's status as a result, and also make this a platform for building a science and technology strategy that includes international conventions. ■

1) See 61st Ocean Forum (June 15th, 2009), "Present status and prospects of developing technology for ocean sequestration of $CO_2$", Toru Sato.
2) Death valley: a situation in which fundamental research cannot be used for applied research, or R&D results cannot be used for commercialization, or the causes of these in general.

# Aiming to Establish an East Asian Marine Science Consortium

[KEYWORDS] East Asia / oceanography / international cooperative research

**Mitsuo UEMATSU**
*Director and Professor, Center for International Cooperation, Ocean Research Institute The University of Tokyo*
(Ship & Ocean Newsletter No.245 October 20, 2010)

**"Coastal Marine Science", a multilateral core university program undertaken by Japan and five Southeast Asian countries over the last ten years, comes to an end this year. Based on the Southeast Asian networks created in this program, I would like to propose that we establish an East Asian Marine Science Consortium based around researchers, which can contribute to cooperation not only in coastal marine science but also to ocean research on a global scale, covering the whole of East Asia, including its outer seas, through an international framework.**

## High acclaim for the multilateral core university program "Coastal Marine Science"

East Asia and Southeast Asia today embrace a population of more than 3 billion, and their socio-economic activities have a major impact on coastal regions. Every country in the region has a strong interest in bio-resources in coastal regions and mineral resources on the seabed, and ensuring their sustainable supervision and exploitation is a pressing task. And in the areas around Southeast Asian countries, where environmental change is becoming pronounced, there is now a strong awareness that localized environmental change is closely linked to changes in oceanic and meteorological patterns all over the world.

To address these issues, The University of Tokyo's Ocean Research Institute (reorganized as the Atmosphere and Ocean Research Institute in April 2010) initiated research exchanges on coastal marine science with Indonesia from 1988 and Thailand from the following year, as bilateral core university programs of the Japan Society for the Promotion of Science. Then, over the ten years from fiscal 2001 to fiscal 2010, we developed the multilateral core university program "Coastal Marine Science". In this, Japan joined with five Southeast Asian countries (Indonesia, Thailand, Malaysia, the Philippines, and Vietnam) to tackle problems of material cycles, harmful algae, biodiversity and pollutants, and the fruits of this research have received high acclaim internationally.

The number of researchers involved in this project has now reached around 350 (including those from Japan), and every year more than a hundred of them take part in Coastal Marine Science Joint Seminars held in rotation around the participating countries. In particular, the 7th UNESCO / IOC / WESTPAC (UNESCO Intergovernmental Oceanographic Commission Regional Sub-Commission for the Western Pacific) International Symposium held in Malaysia in 2008 was attended by 350 scientists and government representatives from 16 countries. Of these, more than 70 presented research results arising from the "Coastal Marine Science" project, contributing greatly to a widening of knowledge on oceanography in the Western Pacific region.

These research results have already been published in more than ten monographs and illustrated works, which are widely used as valuable materials in the countries concerned. Again, many of the government-sponsored overseas students visiting Japan and young researchers from research institutions in various countries have acquired degrees as a result of this research project. However, with the conclusion of this project in fiscal 2010, the time has come for us to consider and implement a new framework.

In future, highly practical international joint research will continue to be absolutely vital to ascertaining the state of marine environments in East Asian coastal regions, and to solving the problems they face. Even before the enactment of the Basic Act on Ocean Policy, the Council for Science and Technology (Subdivision on Ocean Development) reported that "To solve problems related to the oceans, it will be important to promote international cooperation in forms such as developing frameworks of international cooperation, taking part in international projects and supporting developing countries, while attempting a balance between making an international contribution and securing the national interest." In such ways, Japan should also apply its leading strengths in the field of oceanography on an international scale.

## A good time to establish an East Asian Marine Science Consortium

That is why I would like to propose the establishment of an East Asian Marine Science Consortium (EAMSC).

Firstly, we should expand the scope of the "Coastal Marine Science" program built up by Japan over two decades since 1988, based on the Southeast Asian networks, to include all regions of East Asia, including its open seas, rather than being limited to oceanography in coastal regions. Then, we should form a consortium based around researchers and present an East Asian regional version for global research on oceanography that will contribute to international frameworks.

The countries that have taken part in "Coastal Marine Science" so far share the common awareness that, as

one generation gives way to another, we urgently need to develop young researchers and pass on to them the responsibilities of the next generation. These countries are also subject to increasingly aggressive lobbying from Europe, America, China and others, with proposals for joint research and aid. Now, surely, is the time to maintain stable research exchanges in the East Asian region, having clearly specified the future prospects and aims of the network of human resources we have built up.

## International trends in the Western Pacific that cannot be ignored

In recent years, the Chinese government has shown a very strong interest in leadership in ocean research. At a meeting of the intergovernmental body UNESCO / IOC / WESTPAC held in May 2008 and at the IOC Executive Council in June of the same year, China stressed this intention and stated that it would increase its donation to IOC from $20,000 to $60,000. It is also promoting trilateral joint marine observation with Vietnam and the Philippines, countries that face the South China Sea. China's contribution to this region ought to be welcomed. Meanwhile, the USA did not send delegates to the two previous meetings of WESTPAC, but sent a team of 4 delegates to the latest meeting. This can be seen as a sign of growing US interest in ocean research in the Southeast Asian region.

Meanwhile, against this background of increasingly active proposals for joint research accompanied by financial aid from Europe, America and China, Japan's intention is to withdraw from unilateral aid by having each country acquire its own research budget independently. To overcome this considerable hurdle and achieve research on a level footing, we need to maintain high-level research exchanges and close exchanges of human resources between researchers from Japan and other countries via this consortium, and to nurture infrastructure that will allow us to develop spontaneous research exchanges. It could be that the perfect opportunity has arrived for the ocean research networks in the Southeast Asian region that Japan has built up over so many years to take up true leadership in East Asia.

## International conference provides the venue for a proposal

The oceans of Southeast Asia are important sea areas in terms of global environment change, and receive considerable attention, not only from the countries concerned but also internationally (including Japan). However, while it is true that many human resources are being recruited and trained for the sustainable use of bio-resources in the coastal regions of each country as well as for the development and management of seabed resources, initiatives aimed at basic oceanographic observation research and the employment of human resources in this region are limited at present. We need to mutually understand the meaning and importance for the whole Asia region of oceanographic research and marine observation surveys in the coastal regions and surrounding seas of each country, recognize the need for networks that organically link these and for data management, for the whole Asia region and promote measures to that end.


Poster for an International Conference held at the Atmosphere and Ocean Research Institute of The University of Tokyo (Kashiwa Campus) from October 26th to 29th, 2010: "New Direction of Ocean Research in the Western Pacific" – Past, Present and Future of UNESCO – IOC – WESTPAC Activity for 50 years and the JSPS Project "Coastal Marine Science"

In this proposal, as well as further upgrading previous research on coastal oceanography and strengthening and developing collaboration, I am calling for the construction of a new framework whereby Southeast Asian countries can independently tackle the various problems of oceanography, which start locally but develop regionally and thence globally. And beyond this, I propose that we establish directions for contributions from the level of individual researchers, not by only the countries concerned but also in linkage with international networks. At an international conference to be held from October 26th (see poster), I will propose, with the approval of oceanography-related societies and others in each country, that we launch a multilateral collaborative research program using the East Asian Marine Science Consortium as an arena for discussion on concrete measures and research tasks. It goes without saying that the powerful support of the Japanese government will be an essential means to this end. ■

# "Oceans Day at Nagoya" — For the Conservation of Marine Biodiversity

[KEYWORDS] COP10 / marine biodiversity / Nagoya Oceans Statement

**Takashi ICHIOKA**
*General Manager, Policy Research Department, Ocean Policy Research Foundation*
(Ship & Ocean Newsletter No.247 November 20, 2010)

**"Oceans Day at Nagoya", an event held in connection with COP10, shed new light on problems of marine biodiversity that have attracted little attention in the past.**
**Many challenges still remain in connection with conserving marine biodiversity, such as finding ways of promoting specific initiatives aimed at meeting global targets. To address these, a further strengthening of efforts by everyone involved is required as we approach Rio+20 and COP11 in two years' time.**

## Background to holding "Oceans Day"

This year, the 10th Conference of Parties to the UN Convention on Biological Diversity (COP10) was held in Nagoya, Japan. Since the agenda included issues such as setting new international targets, interest in biodiversity rose both in Japan and abroad. In particular, biodiversity in coral reefs, tidal flats, seaweed beds and other marine or coastal environments has not necessarily received enough attention in the past, in comparison to forests and other land-based biodiversity. Nevertheless, it is estimated that about half of the entire world population will be living in coastal areas by the year 2015. As such, conserving the biodiversity of oceans and coasts that bring so many benefits, such as providing food, preventing disasters and mitigating climate change by absorbing greenhouse gases, is expected to become an even more important challenge in future.

"Oceans Day at Nagoya" (Oceans Day) was held on October 23rd, during COP10. It was organized jointly by the Global Forum on Oceans, Coasts and Islands ("Global Forum"), the Secretariat of the Convention on Biological Diversity, the Global Environment Facility (GEF) and the Ocean Policy Research Foundation, with the cooperation of Japan's Cabinet Secretariat Headquarters for Ocean Policy and the Ministry of the Environment, as well as international organizations, foreign government bodies and NGOs, etc. The aim of the event was to raise the awareness of high-level policymakers on the need for efforts to conserve marine biodiversity [1].

The event was first planned when, at the "World Ocean Conference 2010" held in Paris in May this year, it became clear that the governments of relevant countries should be urged to further strengthen efforts aimed at conserving marine biodiversity. The Ocean Policy Research Foundation cooperated fully in holding the conference, as one of the co-organizers and a host country organization.

## A lively discussion on marine biodiversity

The event was held in the Shirotori Hall at the Nagoya Congress Center, the venue for COP10. In the Opening Ceremony from 9:00, the three co-chairs – Dr. Biliana Cicin-Sain (Co-Chair of the Global Forum), Hiroshi Terashima (Executive Director, Ocean Policy Research Foundation) and Ambassador Ronald Jumeau (Permanent Representative of Seychelles to the United Nations) – gave introductory speeches. In the Opening Address, Shoichi Kondo, Senior Vice-Minister for the Environment, expressed his wish that significant resolutions would be agreed at COP10, and that, in future, initiatives for the conservation and sustainable use of marine biodiversity would be promoted still further. Dr. Ahmed Djoghlaf, Executive Secretary of the Convention on Biological Diversity, then spared some time from his extremely busy schedule to outline the state of deliberations at COP10 and the outlook for the future.

Oceans Day at Nagoya was held during COP10 on October 23, 2010

After this, four sessions on specific themes were held in sequence throughout the day.

In Session 1, "Progress Made in Achieving Reduction of Biodiversity Loss and Establishing Networks of Marine Protected Areas", presentations were made on regional and national status as well as trends in marine biodiversity, initiatives in scientific surveys and research designed to ascertain these, the state of implementation of the "Jakarta Mandate" (an agreement on the conservation of marine and coastal biodiversity made by member states at COP2 in 1995) and others, followed by a panel discussion.

In Session 2, "Towards an Integrated, Ecosystem-Based

Approach to Marine Biodiversity Conservation in Areas Within and Beyond National Jurisdiction", presentations were made on opportunities and barriers in applying integrated ecosystem-based management approaches, the problem of identifying marine areas in need of protection beyond national jurisdictions, and ways of mobilizing public and community support, followed by a panel discussion.

In Session 3, "Moving Forward on Achieving Major International Goals for Biodiversity and Marine Protected Areas", presentations were given on ways of setting targets for conserving marine biodiversity (such as creating Marine Protected Areas), different countries' strategies for promoting policies, and others, followed by a panel discussion. At this session, Tsunao Watanabe, Deputy Director-General for Nature Conservation in Japan's Ministry of the Environment, introduced initiatives by the Japanese government, such as the aim to draw up a strategy for conservation of marine biodiversity by March next year. In particular, Mr. Watanabe announced new measures, including a two-fold increase in the ratio of marine park area in national parks and the preparation of an "Ocean-version Red List".

Amongst the speakers from various countries in each session, five researchers from Japan also gave presentations on the "Census of Marine Life", "biologging" as a new method of scientifically surveying marine life behavior patterns, etc., and initiatives involving participation by fishermen, local residents and NGOs, among others.

In Session 4, "Marine Biodiversity: Vision for the Future", a draft "Nagoya Oceans Statement" was introduced by the Secretariat as a co-chair declaration, and after exchanges of views with the participants, it was duly adopted.

## Nagoya Oceans Statement

The most significant outcome of this event was the adoption and announcement of the "Nagoya Oceans Statement". The Statement demands a further strengthening of efforts, inviting the high-level government representatives gathered at COP-10, in addition to stakeholders from all relevant sectors, to "rekindle the political will and commitment of resources to halt marine biodiversity loss, restore degraded marine habitats, and to establish global representative and resilient networks of marine and coastal protected areas, in the next decade, 2011-2020", and to "call for a new process of setting new marine and coastal biodiversity targets at the UN Conference on Sustainable Development 2012 (Rio+20) and at the CBD COP 11 in 2012 in order to move the marine biodiversity agenda forward" [1].

## The "Aichi Target" and beyond

This year's Oceans Day was attended by some 170 participants, including representatives of government bodies from various countries, international bodies and NGOs, researchers and media representatives. During the event, the Japanese Ministry of the Environment revealed new policies devised by Japan and promoted measures by the rest of the world, while Japanese researchers also presented initiatives unique to Japan such as the community-rooted "Satoumi" initiative and new methods of scientific survey in which we lead the world. I will be delighted if Oceans Day has contributed to conveying Japan's efforts on conservation of marine biodiversity to the world, and to encouraging solutions to problems both in Japan and abroad.

At COP10, conflicts between developed and developing nations continued to the very close of negotiations, and there was some doubt over reaching an agreement. In the end, however, it was possible to adopt the "Nagoya Protocol" on access to genetic resources and the sharing of benefits arising from their utilization, and the "Aichi Target" as a global objective from 2010 onwards. In the marine biodiversity sector, new numerical targets were set (for example, the ratio of Marine Protected Areas to oceans would be set at 10%, the speed of habitat loss would be halved, and so on). In future, however, the specific path to achieving these will need to be made clear. Meanwhile, on initiatives for conservation of marine biodiversity, as also mentioned in the Statement, discussion is to be continued within the larger policy framework of sustainable development at Rio+20 in 2012.

Many challenges still remain concerning the conservation of marine biodiversity, such as the specific content of initiatives aimed at meeting global targets, and, in particular, ways of pursuing the creation of Marine and Coastal Protected Areas. On the other hand, there is thought to be room for Japan, which possesses about 15% of the world's marine life species, and moreover, is undertaking pioneering and unique efforts in terms of both scientific surveys and local ecosystem management, to make a greater contribution to conserving the world's marine ecosystems. From the viewpoint of the Ocean Policy Research Foundation, I would like to make positive efforts such as providing information and forming networks between stakeholders, as well as continuing to pursue research on these problems. ■

1) On "Oceans Day at Nagoya" and the "Nagoya Oceans Statement", please see our website (http://www.sof.or.jp).

# The "Senkaku Incident" and National Strategy

[KEYWORDS] Senkaku Islands / China's ocean strategy / national strategy

**Masahiro AKIYAMA**
*Chairman, Ocean Policy Research Foundation*
(Ship & Ocean Newsletter No.250 January 5, 2011)

**The "Senkaku Islands problem" is a problem of Japan's national strategy, in the sense of how Japan should deal with China's ocean and foreign policy strategies. It is clear that Japan will not be able to deal with this problem merely by reacting to circumstances and giving leeway to China, as it has until now. Instead, Japan has to think not only how to defend the Senkaku Islands, but also how to deal with China's ocean and foreign strategies, and, by extension, China itself as a great power.**

## The Senkaku fishing boat collision incident

On September 7th, 2010, a Chinese fishing boat was illegally operating in Japanese waters near the Senkaku Islands when it intentionally collided with a patrol boat of the Japan Coast Guard that was patrolling the area. Coast Guard officials then arrested the boat's captain on charges of obstructing the performance of public duty. He was sent to the Ishigaki Branch of Naha District Public Prosecutor's Office to undergo investigation, and legal procedures were set in motion with a view to indictment. However, the Chinese government issued a strong demand for his release, and took a series of retaliatory measures against Japan as the length of the captain's detention increased. In the end, the Naha Public Prosecutor released the captain without charge on September 24th and sent him back to China. Chief Cabinet Secretary Sengoku issued a statement acknowledging the decision, and the affair was effectively handled with the government's involvement.

The Senkaku Islands are undoubtedly Japanese territory, but China and Taiwan also claim them as their own. In 1968, the United Nations Economic Commission for Asia and the Far East carried out an exploration for mineral resources on the continental shelf of the East China Sea near the Senkaku Islands, and published a report suggesting the existence of promising oil reserves. Soon after that, from 1970 onwards, China and Taiwan started to claim territorial rights over the Senkaku Islands. At the end of the 19th century, Japan conducted careful surveys of the Senkaku Islands, and after confirming that they were not controlled by China or any other nearby country, formally annexed the islands as Japanese territory in 1895, following a Cabinet decision. The San Francisco Peace Treaty, which defined Japan's territory after the war, states unequivocally that the islands are Japanese territory as part of the Ryukyu Island chain.

After the incident, video images of the collision filmed by the Japan Coast Guard were leaked in Japan, raising the issue of poor information management, while there has been harsh criticism over the political release of the arrested captain following demands from China. However, the profoundly serious nature of this problem and the resolve that Japan should now adopt are not well understood. The "Senkaku Islands problem" is a problem of how Japan should deal with China's ocean and foreign policy strategies.

## China's ocean policy

China calls almost the whole of the South China Sea the historical "Sea of China" and claims rights over it. After the war, it seized control of numerous islands and reefs there. In 1992, China enacted a "Law on Territorial Seas and Contiguous Waters", identifying most of the islands in the South China Sea, and even many in the East China Sea, including the Senkaku Islands, as Chinese territory. Then, in 2009, it enacted a "Seas and Islands Protection Act", claiming these uninhabited islands as state possessions, and even laid down provisions for protecting their environment, etc. Ocean-related legislation has also made rapid progress: in 1998, China passed a "Law on Economic Waters and the Continental Shelf", and in 2001, a "Law on Management and Use of Sea Areas". Through these, China has reinforced its attempts to secure its interests and control nearby oceans.

Here, we need to look at China's foreign policy or ocean strategy. In the 1980s, an "ocean strategy" was announced by naval commander Liu Huaqing, whereupon policy shifted from conventional coastal defense to the defense of coastal waters. Liu Huaqing added that, by coastal waters, he meant the Yellow Sea, East and South China Seas, the

Uotsurijima, Senkaku Islands (photographed by the author, 2007)

Spratly Islands, Taiwan, in and around Okinawa, and the North Pacific. In the 20th century, when China's naval power was inadequate, activities were restricted to coastal areas within the so-called "First Island Chain". In the 21st century, however, economic growth has led to a continuous expansion of defense expenditure, while naval power has improved vastly. As a result, China is now extending the range of its influence to the "Second Island Chain". Recently, the phrase "remote sea strategy" has come to be used in China; the so-called "denial of access" strategy is being pursued, and the USA is increasingly on its guard. In 2010, it is reported that an official of the Chinese government has asserted that the South China Sea is a "core benefit" for China, and the US further intensified its alarm over China's strategy of expansion. Trouble regularly flares up around Chinese fishing boats in the South China Sea, while China's fisheries patrol boats lurk in the area. China has also carried out sporadic obstructive actions against US navy survey ships, and strongly opposes US naval drills in open seas in these waters.

Between the 1980s and the 1990s, China's foreign policy was a quiet policy of expansion under the slogan "Hide one's capacities, bide one's time", but in this century, it is thought to have changed from this course to a harder line towards the outside world.

In this century, China has embarked on a reinforcement of its power in the oceans. It is trying to strengthen the combined power of its five armed organizations connected with the sea – navy, coastguard, marine surveillance, ocean patrols and fisheries administration; this takes the form of modernizing naval hardware and building larger vessels for fisheries administration, ocean patrols and marine surveillance. In 2003, China started reinforcing its "three warfares" (media warfare, psychological warfare, legal warfare). Through legal warfare, China asserts the legality of its own actions and the illegality of the other party. It seeks to change international rules if necessary and gain support at home and abroad by advertising its own righteousness and the other party's deviance.

## Japan's national strategy

Japan will not be able to deal with this problem merely by reacting to circumstances and giving leeway to China, as it has until now. Instead, Japan has to think not only how to defend the Senkaku Islands, but also how to deal with China's ocean and foreign strategies, and, by extension, China itself as a great power.

The need to defend the Senkaku Islands will be better understood if we look at the process whereby China has gained hegemony in the South China Sea over the last half-century. To put it simply, it involves sending large fleets of fishing boats, causing minor skirmishes, starting patrols by the fishery administration, then surveys by public vessels, dispatching the navy, occupying islands or reefs, and finally building strongholds. It has exchanged hostile fire with Vietnam on two occasions.

China's involvement in the Senkaku Islands started with the incursion of fishing boats from the 1970s, followed by minor skirmishes in recent years, activity by the fishery administration, incursion into territorial waters by public vessels (2008), and finally the latest incident. Although we cannot rule out military exchanges in future, we need to reinforce the capabilities of the Japan Coast Guard and improve its preparedness so that it can deal with a variety of situations. To ensure effective control of our territory, we should include the island territories in that control. Meanwhile, the media and legal warfare currently being pursued by China should provide a good model for Japan; actively issuing statements to the international community or even the Chinese people will be effective. While China's hardline strategy may have paid off in the latest incident, it has not only received severe criticism from the international community, but also criticism within China itself, in that this was the biggest diplomatic blunder since the end of the Cold War.

Against China's ocean strategy, we need to fully assert freedom of navigation and the freedom to use the ocean, and join forces with the USA in restraining China. To this end, we will augment the Marine Self-Defense Forces and strengthen the alliance with America. Furthermore, in our response to the might of China, it will be important to draw China, currently awash in mercantilist behavior, into the fold of the contemporary international order. I think Japan's basic stance towards China should be one not of indulging China but of clearly expressing opinions.

At the same time, we must also strive to foster trust between Japan and China, and in particular improve confidence building between Japan-USA and China, as strongly sought by Asia; we need to pursue the positive development of bilateral or trilateral relations between our countries. This is because problems will never be solved by antagonism or hostility.

I think Japan must adopt this kind of resolve regarding the Senkaku Islands. ■