

Basic Plan on Ocean Policy

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General Remarks

1 Vision of Japan as an Oceanic State

(1) The Basic Act on Ocean Policy (Act No. 33 of 2007) states that, since Japan is surrounded by the sea, “the development and use of the oceans are the basis of existence for the economy and society of our State, and ... securing the marine biological diversity and conserving other better marine environment are the basis of the existence of mankind.”

Japan has traditionally developed the foundations of its society and economy through fisheries, shipping, shipbuilding and other industries. At the same time, our country has strived to prepare for threats from the sea such as tsunamis and storm surges. Japan has been taking initiatives to create and use new value provided by the sea, such as marine energy and mineral resources, marine renewable energy, deep-sea living resources and marine leisure activities. Our country has also been addressing issues such as conservation of marine biodiversity, global warming and ocean acidification, in consideration of the sea as an indispensable factor for maintaining the lives of living creatures, including humankind, and from the viewpoint of protecting the global environment.

In recent years, in the Asia-Pacific region, the establishment of the order of the sea based on laws under international cooperation with related countries is needed. Expectations for active development and use of the sea have reached new highs given the changes in social circumstances surrounding the sea, such as the revision of energy strategy in response to the Great East Japan Earthquake and mounting expectations for the development of marine energy and mineral resources, and from the viewpoint of promoting our country’s growth strategy. The sea is also a frontier with unlimited potential, so there have been expectations for challenges for new discoveries and understanding, such as those of biospheres existing in the deep sea floor and under the seabed.

(2) The Basic Act on Ocean Policy also states that it is important to aim to “realize a new oceanic State in harmonization of the peaceful and positive development and use of the oceans with the conservation of the marine environment, under the international cooperation based on the United Nations Convention on the Law of the Sea and other international agreements.”

In light of this, the government has decided to set the following as its basic stance and approach to be adopted to the development of the new Basic Plan on Ocean Policy (the “Plan”).

(International cooperation and contribution to international community)

The government should strengthen international ties at various levels with Asia-Pacific and other countries that are related to our country via the sea. The government should also observe relevant international law and regulations, such as the Charter of the United Nations and UNCLOS, and aim to establish the international order of the sea based on the rule of law. Japan should substantially contribute to global development and world peace by taking leading role within the international society to share the principles that we should aim to establish such order of the sea.

(Wealth and prosperity through ocean development and utilization of the sea)

The government should aim to elicit the potential of the sea to the maximum extent in order to bring wealth and prosperity to our country. It will contribute greatly in creating wealth for our country, through its future growth, to promote marine resources development, such as fishery resources and marine energy and mineral resources, in the marine zones surrounding our country, and aim for promotion, creation and international expansion of marine industries including fishery industries and resources-related industries related to the above marine resources, while seeking to harmonize the development and use of the oceans with conservation of the marine environment.

(From a country protected by the sea to a country that protects the sea)

The government should aim to secure safe, efficient and stable maritime transport routes in the sea, which provides for trade routes, and to thoroughly prepare for marine-derived natural disasters to make Japan a disaster-resistant country. The government should defend our territorial seas and the Exclusive Economic Zone (EEZ) and other maritime zones and positively work to maintain the ocean as part of the global commons for which rule of law persists. Through these measures, the government should protect life, body and property of the people and contribute greatly to maintaining or developing the lives of the citizenry and economic activities.

(Venturing into the unexplored frontier)

By maximizing use of Japan's science and technologies, the government should implement research, etc. on unknown domains of the sea, including the deep seabed, to contribute to creation of intellectual assets of humankind and endeavor to resolve global issues such as changes in the ocean environment and climate change. Through these efforts, the government should aim to lead and contribute to the world with ocean policy.

2 Significance of Establishing the Basic Plan on Ocean Policy

While measures with regard to the oceans include diverse individual measures in a wide range of fields, all such measures are related to the sea as a place that is common to them. Therefore, it is necessary to coordinate among those individual measures in promoting the ocean measures. In addition, many of those measures need to be coordinated comprehensively by the entire government as they are promoted. Under such circumstances, the Basic Act on Ocean Policy was put into force in July 2007 for the purpose of comprehensively and systematically promoting ocean measures. Based on this law, the Basic Plan on Ocean Policy was approved in a Cabinet meeting in March 2008.

Since then, the government has implemented required measures under the above Plan. However, five years after the Plan was established, it is deemed appropriate to move the efforts to be an oceanic state into a new phase while also considering changes in circumstances surrounding the sea that took place during the five years. It was therefore decided that the Plan should be established based on the

projection for the period of about five years from FY2013. Following the Basic Plan on Ocean Policy established in March 2008, the Plan offers specifics of ocean measures that our country should implement so that related parties will further collaborate and cooperate as they work on the ocean measures and make Japan a new type of oceanic state. After the Plan is established, measures will be taken to allow people to easily and simply obtain information about the Plan and related measures. For example, a measure will be taken to allow people to easily refer to specific measures from the Plan.

In Chapter 1 of the Plan, current conditions and issues are sorted out before measures to be intensively promoted in the coming roughly five years are stipulated in consideration of changes in social circumstances and other factors. The basic policy of the measures to be implemented in the coming years will also be stipulated in Chapter 1. For example, the direction of each of the seven measures in line with the basic principles stipulated in the Basic Act on Ocean Policy will be stipulated, with medium- and long-term perspectives occasionally taken.

In Chapter 2, based on the basic policy shown in Chapter 1, specific ocean measures that need to be comprehensively and systematically promoted in the coming five years, including measures to be taken in a focused manner and to be taken under close cooperation among related agencies, are stipulated for each of the twelve basic measures set forth in the Basic Act on Ocean Policy.

In Chapter 3, matters necessary for comprehensively and systematically promoting ocean measures, such as review of the Headquarters for Ocean Policy, roles to be assumed by local governments and the private sector, and active publication of information, are stipulated.

Chapter 1 Basic Policy of Measures with Regard to the Oceans

1 Current Conditions and Issues of Measures with Regard to the Oceans

(1) Implementation status of the Basic Plan on Ocean Policy

a. Key measures implemented thus far

In July 2007, the Basic Act on Ocean Policy was put into effect and the Councilors' Meeting was established in the Headquarters for Ocean Policy in accordance with the Order on the Headquarters for Ocean Policy (Cabinet Order No. 202 of 2007). In the same month, the first meeting of the Headquarters for Ocean Policy was held and the meeting decided to establish the Executive Board.

In March 2008, the Basic Plan on Ocean Policy was established, and since then ocean measures have been implemented steadily based on the said Plan at each ministry. The following measures, for which efforts by the entire government were deemed necessary, have been promoted under the general coordination of the Headquarters for Ocean Policy.

- In FY2008, Japan submitted information on the extension of its continental shelf to the Commission on the Limits of the Continental Shelf in November. In March 2009, the Plan for the Development of Marine Energy and Mineral Resources was approved at a meeting of the Headquarters for Ocean Policy.
- In FY2009, Punishment of and Measures against Acts Piracy (the Anti-piracy Act) was established in June (Act No. 55 of 2009). In December, the Basic Policy concerning Preservation and Management of Islands for Management of the Sea was established. In March 2010, the Marine-related information Clearing House was commenced.
- In FY2010, Law on the Development of Base Facilities and Preservation of the Low-Tide Line for the Promotion of Use and Conservation of the EEZ and Continental Shelf (Low-Tide Line Preservation Act) (Act No. 41 of 2010) was established in May. In July, the Basic Low-water Line Protection Plan was established based on the law. In March 2011, the Future Policy on Exploration of Minerals and Scientific Surveys in the EEZ, etc. of Japan, which is aimed at appropriately exercising sovereign rights concerning exploration of minerals and scientific surveys in the EEZ, etc. of Japan, was approved at a meeting of the Headquarters for Ocean Policy.
- In FY2011, How to Establish Marine Protected Areas in Japan, in which our country's stance to marine protected areas is summarized, was approved at a meeting of the Headquarters for Ocean Policy in May. The Act on Partial Revision, Etc. of the Mining Act (Act No. 84 of 2011), which includes revisions such as introduction of a license system for exploration of minerals, was established in July and put into effect in January 2012.
- In FY2012, the Commission on the Limits of the Continental Shelf (CLCS) agreed in April to extensions of the continental shelf in six of the seven sea regions concerning which Japan had requested such extensions. In May, the Future Policy on Promotion of Use of Marine Renewable Energy was determined at a meeting of the Headquarters for Ocean Policy.

b. Main future tasks

Ocean measures have been implemented at a nearly steady rate in accordance with the Basic Plan on Ocean Policy. In the next phase toward being an oceanic state, it will be important to enhance, strengthen, and intensify individual measures and improve their efficiency. It is also necessary to examine and improve activities for measures that have not necessarily been implemented adequately.

Based on these ideas, in the Plan, the Measures to be Promoted Intensively under the Plan will be clarified in consideration of the changes in social circumstances surrounding the sea, and other factors, and the Direction of the Measures under the Plan will be stipulated in accordance with the basic principle, etc. prescribed in the Basic Act on Ocean Policy.

(2) Changes in social circumstances surrounding the sea

a. Review of Energy Strategy and Disaster-Prevention Countermeasures after the Great East Japan Earthquake

As a result of the accident at the Fukushima Daiichi Nuclear Power Station following the Great East Japan Earthquake, Japan has been urged to revise its energy policies. The government has decided to conduct deliberations toward developing responsible energy policies including viewpoints of stable energy supply and energy cost reduction. Above all, marine renewable energy is expected to have potential. For example, with regard to offshore wind power, one estimate shows that it is theoretically possible to install power generation facilities with a total capacity of approximately 1,500 GW in our territorial seas and the EEZ if profitability is not taken into account.

The Great East Japan Earthquake caused a giant tsunami that far exceeded what had been expected in Japan, resulting in devastating damage. Currently, our country is making every possible effort for the reconstruction and strengthening disaster-prevention counter measures, including tsunamis.

b. Mounting expectations for development and use of the sea

To promote development of marine energy and mineral resources, Japan has taken measures such as establishment of the Plan for the Development of Marine Energy and Mineral Resources and revision of the Mining Act. However, importance has been growing in recent years to ensure stable supply of petroleum, natural gas, rare metals and other energy and mineral resources, given factors such as the rare metal supply to Japan that became unstable, shutdown of many nuclear power plants, and increase of demand for natural gas, whose price is high. On the other hand, in the sea zones surrounding Japan, research on development of resources such as methane hydrate and polymetallic sulphides, as well as petroleum and natural gas, continues and seabed sediments which contain rare earth elements have been discovered. From the viewpoint of promoting such innovations that will provide Japan with new possibilities, future progress of resource development is expected. The global market of marine resources development has been growing rapidly due to growing demand for energy mainly in emerging countries. Japan's marine industries are expected to achieve growth by taking advantage of the demand.

c. Changes in international circumstances surrounding conservation of marine interests

In recent years, claims and activities by neighboring countries over maritime security and marine interests have intensified in the sea zones surrounding Japan. Moreover, there have also been cases of illegal operations by foreign fishing boats, and of marine surveys by foreign vessels in Japan's territorial seas and the EEZ which were conducted without Japan's consent. In addition, pirate attacks continue off the coast of Somalia and in the Gulf of Aden, making it necessary to promote measures from the viewpoint of maintenance of the order of the sea and securing safety of sea lanes.

d. Other changes in social circumstances, etc.

Given changes in the Arctic Ocean caused by climate change, including the decline of sea ice extent, global concern has been mounting over the impact of such changes on the global climate system and potential for use of Arctic Sea Route. In Japan, there have been expectations for promotion of research and survey activities with regard to the Arctic and reform in maritime transport by reduction of transportation costs. Other trends are observed as well such as changes in the ocean environment attributed in part to global warming and ocean acidification, rapid shift of Japanese consumers from fish amid growing demand for fishery products in the rest of the world, and increase and changes in the distribution of goods via the oceans associated with the remarkable economic development of East Asian countries.

2 Measures to be Intensively Promoted Under the Plan

Given the implementation status of measures, changes in social circumstances, and other factors, the following measures will be intensively promoted in the coming five-year period.

(1) Promotion and creation of marine industries

Revival of the Japanese economy and creation of wealth through growth of our country are urgent policy issues. Under such circumstances, promotion of development and use of the sea and of innovations in fields related to the sea, and promotion and creation of marine industries, are expected to be the key for Japan's growth strategies since the sea has unlimited potential including resources, and marine resources development is about to become reality as a result of past measures, etc.

From this viewpoint, to promote the development of marine energy and mineral resources and use of marine renewable energy, the government should take measures including joint efforts of the public and private sectors to improve frameworks for such developments, with its eye on industrialization and participation in various overseas projects, in consideration of the progress that has been made thus far. Efforts should also be made to promote strategic measures in maritime transport, shipbuilding, fisheries and other fields and measures for increasing the international competitiveness of Japan's marine industries. With regard to the shipbuilding industry, it should be kept in mind that the industry is also important from the standpoint of maintaining a foundation for building ships. Efforts such as implement technological development, human training resources and strengthening of collaboration between the governmental and private sectors should be made to build a foundation for supporting

marine industries.

To promote creation of new marine industries that will be responsible for developing, using and preserving the sea, under coordination between the industrial, academic and governmental sectors, the government should deliberate on establishment of a comprehensive strategies including policy support measures in accordance with the state of industry and development of an environment for creating businesses, improvement of international competitiveness, and human training resources measures.

(2) Securing safety and security on the oceans

International circumstances surrounding marine interests have been changing greatly. Given this, it has become important to further enhance measures for ensuring safety and security on the oceans. Measures should therefore be taken to strengthen the systems, improve the abilities of the Maritime Self-Defense Forces and the Japan Coast Guard, and heighten coordination among related ministries in order to ensure safety of our country's territorial seas and the EEZ. Measures should also be promoted for protecting, managing and promoting islands near national borders and establishing the international order of the sea based on the rule of law.

(3) Promotion of marine surveys and integration and disclosure of marine-related information

For steady and smooth implementation of ocean policy such as the development and use of marine resources, comprehensive management of the sea, and preservation of marine interests, it is essential to collect necessary marine-related information and build an infrastructure for sharing such information. Marine surveys including continuous oceanographic observations should therefore be carried out strategically, and the surveyed information as well as the marine-related information derived by satellites should be compiled to enrich the contents of comprehensive information. Comprehensive collection and integrate of marine-related information independently controlled by governmental agencies should be promoted and such information should be disclosed appropriately to increase the convenience for users to access and handle such information.

(4) Developing human resources and improving technological ability

As a prerequisite to being an oceanic state, it is important to develop human resources related to the sea and improve relevant technological abilities. Measures should therefore be taken to improve marine-related education at elementary schools, junior high schools and high schools. Efforts should also be made to develop diverse human resources who will support efforts to realize an oceanic state and improve basic technologies, in ways such as by promoting interdisciplinary and specialized education at universities and other institutions, strengthening basic and advanced research and development, and promoting industry-academia-government collaborations.

(5) Comprehensive management of sea areas and formulation of plans

As bases of economic and social activities, coastal regions of Japan are congested with multiple users. Such areas also face diverse issues in areas such as environmental conservation. Therefore,

measures should be promoted to manage land areas and sea areas in an integrated, comprehensive manner from the standpoint of, for instance, revitalizing the coastal regions, preserving and reclaiming the marine environment, taking countermeasures against natural disasters, and improving convenience for local residents. With regard to the EEZ and continental shelf, promotion of their development and use is expected to promote and create marine industries. Measures should therefore be promoted to ensure appropriate management of sea areas, including coordination of use of such areas.

(6) Other important measures to be promoted intensively

a. Disaster control and environmental measures after the Great East Japan Earthquake

Disaster control and environmental measures with regard to the sea should be strengthened based on the experience of the Great East Japan Earthquake. Efforts should also be made to, for instance, appropriately handle the large amount of drifting matters generated as a result of the Great East Japan Earthquake and to monitor harmful substances and radioactive substances in the ocean.

b. Measures responding to changes in the Arctic Ocean caused by climate change

Given the changes in the Arctic Ocean caused by climate change, Japan has been facing diverse issues to study and address, such as securing maritime transport, securing the safety navigation, promotion of research and survey activities, conservation of environment, and promotion of international coordination and cooperation. Comprehensive and strategic measures should therefore be promoted to tackle these issues.

3 Direction of the Measures Under the Plan

(1) Harmonization of development and use of the oceans with conservation of the marine environment

The development of marine energy and mineral resources should be deemed to have moved to the phase of intensified research and development for commercialization while continuing surveys and studies, (1) technological development and broad-based scientific surveys and resource exploration for identifying the resource potential of marine zones surrounding Japan should be successively implemented and (2) intensive technological development for production should be implemented. Deliberations on environmental impact assessment methods for the development should also be continued and promoted. Concerning Action bases for the development and other purposes, construction will also be promoted in areas including remote islands, specifically Minami-Tori Shima Island and Okino-Tori Shima Island, and marine surveys, economic activities and other activities made by using such bases should be discussed. Information related to resources should be controlled rigidly as necessary while consideration should be given to balance with the principle of publication of scientific information.

With regard to promotion of use of marine renewable energy, related parties in various fields, with the Headquarters for Ocean Policy as its core, should collaborate and cooperate with each other in

advancing measures for speeding up technological development for practical application and promoting their commercialization, based on the Future Policy on Promotion of Use of Marine Renewable Energy determined by the Headquarters for Ocean Policy in May 2012. Above all, in sea areas with administrators already clarified, such as port areas, a coordination system should be developed and promoted as a pioneering attempt. Purchase prices of marine renewable energy should be discussed and determined in consideration of the burdens on the general public at the stage where commercialization is certain and where it is possible to review the costs. Measures for improving social acceptability should also be promoted based on local area coordination and coordination with fisheries. With regard to use of sea areas without administrators, including the sea surface, efforts to develop the environment such as studies of frameworks for cooperation and coordination, including development of laws, should be made and bases including necessary infrastructure should be established. As the next step of the Policy, measures for strategically promoting large-scale introduction of offshore wind turbines and creation of related industries, etc. should be discussed, with determination of goals of the introduction and time schedules taken into account.

Concerning development and use of marine resources, fishery resource management in the EEZ of Japan and international fishery resource management should be promoted to ensure sustainable use of fishery resources. At the same time, research and development for sustainable use of the resources and relevant measures should be discussed and promoted to establish sustainable aquaculture industries with less environmental impact. Thus, measures should be promoted in accordance with the Basic Fisheries Plan, etc.

The sea has significant connection with the global environment, and it is important to promote measures for conserving the marine environment by seeking international cooperation. Measures for conserving marine biodiversity should be steadily promoted in accordance with the Marine Biodiversity Conservation Strategy and the National Biodiversity Strategy. As countermeasures against environmental problems on the global scale, such as climate change and ocean acidification, surveys and research should also be promoted in ways that will allow Japan to take the leading position in the world. At the same time, long-term monitoring should continue to be undertaken.

To ensure harmonization of the development and use of the oceans with conservation of the marine environment, the government should make efforts to establish environmentally friendly development technologies by dispelling the idea that development or use of the sea and environmental conservation are contradictory and incompatible. Measures for appropriate resource management should also be studied specifically and promoted.

Drifting marine debris generated as a result of the Great East Japan Earthquake has washed ashore in countries including the United States, and it is pointed out that still more such marine debris may follow. The Government of Japan should therefore make concerted efforts to address this issue by comprehending the current situation and predicting drift patterns while sharing information with relevant countries.

(2) Securing safety and security on the oceans

To secure safety of sea zones surrounding Japan, sea lanes and remote islands, the government should strengthen cooperative relationships with related countries and coordination among related

ministries, and promote measures including strengthening of necessary systems.

Measures for maintaining and strengthening the ocean as part of the global commons should also be promoted.

The government should make every possible effort to maintain security and guard our territorial seas and should promote measures for strengthening the maritime security structure and marine accident prevention measures in order to secure maritime transport safety and ensure accurate maritime search and rescue.

For addressing the problem of pirates, the government should continue to implement measures off the coast of Somalia and in the Gulf of Aden and Southeast Asia by cooperating with related countries and other parties. Above all, measures to protect ships related to Japan from pirates off the coast of Somalia should be promoted.

The government should take countermeasures against marine-derived natural disasters comprehensively and in a planned manner by following the current basic disaster prevention plan, to which measures against tsunami disasters have been added. Above all, with regard to these measures, the government should study the largest earthquakes and tsunamis in consideration of every possibility based on geological records and other information and assume: (1) the largest tsunamis, whose frequency of occurrence is extremely low but would cause devastating damage once they occur, and (2) tsunamis whose frequency of occurrence is higher than that of the largest tsunamis and would cause great damage despite lower height. Based on this, as measures against the largest tsunamis, the government should create communities with multiple forms of protection, in which tangible and intangible measures are flexibly combined, by giving top priority to protecting the lives of residents, etc. For certain levels of tsunamis whose frequency of occurrence is relatively high, the government should promote development of coastal protection facilities, etc. from the standpoint of protecting people's lives and property, stabilizing the local economy and securing efficient production bases.

The government should also promote measures against earthquakes and tsunamis based on the assumption that earthquakes can occur anywhere in Japan, with examples including subduction-zone earthquakes in the Nankai Trough and earthquakes occurring directly beneath the Tokyo Metropolitan Area.

As adaptation measures for global warming, the government should take measures against storm charges in consideration of sea-level rise caused by global warming and other disasters.

(3) Improvement of Scientific Knowledge of the Oceans

With regard to research and development of marine science and technology, in consideration of the Science and Technology Basic Plan and deliberations of the Subdivision on Ocean Development of the Council for Science and Technology, the government should intensively promote research and development for the five policy needs: (1) projection of and adaptation to global warming and climate change, (2) development of marine energy and mineral resources, (3) conservation of marine ecosystems and sustainable use of living resources, (4) development of marine renewable energy and (5) response to natural disasters.

The government should also promote basic research related to the sea and research and development that should be carried out from medium- and long-term perspectives. At the same time, the

government should promote research and development of world-leading fundamental technologies, such as those related to the basis of the nation's existence and those necessary for comprehensively understanding the vast marine space.

Japan should promote systematic development of ships, shared use of ships by research institutes, universities, etc., and technological development, etc. for improving the efficiency of surveys, such as compact, high-performance unmanned probes. Increased use of satellite information for promoting ocean policy should be considered in light of the future development of satellite infrastructure in Japan and overseas, through coordination with space policy. Observations, surveys and research of the Arctic, Antarctic and other areas are important for assessing the impacts on climate change and future projections on the global scale and in Japan and areas around it. Above all, observations, surveys and research of the Arctic will lead to assessment of the potential for future use of Arctic Sea Route, so the government should continue and promote such activities.

Marine surveys and monitoring that will be the foundation of marine policy including use of marine resources, conservation of the marine environment, conservation of marine interests and measures against global issues such as climate change, should be strategically promoted by combining observations via survey vessels, satellites, research buoys and general vessels, observations on land, etc.

With regard to integration and disclosure of marine-related information, the government should take measures including improvement and strengthening of the Marine-related information Clearing House and the Marine Cadastre and development of systems for analyzing and visualizing data in order to further increase use of marine-related information. Common rules on collection, management and publication of marine-related information should be also established to widely promote use of marine-related information.

(4) Sound development of marine industries

To secure maritime transport, the government should work comprehensively on shipbuilding, development of ports, development of maritime transport routes and securing and raising of seafarers. Above all, with regard to shipping, the government should promote strategic efforts in the international shipping industry based on global environmental changes and successive measures for equating the conditions for international competition, and at the same time develop an orderly competitive environment through international negotiations by being mindful that the industry would actively make social contributions for Japan's economic strategies and economic security. The government should also strengthen the competitiveness and management base of Japan's shipping industry by securing a maritime transport system that contributes to a low-carbon, recycling-oriented society. At the same time, the government should strengthen the competitiveness of Japan's shipbuilding industry by promoting technological development for ships with high environmental-related performance and taking other measures for improving the ability to win orders and by promoting its expansion to new markets and businesses, as well as promoting reorganization of the industry. Measures aimed at future use of Arctic Sea Route should also be accelerated.

With regard to promotion of the fisheries industry, the government should promote measures in accordance with the Basic Fisheries Plan. For example, the government should popularize

fish-consuming habits by providing consumers with relevant information and promote stabilization of fishery management, while managing resources appropriately, to speed up efforts to improve the management culture for fostering management entities with international competitiveness.

From the standpoint of creating new marine industries, the government should promote commercialization of power generation businesses related to use of marine renewable energy and creation of industries related to the development of marine energy and mineral resources and marine structures and plants, which are expected to expand globally. Also, research and technological development aimed at industrialization should also be promoted with regard to, for example, industries that use marine-related information and marine biomasses that have not been utilized yet and/or have unique functions. For further developing Japan's marine industries and contributing to our country's economic revival it is also important to enter the global markets of marine renewable energy, marine energy and mineral resource industries, etc. in order to take advantage of growing demand for marine development in the world. From the standpoint of increasing market shares around the world, policy support and environmental development aimed at allowing Japanese companies to participate in overseas ocean development projects should be promoted through joint efforts of the public and private sectors to increase the international competitiveness of Japan's marine industries.

Measures for marine tourism, etc. should be promoted for speeding up the promotion and development of tourism that uses the sea as tourist resources and a recreation area, such as cruising and marine leisure activities.

In the areas on the Pacific coast of the Tohoku district that were severely damaged by the giant tsunami triggered by the Great East Japan Earthquake, the government should steadily implement measures aimed at reviving marine industries.

(5) Comprehensive management of the sea

According to the relevant international laws, the rights of the coastal states differ among each maritime zone such as the territorial sea, the EEZ, and the continental shelf. The Government should examine an appropriate management framework for these maritime zones, which includes the establishment of relevant laws and regulations if needed, in full reference to the coastal-states' rights as defined differently in each maritime zone. The Government should also consider building a coordination mechanism for efficient and effective utilization by all stakeholders in each maritime zone.

Concerning the continental shelf beyond 200 nautical miles, Japan received recommendations of the Commission on the Limits of the Continental Shelf in April 2012. Based on the contents of the recommendations, Japan should appropriately promote measures for establishing the limits of its continental shelf, including by continuing to strive to the end that the Commission will make recommendations as soon as possible on the region for which the issuance of the recommendation was deterred.

With regard to the comprehensive management of coastal zones, the national government, local governments and other parties should address each issue in coordination with each other and promote integrated management of land areas and sea areas, while remaining mindful that sea areas are used in accordance with their individual characteristics.

With regard to stable preservation, management, etc. of remote islands, the government should intensively promote measures that justify the outer limits of Japan's territorial seas and the EEZ, in accordance with the Basic Policy concerning Preservation and Management of Remote Islands for Management of the Sea, which clarifies the position of the preservation, management, etc. of remote islands in promoting the government's ocean policy. At the same time, the government should strive to preserve the low-water line and its surroundings based on the Basic Low-water Line Preservation Plan. The government should also develop activity bases with transport and supply functions on the remote Minami-Tori Shima Island and Okino-Tori Shima Island.

The government should facilitate self-sustaining development of remote islands, stabilize residents' lives and improve welfare. At the same time, measures should be taken to promote exchanges among communities and prevent increase of uninhabited remote islands and significant decrease of population on remote islands. To enable those remote islands to play a significant role in the government's ocean policy, the government should also comprehensively and successively promote the remote islands by, for example, developing industries, infrastructure, etc. that are at lower levels compared with other regions and by implementing intangible policies concerning health care, transportation and communications, industries, living environment, education and culture, tourism exchanges and other aspects.

(6) International partnership with regard to the oceans

In order to secure use of the oceans, development and use marine resources, etc., and conservation of the marine environment, Japan should contribute to international rule-making and creation of international consensus-building through the multilateral and bilateral consultations of ocean policies.

With regard to ocean-related disputes in particular, settlement should be sought accordance with international rules based on international law, and active use of third-party bodies such as international judicial bodies from the standpoint of formation and development of the order of the sea. Japan should be valued promote this idea to be shared by other countries, and positively support the activities of international judicial bodies in the ocean-related fields.

In order to ensure safety and security on the sea, Japan should promote international cooperation and coordination holding including of joint exercises and provision of support for capacity-building to related countries.

In area of the science and technology, Japan should promote successive and advanced research on the vast oceans under international cooperation and coordination to tackle a variety of issues such as understanding global environmental changes and clarifying the reality of frontier domains under the seabed. At the same time, Japan should promote international cooperation by taking advantage of the lessons it learned from the Great East Japan Earthquake concerning countermeasures against disasters, including tsunamis.

Through these diverse measures in the sea, Japan should contribute to the stability and prosperity of international society.

(7) Improvement of marine-related education and heightening of understanding of the oceans

The government should improve marine-related education provided at schools for elementary, secondary and higher education, and discuss measures for linking them systematically. From the standpoint of supporting marine-related education, the government should also promote organic coordination among outreach efforts, etc. undertaken by related agencies, universities, private companies and other entities.

Concerning development of human resources, the government should foster people who will be responsible for marine industries and marine-related education and discuss measures for increasing the number of such people in the future from medium- and long-term perspectives. Measures should also be taken to develop human resources with specialized knowledge in particular fields and those who have wide-ranging knowledge related to the sea. Human resource development that takes advantage of the characteristics of respective regions should also be promoted through creation of a network for industry-academia-government collaboration in each region.

From the standpoint of heightening citizens' understanding of the sea, the government should strive to familiarize citizens with the sea by increasing opportunities for them to enjoy it, such as events and marine tours that can attract wider participation, and discuss transmission of information via mass media and the Internet and in collaboration with aquariums, museums and other entities. Exchange of information between the government and citizens, including reflection of citizens' opinions about the sea in government policy, should also be promoted. The government should also continue to promote educational activities on safety measures for marine leisure and other activities and on conservation of the marine environment. At the same time, the government should conduct surveys of underwater archaeological sites, which will provide opportunities to know the history and culture of Japan related to the sea, and discuss how to preserve and utilize such sites.

Chapter 2 Measures the Government Should Take Comprehensively and Systematically with Regard to the Sea

1 Promotion of development and use of marine resources

(1) Promotion of development of marine energy and mineral resources

a. Acceleration of survey of marine energy and mineral resources

- To gain an understanding of the total amount and abundance of marine energy and mineral resources in Japan's vast jurisdictional marine zones, speed up the marine resources survey, under collaboration with related government ministries and agencies, receiving cooperation from private companies, through the use of "Chikyu", a deep-sea drilling vessel that has been mainly conducting scientific drilling, in addition to "Hakurei", a marine resources survey vessel, "Shigen", a three-dimensional geophysical survey vessel, the new research vessel that will be built to survey a wide area of the sea floor, and other vessels.

b. Development of common bases, etc.

- With respect to the revision of the Plan for the Development of Marine Energy and Mineral Resources, take necessary measures taking into account the situation of progress so far under the collaboration of related government ministries and agencies.
- To collect data and other materials through the wide-area scientific survey that will be a basis for projecting the potential area of ore deposits of energy and mineral resources, strengthen the abilities of the survey and the research of marine resources mainly by speeding up research and development of new exploration methods, in addition to developing and improving the platforms, such as research vessels that survey a wide area of the sea floor, manned research submersible, Autonomous Underwater Vehicles (AUV) and Remotely Operated Vehicles (ROV), and wide-area survey systems that use leading-edge sensor technologies.
- To promote commercialization of resource development and strengthen global competitiveness, under the collaboration of related government ministries and agencies, consolidate results of surveys, exploration, research and development, and initiatives related to marine energy and mineral resources, and rally together leading-edge technologies in other fields that Japan possesses to be used for resource development.
- Develop bases which enable transportation, supply and other activities on remote isolated islands (Minami-Tori Shima Island and Okino-Tori Shima Island) so that activities such as development and utilization of marine resources and survey can be conducted on remote islands. Also, conduct examinations on how to effectively use the bases by taking into account transportation methods of marine resources in the future.
- While the government should take an integrated approach to countries that supply resources, secure resources more strategically through maximum use of resources of the public and private

sectors by creating cooperation packages for countries with resources, strengthening functions to supply funds to gain interests in resources, and taking other initiatives.

c. Petroleum and natural gas

- Flexibly implement primary geophysical exploration (6,000 km²/year) by using “Shigen”, a three-dimensional geophysical survey vessel, and exploratory drilling in the marine zones with higher possibility of abundance of petroleum and natural gas, in less explored surrounding marine zones of Japan.
- Promote exploration activities by transferring results and other findings from primary geophysical exploration by the Shigen, and exploratory drilling to be conducted in the marine zone southwest off Sado, Niigata Prefecture in FY2013, to private companies.

d. Methane hydrate

- Build technologies toward achieving commercialization targeting at around FY2018 in order to enable use of methane hydrate, of which a considerable amount is foreseen as deposited in Japan’s surrounding marine zones, as future energy resources, based on results of offshore production test and other data. In doing so, develop technologies that ensure start of a commercialization project led by private sectors in around FY2023-2027, taking the international situation into account.
- Conduct the necessary broad-based distributional exploration and other research over approximately three years from FY2013 in order to gain an understanding of the amount of reserves of shallow methane hydrate, whose existence has been confirmed mainly in areas in the Sea of Japan.

e. Polymetallic sulphide

- Taking the international situation into account, promote assessment of the amount of reserves of known mineral deposits, promote discovery of new mineral deposits and comprehension of the approximate amount of reserves, development of equipment technologies and environmental impact assessment methods related to mining and lifting, including actual offshore tests, expecting projects aiming at commercialization to be initiated with the participation of private companies in or after FY2023-2027. At the same time, promote commercialization by private companies of results of the development of these technologies and methods under cooperation between the public and private sectors.

f. Cobalt-rich ferromanganese crusts, polymetallic nodules and rare earth

- In accordance with the Regulations on exploration issued by the International Seabed Authority, implement examinations and research on the exploration of the amount of reserves and production-related technologies of cobalt-rich ferromanganese crusts and polymetallic nodules. In particular, take measures on cobalt-rich ferromanganese crusts by establishing specific development plans based on results of initiatives taken on polymetallic sulphides and other factors.
- Implement the basic scientific survey and research on submarine deposits that contain rare earth to

examine their future potential as rare earth resources. In addition, over approximately three years from FY2013, implement a survey to measure the approximate amount and the abundance of rare earth assumed to be deposited under the seabed. Moreover, in light of its high viscosity and position in the abyssal environment, implement surveys and research on a wide range of technology fields by taking future development and production into consideration.

(2) Promotion of the use of marine renewable energy

a. Acceleration of technological development to commercialize marine renewable energy

- To lower costs for developing electric-power-generation technologies that use marine renewable energy, secure the safety of such technologies, encourage participation of the private sector, strengthen the international competitiveness of marine industries, and revitalize local economies by building up related industries, take measures to set up demonstration fields, marine zones for experiments.
- To support technological development to facilitate the use of marine renewable energy, promote the use of demonstration fields and the organic cooperation of other related initiatives.
- Conduct examinations on a structure in which a third party assesses whether technological issues have been cleared in order to ensure that experiments in actual marine zones are implemented safely and surely when experiments and related activities are implemented.

b. Promotion of practical application and commercialization of marine renewable energy

- In coordinating utilization of marine zones to be engaged in the electric power generation business by using marine renewable energy, with the awareness of the importance of the role of local government, achieve co-existence and co-prosperity with other users of the marine zone, and implement coordination from a comprehensive perspective in accordance with regional circumstances. In addition, from the perspective of developing a sound coordination environment, achieve sharing awareness among the related parties by creating and announcing a list of options to use marine renewable energy in coordination with local communities and fisheries.
- Clarify the rules on use of marine zones, including examination of development of required legal systems.
- To facilitate the use of marine renewable energy, improve a range of required marine-related information and take initiatives to improve “Marine Cadaster” and strengthen their functions so that marine-related information is readily browsed on PC.
- In marine zones, such as port areas, fishing port areas and coastal protection areas, where the administrators are already clarified in accordance with individual laws, implement leading projects to the extent to which they do not hinder their original purposes and functions.
- Clearly define regulations that ensure safety of marine structures and power generators, and the initiative in international technological standardization, based on Japan’s technologies from the perspective of improving the international competitiveness of Japan’s marine industries.
- For assessment of the environmental impact of the offshore wind power generation business, examine technical methods of assessment in the demonstration projects conducted by the government. Moreover, when the need arises in the future, examine appropriate methods to assess

the environmental impact of ocean energy the power generation businesses, other than the wind power generation business.

- Study the approach of building working vessels engaged in safe and efficient installation and maintenance operations and infrastructure that are used as backyards in order to respond to issues related to costs peculiar to marine operations.

c. Construction of infrastructure and the environment for increased use of marine renewable energy

- Implement comprehensive studies on measures to strategically increase the use of marine renewable energy, including studies on target-setting, while maintaining consistency with the overall direction of the energy policy.
- Study and determine the rate of feed-in tariff (FIT) of marine renewable energy considering burdens on general public, at the stage where commercialization is certain and where it is possible to review the cost.
- Implement enlightening and promoting activities on the importance of the use of marine renewable energy in Japan.

d. Wind turbines on the sea

(i) Promotion of technological development, etc.

- Steadily implement demonstration project of systems with a capacity of 2 MW in areas off Choshi and Kitakyushu to establish technologies for wind condition monitoring systems and bottom-fixed offshore wind turbines that are suitable to Japan's oceanographic and meteorological features targeting at around FY2014, studying technological methods to assess environmental impact. In addition, develop drive-trains, long-wing blades, remote monitoring systems and other technologies for supersized wind turbines that meet the market needs.
- To establish technologies and other expertise for floating offshore wind turbines by FY2015 based on Japan's meteorological and oceanographic features, implement a demonstration projects by including installing a commercial scale wind turbine (2 MW) in FY2013 in the area off Kabashima, Goto City, Nagasaki Prefecture, following the installation of a small-scale experimental system (100 kW) in FY2012.
- Implement demonstration projects on floating offshore wind turbines off Fukushima Prefecture to realize construction of the world's largest floating offshore wind power plant (wind farm). In addition, assess the safety, reliability and economic performance of the related technologies in FY2015.
- Establish methods to assess the safety of the navigation of vessels and to coexist with fisheries by studying maintenance and management methods and environmental impact assessment methods.

(ii) Development of safety standards

- Conduct technical studies on the safety of floating and mooring systems against drifting, overturning, sinking and other incidents to ensure the safety of floating offshore wind turbines. Moreover, implement technical studies on safety, such as lowering risks of tangling of mooring cables during the implementation of large-scale operations. Based on results of these studies,

create safety guidelines by FY2013, and take an initiative to strengthen international competitiveness by leading preparation of international standards at the International Electrotechnical Commission (IEC).

(iii) Development of infrastructure

- To facilitate the use of offshore wind turbines, implement studies on the commercialization of offshore large-scale windmill working vessels mainly by analyzing issues related to offshore large-scale windmill working vessels and clarifying methods to address such issues.

(iv) Leading projects

- As leading projects in marine zones with their administrators already clarified, continually take measures to ensure smooth introduction of offshore wind turbines in port areas by establishing a system in which offshore wind turbines coexist with port management and other port activities. In addition, take initiatives to introduce renewable energy in fishing ports and villages from the perspective of reducing energy costs and greenhouse gas emissions and of use as an emergency power source in times of disaster.

e. Marine energy, such as wave energy

- To develop an actual system that meets the target of 40 yen/kWh and is based on power generation technologies that use marine energy (e.g., wave energy, tidal energy, ocean currents, ocean thermal energy). In addition, to achieve a further reduction in power generation costs, implement support for fostering seeds of innovative technologies, development of power generation systems, experimental studies and other technical research and development in a diversified manner.
- To facilitate introduction of marine energy, implement studies on methods to ensure the safety of power generation facilities, including floating converters and moored underwater converters, and study measures for smooth introduction and advanced utilization in a manner compatible with the original purposes and functions of a port.
- In accordance with the “Basic Guidelines for Reconstruction in Response to the Great East Japan Earthquake,” implement basic research and development to establish high-performance, reliable, low-cost, innovative power generation systems that can meet natural conditions of coastal areas in the Tohoku region.

(3) Development and use of fishery resources

a. Proper management of fishery resources and conservation of the growing environment for aquatic plants, animals, etc.

- When fishermen prepare and steadily implement resources management plans in accordance with the resource management guidelines, which are prepared by the central and prefectural governments, compensate for decreased income through resource management and income stabilization measures. Based on this system, with the participation of all fishermen in principle, implement nationwide resource management in accordance with the resource management guidelines and resources management plans.
- Lead discussions based on scientific evidence at Regional Fisheries Management Organizations

(RFMOs) to promote appropriate conservation and management of international fishery resources, such as tuna and tuna-like species.

- Safely conduct the whale research programs, and continually implement initiatives to gain a wider international understanding of Japan's stance to realize sustainable use of whale stocks based on scientific evidence.
- To strengthen coordination and cooperation with neighboring nations with which resources are shared, and further promote the management of fishery resources, secure operation opportunities of Japan's fishing boats and promote international resource management by appropriately establishing and thoroughly complying with the individual fishing quotas, the total number of permitted fishing boats by country and other conservation and management measures.
- To improve surveys and research on resources, maintain a system to effectively and promptly collect data of fish catches and maintain a system for collecting data of marine surveys by central and prefectural governments, while implementing initiatives to improve the accuracy of resource assessment and other data by developing methods to forecast a marine environment that is necessary for understanding resource trends.
- Implement research and development to understand the process of the occurrence of new red tides due to changes in the marine environment and other issues in order to prevent and reduce damage to aqua farming by red tides.
- To ensure harmonization between conservation of the marine ecosystem and biodiversity and the sustainable development of fisheries, assess the impact of bycatch of seabirds, sea turtles and other creatures, and take initiatives to improve and more widely use technologies to avoid bycatch, while taking initiatives to establish and improve the management of Japanese-type marine protected areas that are necessary as a method for the conservation and management of resources, and to assess the scarcity of fishery resources.
- To improve surveys, research and technological development that support the fisheries industry, facilitate cooperation among industry, academia and government, including the government, the Fisheries Research Agency and other incorporated administrative agencies, examination organizations of prefectures, universities, private companies, while effectively and efficiently implementing research and technological development of the promotion of resource management, promotion of fisheries, sustainable aqua farming, safety of fishing boats and other matters. In addition, steadily implement basic surveys and research, such as marine monitoring.
- Implement effective surveillance and a crackdown on illegal operations to ensure compliance with resource management rules and improve the effectiveness of resource management.
- Because illegal operation of foreign fishing boats has been conducted with greater malevolence and ingenuity in Japan's territorial seas and EEZ, strengthen the surveillance and crackdown structure.

b. Boosting productivity of fishery grounds, etc.

- To foster and achieve the sustainable utilization of fishery resources, boost the productivity of the overall ecosystem by developing offshore fishery grounds and promoting the conservation and development of seagrass bed/algal bed and tidal flats while responding to changes in biofacies, the

marine environment and the style of the use of fishery grounds. In addition, as a measure to counter the discoloring of seaweeds, take initiatives mainly to develop methods to conserve and manage the water quality of fishery grounds at the level in which the necessary nutrients can be provided.

- To foster the multifunctions of the fishery industry and fishing village, boost activities in fishing villages and heighten their attractiveness by promoting a variety of initiatives through proactive use of their abundant local resources.

2 Conservation of marine environment, etc.

(1) Efforts for ensuring biodiversity

a. Strategic efforts for conservation of biodiversity

- In accordance with the National Biodiversity Strategy 2012-2020, promote measures for the conservation and sustainable use of biodiversity, and steadily implement Japan's initiatives to achieve the Aichi Biodiversity Targets.
- Under coordination among related agencies, appropriately implement international agreements such as the Convention on Biological Diversity (CBD), the outcome document of Rio+20, the United Nations Conference on Sustainable Development, and other commitments.

b. Identification of marine zones important for conservation of biodiversity, etc.

- From the perspective of biodiversity, identify marine zones that are ecologically and biologically important by FY2013, and by taking the identified marine zones into account, enhance the characteristics of ecological systems of each marine zone, and social, economic and cultural factors, establishment and management of marine protected areas, and promote a network of marine protected areas.
- Collect and compile information about rare marine organisms by assessing endangered marine organisms by the level of their chance of extinction by FY2016 in order to ensure that measures related to the conservation of marine biodiversity are established and steadily implemented. In addition, take measures to protect endangered seabirds and help breeding.
- From the perspective of securing biodiversity in accordance with the characteristics of the ecological systems, implement action plans that meet the characteristics of each ecological system, such as the Action Plan to Conserve Coral Reef Ecosystem in Japan. In particular, to promote conservation of coral reefs in East Asia, under the framework of the International Coral Reef Initiative (ICRI), continually implement the ICRI East Asia Regional Strategy on MPA Networks 2010.

c. Appropriate promotion of establishing marine protected areas and improved management of the areas

- By considering marine protected areas as a method to conserve marine biodiversity and to achieve the sustainable use of the ecosystem service, with the target of appropriately preserving and

managing 10% of coastal zones and marine zones by 2020, with coordination among related agencies, take measures to improve the management of such areas and appropriately establish marine protected areas.

- By considering marine protected areas as a method to conserve resources, take measures to promote the coexistence of conservation of marine ecosystem and biodiversity and the sustainable development of fisheries by improving the establishment and management of the areas.
- Take initiatives to improve understanding both in Japan and overseas of Japanese-type marine protected areas, whose concept is to achieve sustainable use of the areas.
- Take initiatives to designate and expand national and quasi-national parks, and designate marine areas in national or quasi-national parks with superior undersea or sea views as marine park areas.

d. Efforts to make areas foster a range of ecological systems

- Promote appropriate conservation and development of seagrass bed/algal bed, tidal flats, coral reefs and other areas in order to promote the purification of water quality, maintenance of biodiversity, development of fishery resources and sustainable use of marine zones.

(2) Efforts for reducing environmental burden

a. Initiatives to respond to global environmental changes

- Continue sophisticated marine surveys to understand the impact and other effects on marine ecosystem from rising sea temperatures from global warming, rising sea levels mainly due to continental ice sheets melting, and acidification of the oceans. In addition, implement research on the assessment of the impact on the marine environment by taking measures to improve the sophistication of numerical models to reproduce or forecast these environmental changes.
- Implement research on global environmental changes, including marine surveys to address global environmental issues, by participating in the Argo project, Global Ocean Observing System (GOOS), International Ocean Carbon Coordination Project (IOCCP), Global Ocean Ship-based Hydrographic Investigations Program (GO-SHIP), Global Earth Observation System of Systems (GEOSS) 10-year Implementation Plan and other programs, in cooperation with related agencies both in Japan and overseas. In addition, make proactive contributions to activities of the Intergovernmental Panel on Climate Change (IPCC), which provides policymakers and other parties with scientific, technical and socioeconomic assessments related to establishment and implementation of international global observation plans and global warming.
- Offer support to the Northwest Pacific Action Plan (NOWPAP), a part of Regional Seas Programme of the United Nations Environment Programme (UNEP), Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Global Marine Assessment (GMA) and other programs in order to strengthen international coordination and cooperation structures for the marine environment.

b. Efforts in coastal zones, etc.

- In Tokyo Bay, Ise Bay, the Seto Inland Sea, make efforts to promote the total pollutant load control by carrying out the Seventh Total Pollutant Load Control (FY2014 as the target year) and

- measures to achieve the next total pollutant load control target. At the same time, promote the Bay Renaissance Project mainly by implementing pollutant load reduction measures, environmental improvement measures and environmental monitoring. In addition, with regard to the Seto Inland Sea, in light of a report from the Central Environment Council, change the Future Vision of the Seto Inland Sea and Environmental Conservation and Recovery, the basic plan based on the Law concerning Special Measures for Conservation of the Environment of the Seto Inland Sea (Law No. 110 of 1973). Hold discussions to identify causes and factors for environmental deterioration and develop images of restoration and procedures with regard to the Ariake Sea, the Yatsushiro Sea and other seas. At the same time, promote deliberations based on the Law concerning Special Measures for the Rejuvenation of Ariake Sea and Yatsushiro Sea (Law No. 120 of 2002).
- While assessing the actual situation of article washed ashore and examining countermeasures, provide support to local governments in dealing with such article and developing waste disposal facilities that are necessary for treating article including that washed ashore. Moreover, provide support to coastal management organizations in dealing with driftwood and other materials on an emergency basis.
 - By paying full attention to the convenience of users, such as in securing access to the seaside, and the conservation of superior seashore landscapes and the habitat environment for organisms, in addition to the disaster protection of coasts, take measures to develop coastal preservation facilities.
 - Strengthen measures to prevent illegal dumping, including littering, and measures to promote beautification of rivers to reduce articles flowing into marine zones via rivers.
 - Build wastewater treatment plants and introduce advanced wastewater treatment to reduce the burden of pollutants flowing down from land areas.

c. Prevention of marine pollution

- Based on the 1996 Protocol to the London Convention, the Act on Prevention of Marine Pollution and Maritime Disaster has been revised, and disposal of articles in the sea has been, in principle, prohibited. Accordingly, appropriately implement a new permission system adopted and develop appropriate supervising and monitoring methods in relation to compliance with laws and regulations.
- From the perspective of compliance with international agreements, such as the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) that is overseen by the Marine Environment Protection Committee (MEPC) of the International Maritime Organization (IMO), take appropriate control measures for discharge of oil, noxious liquid substances and garbage from ships, securing of waste oil reception facilities, and other matters. At the same time, make preparations for the entry into force of the International Convention for the Control and Management of Ships' Ballast Water and Sediments.
- Based on frameworks such as the National Contingency Plan on marine pollution by oil and noxious liquid substances, enhance systems to control spilled oil and other pollutants by properly arranging environmental information concerning coastal marine zones for enabling effective controlling activities, developing equipment to control and recover spilled oil, providing lectures

and training to related agencies, and appropriately dealing with compensation in the case of oil pollution incidents. In addition, to achieve safe navigation for ships, recover spilled oil caused by ship accidents and other incidents. Moreover, take appropriate measures regarding compensation for oil pollution incidents from ocean-going ships that enter Japanese ports.

d. Radiation monitoring

- Continue monitoring seawater, marine soil and marine organisms with regard to marine radiation monitoring, under coordination among related ministries and agencies.
- With regard to monitoring related to the accidents at the Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station, in accordance with the comprehensive monitoring plan and in cooperation with related agencies, monitor levels of radioactive materials present in seawater, marine soil and marine organisms in the surrounding marine areas of the plant, coastal marine zones, offshore marine zones and open ocean marine zones. In addition, improve and strengthen monitoring by taking into account routes of radioactive materials that flow into the sea from land via rivers. Moreover, implement necessary measures based on results of monitoring as described above.

e. Efforts to reduce emissions of greenhouse gases in marine-related fields

- To reduce emissions of greenhouse gases in ports, promote a modal shift from land transport to maritime transport, and comprehensively take measures toward lower carbon by promoting energy-saving cargo-handling machines used in port activities, use of renewable energy and expansion of income sources of carbon dioxide.
- Promote research and development and the use of innovative energy saving technologies for ships, and promote experiments and the use of innovative energy saving maritime transport systems in order to encourage energy saving and reduced greenhouse gas emissions in maritime traffic. At the same time, promote early commercialization and use of ships that use natural gas, which has superior environmental-related performance, as fuel.
- With regard to submarine carbon dioxide capture and storage, to ensure appropriate judgment of results of assessment of environmental impact implemented by operators, implement surveys of ecological systems and the chemical characteristics of seawater and bottom sediments in Japanese coastal waters.

3 Promotion of Development of EEZ and Continental Shelves

(1) Maintenance, preservation, etc. of EEZ and continental shelves

- Based on the content of the recommendations of the Commission on the Limits of the Continental Shelf in regard to Japan's submission of information on the extension of its continental shelf, Japan should appropriately promote measures for establishing the limits of its continental shelf, including by continuing to strive to the end that the Commission will make recommendations as soon as possible on the region for which the issuance of the recommendation was deterred.

- Securing Japan's interest in the EEZ and continental shelves by making every effort to resolve the issues regarding overlapping maritime claims of Japan and neighboring states in East China Sea and other area based on international law. In addition, taking every opportunity, Japan should try to persuade China to restart the negotiation for the implementation agreement of the agreement between Japan and China regarding the development of seabed resources of the East China Sea in June 2008 which have been suspended since September 2010.
- Restrict activities of submarine drilling in the low-water line preservation areas in order to preserve the low-water line, which is a basis for the EEZ and continental shelves, in accordance with the Act on the Preservation of Low-Water Line and the Basic Plan for Preservation of Low-water Line. In addition, to understand the status of the low-water line, implement patrol by ships, helicopters and other equipment, periodically take aerial photographs, and promote surveys that use satellite images and other materials.

(2) Promotion of effective use of EEZ and continental shelves

- Make efforts to ensure sustainable use of fishery resources, promote development of marine energy and resources, and facilitate use of marine renewable energy, among other initiatives, to facilitate effective use of the vast EEZ and continental shelves and the promotion and creation of marine industries, in accordance with the characteristics of marine zones.

(3) Establishment of infrastructure and the environment to promote development and other activities in EEZ and continental shelves

- Develop bases in which transportation, supply and other activities are able to be implemented on far away and isolated islands (Minami-Tori Shima Island and Okino-Tori Shima Island) to ensure that the development and use of marine resources, marine surveys and other activities are implemented safely and steadily even in marine zones far from the mainland.
- Promote marine surveys and take initiatives for the integration and disclosure of marine-related information to establish fundamental information necessary for efficient promotion of the development, use, management and other activities of EEZ and continental shelves.
- To prevent activities that violate Japan's sovereign rights in the EEZ and continental shelves, under mutual cooperation, the related ministries and agencies should respond to the exploration of mineral resources, implementation of scientific surveys and other activities by foreign research vessels and other ships.
- In order to promote exploitation and exploration in the EEZ and the continental shelf, the Government should introduce a policy on appropriate management of the EEZ and the continental shelf, taking into account the current progress and the future outlook of exploitation and exploration in these maritime zones. This policy should establish the purpose, procedure, plan and schedule of management in the EEZ and the continental shelf. Based on the policy, the Headquarters for Ocean Policy under the Cabinet should examine the establishment of comprehensive laws and regulations for the management of the EEZ and the continental shelf, with extensive consideration for the rights and duties of the coastal states, harmonization between the exploitation and conservation of the

environment, development of an efficient coordination mechanism, facilitation of ocean surveys, and the centralization and publication of ocean-related information and data.

4 Securing Maritime Transport

(1) Securing a stable marine transport system

- Apply tonnage tax and other special treatment to Japanese international shipping operators that try to increase the quantity of Japanese-flagged vessels and Japanese seafarers in a planned manner with an aim of establishing a 450-vessel structure at an early stage that includes Japanese-flagged vessels and -deemed-Japanese-flagged vessels that supplement Japanese-flagged vessels to secure the international competitiveness of Japanese merchant fleets and stable international marine transport. At the same time, continue to promote initiatives to increase the number of Japanese seafarers by 50% in the 10 years from FY2008.
- As a measure for developing an environment in which competition takes place under equal conditions, engage in maritime transport service negotiations mainly at the World Trade Organization (WTO) and in economic partnership agreements (EPAs) with an aim that countries participating in negotiations will reach high-level liberalization agreements.
- Promote talks with relevant countries on the possibility of use of the Arctic Sea Route, which has recently been attracting interest, and under coordination with shipping operators, shippers and other parties, examine the possibility of the opening of shipping routes, technological issues, economic issues and other challenges.
- Maintain the Cabotage system that is internationally adopted, and promote the replacement shipbuilding of aging ships and grouping through ship management companies in order to secure steady traffic in coastal shipping.

(2) Securing and raising seafarers

- To develop seafarers possessing professional expertise and execution abilities to meet the needs of international and coastal shipping, take initiatives to further improve the quality of training of seafarers by (1) expanding training in owned ships and introducing such training in coastal shipping by using ships operated by shipping operators so that more practical onboard training can be provided, and (2) promoting introduction of training coastal shipping ships so that practical onboard training that meets the actual operation situation of domestic service ships can be provided.
- To respond to the shortage of seafarers engaged in coastal shipping, which is mainly due to aging, by offering work experience and other opportunities, promote initiatives to increase the number of young people who wish to join the shipping service industry under cooperation between the government and domestic shipping operators and other parties. In addition, provide in a planned manner support to shipping operators that try to Secure and raise new seafarers.
- To improve the environment of training of seafarers, by introducing onsite knowledge and experience to training through practical lectures by active seafarers and personnel exchanges and

adopting other measures, strengthen cooperation among relevant parties, such as the government, seafarers training institutions and shipping operators, that are engaged in the securing and raising of seafarers.

(3) Developing maritime transport bases

a. Developing distribution infrastructure that supports economies, industries and livelihoods

- To support the economies, industries and livelihoods of Japan on the whole and regional areas through the distribution system, promote measures to develop international maritime container terminals as a base in the international shipping network, develop intermodal transport terminals to establish a prompt and economical transport and distribution system, and develop intra-trade terminals that respond to the characteristics of industries and needs of transport in regional areas. At the same time, develop the network of road access to these facilities.
- To maintain and expand major international shipping routes that directly connect Japan with North America, Europe and other regions, strengthen the functions of strategic international container ports (Hanshin Port and Keihin Port) by focusing on comprehensive measures that integrate tangible and intangible aspects, such as the development of container terminals and other infrastructure to improve functions as a hub, concentration of cargo by strengthening the network of feeder transport, and privatization of port management.
- With an aim of achieving steady and economical imports of resources, energy and other materials, from the perspective of strengthening the competitiveness of Japanese industries, the creation of employment, and preventing outflows of income, develop an efficient and steady nationwide marine transportation network by establishing major ports that can be a base for large vessels can enter and promoting cooperation among companies.
- Monitor waves heights and tidal levels in coastal zones, and implement offshore monitoring based on GPS buoys, which can be also useful for tsunami monitoring in case of earthquakes, in order to implement the development of ports and harbors efficiently.
- Examine and promote development and management of facilities through the use of public-private partnership (PPP) to use expertise, funds and other facilities of the private sector in ports.
- Take measures to further improve the convenience of users by improving the functions of electronic processing systems and other facilities to efficiently conduct import and export and procedures related to port operations.

b. Developing bases that are compatible with a sound material-cycle society

- To create a distribution network of recyclable resources, by designating ports that become bases for wide-area distribution as Recycle Ports (integrated logistics hubs for extended recycling), take measures to secure berths and other port facilities in which recyclable resources are handled, and improve enforcement of regulations in handling recyclable resources at ports. At the same time, promote cooperation with the Recycle Ports Promotion Council, which was established by public and private entities.
- Reduce as much as possible the volume of dredged soil created from development work in ports

and other waste that cannot be recycled, and develop coastal disposal sites by which waste is ultimately disposed of in a planned manner. In particular, dispose of regionally collected waste from the Osaka Bay area in coastal disposal sites in Osaka Bay, and use soil generated from construction / dismantling activities in the Tokyo metropolitan area for the reclamation of land nationwide by using a system to promote wide-area utilization of port construction resources.

5 Securing Safety and Security of the Sea

(1) Securing security and public order of the sea

a. Maintaining order on the sea

- Make efforts to strengthen the broad-based, constant monitoring structure in Japan's surrounding marine zones and the structure to respond to distant or critical events. In particular, in accordance with domestic laws, appropriately respond to foreign ships that anchor, hover or engage in other activities in the territorial seas and other areas without unavoidable reasons. In addition, make efforts to develop a structure to collect information and monitor security in the scattered island areas, and strengthen the maritime safety and security system.
- Secure sustainable activities by procuring in a planned manner patrol vessels, aircraft and other equipment of the Japan Coast Guard and SDF's Vessels, aircraft and other equipment of the Japan Self-Defense Forces, and make efforts to secure necessary personnel. In addition, to maintain and improve abilities to respond to unidentified vessels and spy ships, hold exercise training to respond to unidentified vessels, and strive to strengthen the information collection and analysis structure.
- Make efforts to strengthen the coordination system of the Japan Self-Defense Forces and the Japan Coast Guard. Moreover, to ensure that the government can respond in an integrated manner to developments in Japan's surrounding marine zones, strengthen the coordination system of the related ministries and agencies mainly by ensuring that information obtained through information collection activities and surveillance monitoring is promptly shared by all parties, including operators at actual sites and those at central operations.
- To acquire information of the movement of ships sailing through the surrounding marine zones, investigate the methods of monitoring the movement of ships, including an integrated framework for managing and providing information of sailing ships owned by related administrative agencies and other organizations, and Space-based Maritime Domain Awareness.

b. Crackdown on marine crimes

- To preemptively prevent marine crimes, continue to implement surveillance and crackdown. In particular, implement surveillance and crackdown against illegal domestic poaching, illegal operations by foreign fishing boats, and marine environment crimes, such as disposal of waste in marine zones, while continuing to take initiatives to crack down on or interdict at the border the smuggling of drugs, guns and other items and illegal immigration.
- From the perspective of improving the structure to secure security, strengthen cooperation among

the related agencies, and maintain and improve patrol vessels and aircraft of the Japan Coast Guard, police boats and other equipment.

- To secure the safety of Japan's coasts and islands, further promote initiatives to ensure that the number of necessary personnel engaged in security maintenance activities is increased, equipment and machinery that are used for such activities are improved, and a coordination system among the Japan Coast Guard, the police and other institutions is established mainly by maintaining efficient and close information-sharing. In addition, effectively manage the surveillance system of illegal immigration and take a range of measures under coordination with coastal guard cooperation organizations.

c. Measures of counter-piracy, etc.

- Under coordination with international society, continue to take measures of counter-piracy off the coast of Somalia and in the Gulf of Aden, and promote initiatives to allow Japanese-flagged vessels to guard themselves with rifles and in other ways as a form of special treatment in pirate-infested waters. In addition, through the Contact Group of Piracy off the Coast of Somalia (CGPCS), an international forum established by the United Nations, and other organizations, strengthen coordination with relevant countries. Moreover, to improve abilities of maritime safety authorities in Somalia and its neighboring countries and their abilities to prosecute and crack down on piracy, Japan continues to provide support through international organizations and bilateral support.
- By offering cooperation and human resources training on the management and development of Aids to Navigation, sharing information about piracy based on the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) and adopting other measures, Japan implements measures to combat piracy and secure navigation safety in marine zones, such as the Strait of Malacca and Singapore.
- As countermeasures against terrorism on the seas, under the coordination of related agencies, collect and analyze information about terrorism, confirm the safety of ships entering Japan, promote development of an exit/entry management information system, take countermeasures against terrorism at the border, and appropriately implement monitoring and surveillance of facilities that handle hazardous materials, such as nuclear power plants in coastal regions and petrochemical complexes, and important facilities such as US military facilities. In addition, strive to strengthen the security measures for nuclear fuel transport ships.
- To ensure the effectiveness of measures taken under the Act on Special Measures concerning Cargo Inspection, etc., strive to maintain close coordination with related administrative organs by holding joint exercise and taking other measures.
- To prevent proliferation of weapons of mass destruction by marine transport, Japan needs to actively participate in maritime exercise and other exercises, etc. under the Proliferation Security Initiative (PSI). In addition, with regard to prevention of terrorist attacks on the seas and prevention of proliferation of weapons of mass destruction by marine transport, by taking into account international trends, examine methods to prevent and crack down on the use of weapons of mass destruction on ships on the high seas and transportation of such weapons via ship.

(2) Safety measures of maritime transport

a. Improving the safety of ships and securing the safety of navigation of ships

- Promote the transport safety management system, which aims to develop an integrated safety management system that involves every party from the management to onsite workers of shipping operators, in order to preemptively prevent occurrence of maritime accidents of ships and other accidents and secure the safety of transport in the shipping industry. At the same time, implement existing audit operations and develop safety assessment methods.
- Through deliberation at international organizations, develop and continuously review various types of standards concerning design, construction, operation and dismantling of ships. At the same time, securely conduct inspections and take measures for supervising foreign ships (port state control or PSC) and educating on maritime safety.
- To secure safe and stable maritime transport, the government needs to take measures in an integrated manner to develop, preserve and manage waterways designated to be developed and preserved that form the backbone of Japan's international and coastal shipping network.
- To improve the safety of vessel traffic and the efficient movement of ships, take initiatives to improve Aids to Navigation, guides for navigation of ships, mainly by improving the visibility and identifiability, and promote the maintenance of such assistance.
- To improve the safety of vessel traffic that uses electronic navigational charts and nautical publications, examine methods to provide highly convenient navigation safety information by actively participating in development of international standards at the International Hydrographic Organization (IHO), and take measures to improve information and functions of electronic navigational charts.
- Provide information about ocean conditions via the Quick Bulletin of Ocean Conditions, and strengthen systems to monitor and provide information on tidal currents in narrow channels.
- To prevent occurrence of large-scale marine accidents that greatly impact society, provide information necessary for safe navigation of ships by vessel traffic service centers and other organizations, give instruction to ships, and take other necessary actions. To ensure that these actions are appropriately and effectively implemented, seek to improve the functions of the service centers.
- By maintaining close coordination with private organizations and related administrative organs, strive to raise the awareness of the notion of preventing marine accidents and improve knowledge about such prevention, and promote marine accident prevention measures mainly by offering guidance on thorough compliance with laws and regulations and safe navigation at every opportunity.

b. Strengthening maritime search and rescue system, accident and disaster countermeasures, etc.

- To promptly and accurately respond to maritime-search-and-rescue-related and other incidents, seek to improve and strengthen the maritime search and rescue system mainly by taking initiatives to improve the performance of patrol vessels and aircraft, strengthen rescue and emergency

abilities by improving equipment, materials and machinery, drilling and exercise, and improve the accuracy of drift forecasts. In addition, seek to maintain coordination with private rescue organizations, and strengthen coordination with search and rescue organizations of neighboring countries by regularly holding talks and exercise with such organizations.

- To minimize damage from ship fires, marine pollution caused by ships and maritime disasters, make efforts to improve the system to control and recover discharged oil and other disaster countermeasure systems, maintain materials and machinery used for countermeasures, and implement training.
- To effectively control and recover discharged oil, promote improvement of Environmental Sensitivity Index Map that shows environmental information on coastal area, development of monitoring that use satellite images, coastal environmental information service on the Internet (CeisNet), strengthening of coordination with related agencies, and other initiatives.
- If a severe marine accident occurs, implement research and analysis to understand the causes and mechanism of problems, and prepare proposals of countermeasures, including improvement of safety standards and the system on ship management, to prevent recurrence of the accident.

(3) Countermeasures against marine-derived natural disasters

- To forecast the occurrence of earthquakes and tsunamis and estimate damage due to them in the surrounding marine zones of the Japanese archipelago, strengthen the survey and monitoring system related to earthquakes and tsunamis, develop a monitoring network, and take initiatives to collect and compile information about active faults and geological features.
- Based on the Act on Regional Development in Tsunami Disaster, etc promote creation of communities equipped with tsunami disaster countermeasures by adopting multi-layered protection systems that combine measures that involves civil engineering, such as development of coastal protection facilities and establishment and improvement of tsunami protection facilities, and measures that involve planning, such as designation of tsunami disaster caution zones and other areas, preparation and review of tsunami hazard maps, and implementation of comprehensive tsunami disaster reduction drills.
- In the wake of the Great East Japan Earthquake, examine safety measures against tsunamis for ships in ports, and effectively issue evacuation orders and take other measures in accordance with the Act on Port Regulations. At the same time, take initiatives to establish evacuation standards and timing of evacuation by tsunami disaster countermeasure councils established in ports and other areas as specified in the Act on Port Regulations.
- To prevent and reduce damage from earthquakes and tsunamis caused by the massive earthquake expected to take place in the Nankai Trough and other earthquakes in the future, promote the development of earthquake-resistant sea embankments and other facilities, automatic operation and remote control of floodgates and other facilities, and development of coastal disaster-prevention woods, and take measures to develop earthquake-resistant berths to secure transport of emergency goods. In addition, promote development of coastal embankments, breakwaters and other facilities in a way that they can consistently exercise their functions even if the tsunami overflows the facilities.

- To protect lives and property in times of disaster, such as tsunami, storm surge and high waves, promote development of coastal protection facilities and other facilities, and take measures against shore erosion from the perspective of national land conservation. In addition, by conducting surveys on renovation measures of facilities, appropriately manage and revise maintenance work to ensure the reliability of facilities.
- To strengthen disaster prevention functions and maintain and sustain logistics functions of cities and fishing villages in the three major bays, Tokyo Bay, Osaka Bay and Ise Bay, and other coastal areas nationwide, examine securing of the protection level based on the assumption of tsunamis that exceed other tsunamis that frequently take place in ports of the three major bays, in which population and functions are concentrated, apply seismic strengthening work to berths and port roads, develop earthquake-resistant and multiple access roads, develop evacuation roads and facilities, secure open spaces, secure navigation route functions, strengthen disaster prevention facilities in industrial complexes, and take other necessary measures. At the same time, appropriately manage main wide-area disaster management bases.
- If a large-scale natural disaster occurs or has the chance of occurring, dispatch the Technical Emergency Control Force (TEC-FORCE) to provide technical support to disaster-hit local governments in promptly collecting information about the status of damage, preventing the occurrence and expansion of damage, restoring disaster hit areas at an early stage, and engaging in other disaster emergency countermeasures.
- With regard to coastal shipping that play an important role in transport and other activities at the time of a large-scale disaster, develop a system in which ships are used for emergency transport operations and other activities by coordinating with local governments, business operators and other organizations.
- To ensure the safety of ships and coasts, acquire an understanding of regional characteristics through observations and analysis by using research vessels, drifting ocean data buoys, coastal wave observation system, tide gauges, satellites and other equipment, and improve forecast technologies, such as storm surge and high wave models, by taking into account regional characteristics, thereby continuing to provide disaster prevention information about storm surges and high waves. In addition, issue marine forecasts and warnings and the Japan Meteorological Agency Weather Fax Transmission, JMH and other materials, and take initiatives to improve the accuracy of typhoon forecasts.
- To contribute to reducing flood damage mainly from storm surges and tidal waves, the national land conservation and other issues, continually monitor, survey, forecast and announce information about tidal levels, and seek to improve the accuracy of such activities. In addition, examine measures to adapt to the rising sea level due to global warming.

6 Promotion of Marine Surveys

(1) Promotion of comprehensive marine surveys

a. Strategic measures for marine surveys

- Conduct marine surveys effectively by enhancing coordination among agencies responsible for marine surveys, encourage mutual sharing of results of the surveys, and improve the convenience for users to access and handle the marine data.
- Equip steadily research vessels, manned and unmanned survey systems and other equipment essential for marine surveys, develop new survey equipment, and introduce new technologies.
- Join the international programs for oceanographic observations planned by the World Meteorological Organization (WMO) , Intergovernmental Oceanographic Commission of UNESCO (UNESCO/IOC), etc. and conduct surveys with high density and high accuracy by research vessels, in order to realize the actual global warming, climate change, ocean acidification and other changes. Conduct steadily surveys of sea temperature, salinity, concentration of greenhouse gas, etc. by utilizing automated observation systems such as profiling floats, and introducing new technologies such as Autonomous Underwater Vehicles. Realize the actual status of climate change, ocean acidification, ocean conditions (sea temperatures, currents and sea ice) and other matters, and improve the accuracy of projections of such matters, to enrich the contents of marine-related information, by carrying out actions such as to improve the accuracies of numerical models. Moreover, disclose the results to encourage wide-range sharing by publications such as the Marine Diagnosis Report, marine observation reports prepared by the Japan Meteorological Agency.

b. Steady promotion of marine surveys

- Continue to conduct surveys such as bathymetric surveys, marine geological surveys, crustal structure surveys, territorial seas baseline measurements, tidal current observations, etc. in order to collect and compile fundamental information required for marine resources development, preservation of marine interests and comprehensive marine management.
- Evaluate the impact on marine environment of pollutants emerged from land or sea, including oil, heavy metals and endocrine disrupting chemicals, and reveal secular variations in background values, to implement measures effectively and efficiently to preserve the marine environment around Japan. In addition, monitor radioactive materials in the sea.
- Continue to monitor hazardous or radioactive materials to realize the impact on the marine environment by events such as the seaward flows of articles and oil pollution in the sea caused by tsunami, and the emission of radioactive materials from the Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station in the wake of the Great East Japan Earthquake.
- Conduct water-quality surveys in Tokyo Bay, Ise Bay and the Seto Inland Sea, as the marine environment monitoring of the enclosed coastal seas, and measure the chemical oxygen demand (COD) and the loading amount of nitrogen and phosphorus from land. In addition, survey the water quality by sea environment improvement vessels, and observe ocean current by HF radar, and improve the database of marine environment information that collects and shares environment survey data collected by the government and local governments.
- To secure the safety of maritime transport, provide marine-related information through *Kaiyo sokuho* (the Quick Bulletin of Ocean Conditions) via the Internet, and enhance the frameworks to collect and provide information of tidal currents in narrow channels with high ship traffic.

- By using satellite remote sensing technologies, develop more effective marine environment monitoring methods, and provide monitored data such as water temperatures and phytoplankton concentration by using the marine environmental watch system around Sea of Japan.
- Make trajectory predictions accurately by collecting oceanographic data in the area with low data density, enhancing data management systems, and improving trajectory prediction methods by means such as revision of the prediction models, to promptly and accurately implement search and rescue activities by patrol vessels and aircraft, and activities to control and recover spilled oil in the case of occurrence of maritime accidents, under coordination among related ministries.
- Conduct experimental test to create sea ice flash charts for safe navigation along the Arctic Sea Route, by using sea ice observation data collected by satellites such as the Water Circulation Change Observation Satellite (GCOM-W) and Advanced Land Observing Satellite-2 (ALOS-2).
- Conduct seafloor crustal deformation monitoring with GPS/acoustic technique, crustal deformation monitoring with GPS, deformed seafloor mapping, seismic surveys, tsunami earthquake sediment survey, drilling on earthquake faults and so on, to collect and improve basic information that aids understanding of the mechanism of the occurrence of massive subduction-zone earthquakes along plate boundaries, and forecast of the occurrence of earthquakes and tsunamis.
- From a perspective of tsunami disaster preparedness mainly by detecting tsunamis at an early stage that occur near the source area of the 2011 Great East Japan Earthquake, observe tsunamis with the buoy-type offshore-water-pressure gauges installed in the Pacific Ocean off the Tohoku region.
- Collect and compile bathymetric data used for measures against tsunami such as evacuation of ships in harbors, and for the preparation of making up tsunami hazard maps by local governments, and promote improvement of tsunami information maps for ships.
- To collect and compile basic data that can help forecast of volcanic eruptions, conduct periodical monitoring with airborne or satellite images, surveys of bathymetry by research vessels, geological structure, gravity and geomagnetism, for volcanic islands and submarine volcanoes especially around Nanpo Shoto Islands and Nansei Shoto Islands.

(2) Comprehensive management and disclosure of marine-related information

- To improve the convenience to utilize marine-related information, establish the common rules on collection, management and disclosure for marine surveys conducted by the government.
- Manage and disclose comprehensively marine-related information that is collected and managed by the government and other agencies for their ocean policies, such as the marine survey data collected by the government and the local governments, and promote ocean policies effectively and promote the use of such information in industrial activities.
- Under the coordination with related agencies, conduct collection, management and provision of all sorts of marine-related information at the Japan Oceanographic Data Center (JODC), and continue to manage the Marine Information Clearing House and improve their contents.
- From a perspective of prompting of utilizing marine-related information, improve the Marine Cadaster, in which various kind of marine-related information are visualized, selected and

- superimposed on geographic maps, and enhance its functions.
- Encourage sharing of marine-related information among agencies including regional levels, such as prefectures, by developing and managing a common platform used for collecting, analyzing and processing marine-related information. Moreover, from a perspective of providing information to a wide segment of the general public, collect and compile a range of documents related to marine science and technology, and improve the convenience for users to access such documents.

7 Promotion of Research and Development of Marine Science and Technology

(1) Promotion of research and development for important issues the government is required to deal with

a. Research and development related to forecasts and adaptation to global warming and climate change

- Strengthen observations, surveys, research and other activities to find out the interaction of the sea and the atmosphere, ocean circulation and its resulting heat transport and carbon cycle, ocean acidification as a result of an increase in the absorption of carbon dioxide by the sea, and its impact on marine ecosystems.
- Quantify the uncertainty of global warming and long-term climate change, and collect and compile information that becomes a basis for risk assessment related to climate change. In addition, to take measures to adapt global warming and long-term climate change, improve numerical models so that the impact can be assessed at regional levels, such as prefectures, and improve observations, surveys, research and other activities in accordance with the needs of each region.
- Promote observations, surveys, research and other activities in regions considered to have a great impact on Japan's climate, such as the Arctic region, Kuroshio region, and the Antarctic region including the Southern Ocean. In particular, implement observations, surveys, research and other activities in the Arctic region by taking into account the fact that global interest in use of the Arctic Sea Route has recently been growing due to melting of Arctic sea ice as a result of global warming.

b. Research and development related to the development of marine energy and mineral resources

- To collect data and other materials through wide-area scientific surveys that become a basis for estimating promising mineral deposits of energy and mineral resources, develop and improve platforms, such as research vessels that survey a wide area of the seafloor, manned research submersibles, AUV and ROV, and wide-area exploration systems that use cutting-edge sensor technologies. At the same time, strengthen capabilities of surveys and research of marine resources mainly by conducting research and development of new exploration methods through the establishment of a mineral deposit creation model.

- Conduct geological and geophysical surveys and research mainly in Japan's territorial seas, the EEZ and continental shelves., and take initiatives to uncover the potential of resources by developing basic marine geology information and learning the origin and formation conditions of marine energy and mineral resources, the origin of various contained elements and other matters.
- In developing marine energy and mineral resources, make efforts to take initiatives by gathering the expertise of a wide range of Japan's industries. With regard to the development of marine mineral resources, such as polymetallic sulphides and cobalt-rich ferromanganese crusts, promote research and development of production technologies, common issues, such as mining (including collecting), lifting, and processing and smelting by taking into account the progress of projects for each subject mineral.

c. Research and development on conservation of marine ecosystems and sustainable use of marine living resources

- From the perspective of sustainable use of marine living resources, promote research and development to comprehensively understand the structures and functions of marine ecosystems and the progress of changes in marine ecosystems, and seek to improve information about the biological characteristics and diversity of marine organisms that is necessary for the conservation of marine ecosystems.
- Contribute to creation of new industries by promoting research and development on production technologies and other matters related to propagation and aquacultures, and on the use of marine organisms as new useful resources.
- To gain an understanding of the status of recovery of marine ecosystems that have drastically changed in the aftermath of the Great East Japan Earthquake, implement surveys and research on marine ecosystems in the Pacific Ocean off the Tohoku region by creating a network of universities, research institutions and other organizations. In addition, contribute to the reconstruction of the disaster-afflicted areas by developing technologies with an aim of creating new industries through the use of marine resources in the above marine zone. Moreover, to understand the monitoring of radioactive materials, the intake of such materials by marine organisms and other developments, implement long-term, continual surveys on the spread of radioactive materials in the sea.

d. Research and development on the development of marine renewable energy

- To commercialize and facilitate introduction of offshore wind turbines, promote technological development and experimental studies. Promote development of infrastructure, such as that for dedicated ships and other equipment and infrastructure information, to heighten the use of offshore wind turbines.
- In accordance with “Basic Guideline for Reconstruction in response to the Great East Japan Earthquake”, by conducting demonstration experiments of wave power generation systems and tidal power generation systems in the coastal areas in the Tohoku region, promote, in particular, research and development that becomes a basis for establishing efficient, reliable, low-cost and innovative electric power generation systems that can operate in the natural conditions in the

coastal areas in the Tohoku region. And, take initiatives to develop power generation technologies by marine energy in Okinawa appropriate to its geography and natural resources.

e. Research and development on marine-derived natural disasters

- To improve warning systems and to uncover the mechanism of the occurrence of earthquakes and tsunamis in marine zones by accurately and promptly detecting them through dense observation networks, develop ocean bottom observation networks particularly along the Japan Trench and Nankai Trough that enables real-time observation of earthquakes and tsunamis. In addition, conduct surveys and research on forecast of the occurrence of earthquakes and tsunamis in marine zones surrounding the Japanese archipelago, including the Sea of Japan, and of the damage from them, and based on such surveys and research, implement research on measures for disaster preparedness and mitigation.
- By conducting basic research on the dynamic behavior of the various phenomena on the solid Earth from its surface to the core, increase knowledge about causes of earthquakes and volcanic activities triggered by the movement of oceanic plates, the evolution of island arcs and the continental crust, changes of the Earth's environment, the structure under the seabed and other matters. At the same time, create models of earthquake, tsunami and volcanic activities and conduct forecasts and verifications.

(2) Promotion of basic research and research and development based on medium- to long-term perspectives

- By strengthening the initiative to broadly and continually promote unique and diversified basic research, seek to create common intellectual assets of mankind and accumulate insightful knowledge.
- To comprehensively understand and analyze the sea, the Earth and other related fields, and build scientific technological infrastructure to develop new intellectual frontiers, promote research and development mainly on observations, surveys and research and analysis.
- In Okinawa, create an international network with a hub of marine research and education by actively promoting cutting-edge research, such as genome and information sciences. Okinawa is geographically well suited to pursue such marine research above, with its active geothermal vents, coral reefs hosting a variety of marine life, and the Kuroshio Current, one of the strongest ocean currents in the world.

(3) Improving and strengthening common infrastructure of marine science and technology

a. Development of the world's leading infrastructure technology

- Promote development of equipment and infrastructure technology that are necessary mainly for surveys of marine spaces above the sea, in the sea, on the seafloor and in the oceanic crust, including technology for marine exploration and development to develop and secure useful resources and biochemical sensor technology that is installed in a range of buoys and Autonomous Underwater Vehicles.

- Promote development and application of infrastructure technology that is necessary for understanding crustal deformation related with earthquakes along plate boundaries and for continuous observation of environmental variation in the sea and at the deep-sea floor, including technology for dense observations, monitoring and information transmission to detect earthquakes, tsunamis and other events at an early stage, and long-term observation platform technology that uses submarine cables.
- To understand the mechanism of the large earthquakes, explore a marine deep subsurface biosphere and find out its functions, and implement drilling of the mantle in the future, promote steady development of infrastructure technology for drilling deep marine strata.
- With a view to application to industries and global application, seek to develop a system in which initiatives are continually taken to develop infrastructure technology, such as technology related to the basis of the nation's existence.

b. Implementation of long-term observations

- By participating in international marine observation programs and a framework for marine-related information exchange, implement marine observations, surveys and research, and other activities on a long-term and continual basis, and take initiatives to exchange and share observation data.
- To significantly improve analysis based on the results of observations, promote integration (data assimilation) of observation data that are obtained through different equipment, such as moored and drifting buoys, ships and satellites.

c. Development and management of platforms

- Promote development of integrated observation systems that combine fixed-point observation stations that issue real-time timeline data of basic factors, such as temperatures, salt content, currents, wave height and wind and rain at sea, and in situ observations mainly through research vessels and observation buoys, and satellites and other facilities.
- Take measures to replace and renovate in a planned manner facilities and equipment owned by the government, incorporated administrative agencies and other institutions, such as ships, manned and unmanned deep-sea survey systems and supercomputers, so that they can adequately perform their functions. In addition, to promote new observations, surveys and research and other activities, promote development of new facilities and equipment and innovative analysis technology and other technologies with the understanding of shared use.
- Promote shared use of ships and other facilities owned by research institutions, universities and other organizations, and examine methods in which limited research infrastructure is used more efficiently.

(4) Promotion of initiatives that use outer space

- Continue to promote use of satellite information in activities such as monitoring of ocean conditions, including sea temperatures, currents and sea ice, provision of fishing ground information to fishermen, observations of greenhouse gases on a global scale including at sea, and forecasts of climate change.

- Under coordination among related ministries, implement demonstration experiments to understand the situation of ship navigation in marine zones, including outer sea marine zones, by using a satellite equipped with automatic identification system (AIS) receivers, and implement demonstration experiments related to the creation of sea ice flash chart to secure safe navigation of ships on the Arctic Sea Route. Based on these experiments, examine the possibility and methods of new use of satellite information in development and usage of the sea, securing of marine safety, comprehensive marine management and other activities by taking into account the progress of development of satellite infrastructure both in Japan and overseas.

8 Promotion of Marine Industries and Increase in International Competitiveness

(1) Solidifying management base

a. Maritime transport industry, shipbuilding industry and infrastructure system

(i) Increasing competitiveness to obtain orders

- In efforts to make the Japanese shipbuilding and ship machinery industries more competitive to receive new contracts, make efforts toward reducing carbon dioxide, exhaust (NO_x and SO_x) emissions and other environmental pollutants from ships in compliance with regulations related to the issues and ensuing ship safety.
- Under coordination between the industrial, academic and governmental sectors, implement technological development for high-value-added vessels to help boost international competitiveness of the Japanese shipbuilding, ship machinery and marine resources-related industries.
- Develop human resources at overseas production basis to increase investment returns from foreign operations.
- To create a corporate environment for better capitalizing the advantage of the Japanese shipbuilding and ship machinery industries, make efforts toward facilitating investment and financing for stimulating the shipbuilding market, including revising the OECD Sector Understanding on Export Credit for Ship, which stipulates conditions for financing of public export credit agencies in participating countries.

(ii) Supporting expansion into new markets and businesses

- Conduct studies on feasibility of the business model in coordination with overseas logistical operators, such as provision of a package covering equipment and operations of Japan's coastal shipping with international competitiveness, and on construction of an overseas ship sales system that is effective for the growing domestic shipping markets in Asia and elsewhere.
- To achieve expansion of the Japanese shipbuilding and ship machinery industries into new markets and new businesses, make efforts to capture new markets, such as leaders' promotional efforts, participation in projects from their conceptual stage, formation of fleets in emerging countries and marine development, by utilizing support measures

including official development assistance (ODA) and loans from the Japan Bank for International Cooperation.

- Support overseas expansion of the infrastructure system in collaboration between the governmental and private sectors with the use of Japan's port-related technologies and management expertise in efforts to construct an international logistics network with high quality and stability.

(iii) Working to achieve fair competitive conditions

- To construct a sound shipbuilding market and attain fair competitive conditions, conduct policy coordination by reviewing policy among principal shipbuilding countries (including Japan, The Republic of Korea and Europe) and close assessment of market distorting measures in the shipbuilding market in the OECD Council Working Party on Shipbuilding. Japan should approach non-OECD member states in an attempt to have them join the organization for the purpose of further increasing effectiveness.
- To improve energy efficiency and CO₂ abatement technologies, implement the convention relevant to energy efficiency at the IMO and play a pivotal role to develop a framework of MBM (Market-Based Measures) such as fuel contribution to address CO₂ emissions from international shipping.
- In view of intensifying competition in the international maritime transport market, pay attention to the trend of international shipping policies of other countries and continue efforts on measures for equalizing international competitive conditions for Japan's maritime transport.

(iv) Supporting structural reform

- In response to the moves toward mergers and integrations in the Japanese shipbuilding industry, provide assistance as needed based on the Act on Special Measures Concerning Revitalization of Industry and Innovation in Industrial Activities and other programs.
- Encourage building of ships that replace aging ships and grouping through ship management companies for stimulating coastal shipping.
- Improve the corporate conditions for investment and financing in shipbuilding and coastal shipping industries, by implementing above mentioned measures.

b. Fisheries

(i) Supplying fishery products that respond to consumers' interests and promoting food education to increase consumption

- To stop the decline in consumption of fishery products following the progress in alienation from fish, relevant parties should work together to increase consumption of fishery products.
- Make efforts to shift to a system of producing and distributing fishery products that satisfy consumers' needs, such as provision of safe fishery products based on strict hygiene control based on the Hazard Analysis and Critical Control Point (HACCP) and fishery products matched with the changes in dietary habits such as simplification of meals. In addition, food provide education to achieve dietary lifestyles with a good

nutritional balance including consumption of fishery products.

(ii) Improving fishery management structure and international competitiveness

- For fishermen engaging in marine resources management and for aquaculture operators working to improve fishing grounds, appropriately implement measures for resource management and income stabilization to achieve stabilization of their income, which massively fluctuates year by year.
- In fisheries, fuel oil costs account for a high percentage of total costs. In aquaculture, the costs of feed mixture make up a large proportion of the total cost. Measures to address the price increase should be properly taken to reduce the burdens of the fuel oil and feed mixture costs.
- For nurturing fisheries with high profitability, implement an intensive fishery reform project, which includes introduction of an operation and production system with a focus on profitability in fisheries with fishing ships, acquisition of energy-efficient and labor-saving substituting ships, collaboration in production activities and a shift to joint management.
- For nurturing aquaculture business with high profitability, make pioneering efforts, including diversification of fish species raised, introduction of an aquaculture production system with a focus on profitability, collaboration in production activities and a shift to joint management.
- For the purposes of promotion of exports, strengthen international competitiveness of Japan's fishery products against imported ones, and developing fisheries trusted by consumers, construct a consistent supply system covering production, landing, distribution and processing and place focus on fishing ports as bases of distribution of fishery products that engage exhaustively in production cost cuts, efforts, freshness maintenance and hygiene control.

(iii) Strengthening safety measures for fisheries with fishing ships

- For preventing maritime accidents involving fishing ships, conduct activities for raising awareness of making proper decisions on departure according to weather and hydrographic conditions and of safe ship and fishing operations and strengthen efforts to prompt wearing of lifejackets.

(iv) Hiring and training of fishermen and encouraging women's participation

- For helping those without experience in fisheries to newly engage in fisheries, offer information for starting fisheries as business and onsite training.
- For securing human resources for fisheries and related fields, the National Fisheries University, which is an incorporated administrative agency engaging in development of human resources playing a leading role in fisheries, and high schools and universities with courses on fisheries, should enrich its practical technical education.
- Make aggressive efforts to develop leaders in fishery village regions such as certified fishermen and those playing central roles in the young fishermen's group in the fishery cooperative. Offer consulting services and support from promotional instructors to young human resources engaging in advanced activities.

- Encourage activities by women playing primary roles in processing and sales of fishery products and in other activities in fishery village communities.

(v) Developing the fisheries industry and exerting multiple functions of the fisheries industry and fishing villages

- To boost the productivity of the whole ecosystem and ensure development and sustainable use of marine resources, development and other efforts should be made on methods of maintaining and managing water quality in fishing grounds. In addition, achieve compatibility between maintenance of marine ecosystems and biodiversity and continued development of fisheries.
- To increase vitality and attractiveness of fishery villages, conduct activities that capitalize on their abundant local resources that are not confined to fishery products but also include scenic views, traditional events and practices of fisheries and aquaculture that are deeply rooted in their localities.
- To enable fisheries and fishing villages to exert their multifunctions in the future other than supply of fishery products, related governmental ministries and agencies should work together to provide comprehensive support in the exertion of their multifunctions, in complement to the material cycle from land to sea by landing of fishery products, in preservation of people's lives and property through national border surveillance and sea rescue operations, and in provision of opportunities for health, recreation, exchange and education.

(vi) Maintaining and upgrading of fishing port facilities serving as bases of stable supply of fishery products

- To achieve early reconstruction of the fisheries industry in the region devastated by the Great East Japan Earthquake as part of the recovery from the disaster, take efforts to reconstruct the industry in combination with distribution, processing and other related industries and to revive the disaster-hit region into a new food supply district.
- Systemically repair and improve existing fishing port facilities to properly conserve the functions of fishing ports that ensure stable supply of fishery products.

(2) Creating new marine industries

a. Industries supporting marine resources development

(i) Fostering industries related to marine resources development

- With respect to deep-water offshore oil, natural gas and other development projects, collaboration with shipping companies, shipbuilders and other related parties should be made toward LNG-FPSO (Floating Production, Storage and Off-loading system), which will be introduced and shifted into full swing, and logistics hub system, which will be necessary for efficient transport of workers and materials to production facilities on the sea, in efforts to strategically foster internationally competitive industries related to marine resources development. Specific actions to be taken collaboratively include development of necessary technologies and human resources, formulation of safety evaluation requirements, and consideration of mechanisms for entry into large-scale

resource development projects.

(ii) Commercializing marine energy and mineral resource development

- Japan should lead the world in commercialization of marine mineral resource development by strategically nurturing its related industries and establishing coordination between these industries and existing resource industries. In this event, the results of development of deep-seabed exploration and production technologies that are considered significant for the basis for the country's existence will be utilized and their application will be expanded into industries.
- For methane hydrate development, technological improvement should be implemented in FY2018, considering of the results of production tests in marine zones in efforts to achieve commercialization. In this process, technological development should be advanced in view of international circumstances for enabling a commercialization project led by private firms to be commenced in FY2023-2027.
- For polymetallic sulphides, conduct successive technological development, including experiments in real marine zones. In addition, conduct studies toward commercialization by, for example, adding a broad range of private companies holding powerful technologies in terms of solving new technological issues in accordance with the progress of the action.

(iii) Commercializing marine renewable energy development

- Implement actions for practical use and expansion of offshore wind power generation and for commercialization of marine energy power generation by elemental technologies and implementing demonstration projects. In addition, make efforts for realization of practical working vessels and to formulate safety guidelines concerning floating offshore wind turbines.

b. Creating marine-related information industries

- To give momentum to the creation of marine-related information industries, make efforts to prepare an environment necessary for creation of such industries. Such efforts will include studies on what marine-related information should be provided and how it should be offered and activities toward increasing convenience and acquiring various styles of information offered in accordance with the study findings.
- Utilize Japan's technologies in development of equipment requisite to marine resources development and other operations. Take other actions for stimulating marine survey industries, including construction of a system that allows many different private companies to participate in marine surveys and consideration for overseas expansion.

c. Creating industries based on marine biotechnology

- For encouraging use of unused marine biomass resources, step up efforts to collect unused biomass resources and conduct research and development for industrial utilization of these resources and for resolving energy and environmental issues. With regard to the sub-seafloor biosphere, conduct research and development activities aimed at exploring

- unknown vital functions and paving the way for effective use of these functions.
- Advance research and development activities concerning algal carbon fixation technologies and algal oil production technologies to help resolve global environmental issues.

d. Developing marine sightseeing

(i) Developing marine sightseeing with the use of local resources

- For the Seto Inland Sea and remote islands, launch a network of attractive islands to promote sightseeing focused on tours and long stays, boost new travel demand and revitalize local economies on these islands.
- To stimulate sightseeing demand on the subject of the sea, provide support in organization of events with an emphasis on local peculiarities in collaboration with local governments and local tourism operators. At “Harbor Oasis” port facilities creating local dynamism and exchange, regional revitalization efforts involving local inhabitants should be encouraged. These facilities should be effectively utilized as disaster prevention bases in times of disaster.
- In accordance with the Act on Promotion of Ecotourism (Act No. 105 of 2007), implement comprehensive activities such as support for regions working on ecotourism, approval of the overall plan and making it known to public, technical advice, information gathering and activities for dissemination, raising awareness and increasing publicity. For increasing attractiveness of regions based on ecotourism, provide assistance to regional ecotourism activities, such as creation of attractive programs and human resource development for guides and other personnel.
- Actions should also be taken for sightseeing with facilities related to renewable energy.

(ii) Increasing Asian visitors to Japan

- For the purpose of increasing the number of those enjoying ocean cruising and to further ocean cruising, conduct the Visit Japan promotion campaign for boosting foreign visitors in partnership with relevant personnel. In parallel, take actions to make the passport control process smoother and faster while keeping it secure.
- To further increase visitors from Asian countries to Japan, make efforts to improve the environment to increase ocean cruise ships calling at Japanese ports. Such efforts include improvement of passenger ship terminals that serve as gateways to sightseeing in Japan and reinforcement of breakwaters for enabling large passenger ships to stably enter ports even under stormy weather conditions. Japan should thus endeavor to evolve into a tourism nation.

9 Comprehensive Management of Coastal Zones

(1) Implementing comprehensive management of coastal zones

- For ensuring safety of coastal zones, establishing multiple uses for them, creating desirable

environments in these zones and developing attractive and autonomous regions, make efforts to comprehensively manage land areas and marine zones together in accordance with regional peculiarities with the participation, coordination and collaboration of many different players based on independence of individual regions while building consensus among the parties concerned. Offer assistance to regions that strive to formulate their own plans.

(2) Implementing coastal zone management integrated with that of land areas

a. Implementing overall sediment management

- For slowing the decrease of national territory following a decline in sediment supply from land to sea and its impact on the natural environment, take actions including adjustment of the outflowing sediment by means of sand control equipment, measures for controlling sedimentation in dams, return of sediment to the downstream sections of dams and construction of sand bypassing system and detached breakwaters. Conduct research activities for pressing ahead with consistent and comprehensive sediment management covering all areas from mountains to coasts and for improving the methods of understanding and forecasting the movement of sediment.
- To prevent outflows of red clay in Okinawa and elsewhere, strengthen measures to control the sources, such as farmlands, by developing sediment control basins and research and promote development on technologies to prevent red clay outflow.

b. Properly controlling nutrients and pollutant load and restoring and promoting cycles

- To reduce the pollutant load flowing down from land areas, construct sewer systems and other wastewater treatment facilities in districts without sewerage and improve combined sewer systems. Advance water purification at irrigation and drainage facilities and rivers.
- For the purpose of developing healthy and rich marine areas with broad biodiversity, conduct studies toward formulating an efficient and effective control measure (an Action Plans for Healthy Material Circulation in Ocean) for monitoring the status of circulation of nutrients in the entire watershed areas, including land areas and marine zones, and for achieving a smooth cycle of nutrients in accordance with specific marine zones.
- In marine zones containing excessive amounts of nutrients, construct sewer systems and other wastewater treatment plants and introduce advanced wastewater management for improving water quality. Related agencies need to cooperatively discuss and build an integrated nutrients circulation system that covers both land areas and marine zones. In marine zones where the concentrations of nutrients comply with the environmental standards, assemble a new method of controlling the concentrations of nutrients within the range provided by the environmental standards and performance records in load management.

c. Working to preserve aquatic life and its habitat and enjoy ecosystem services

- For improving water quality and maintaining biodiversity, offer aid to maintenance and management activities conducted by fishermen and locals for seagrass bed/algal bed, tidal flats and coral reefs, which decreased significantly after the high economic growth period.
- Distribute information on creation of *sato-umi* (a coastal area where biological productivity and biodiversity has increased through human interaction) by means of the Sato-umi Net website and a manual to create *sato-umi*. In marine zones severely damaged by the Great East Japan Earthquake conduct *sato-umi* construction activities for revitalizing the zones in consideration of local intent.

d. Implementing actions to deal with articles drifting or washed ashore

- With regard to the Act on Promotion of Disposal of Articles Washed Ashore for Conservation of Good Coastal Views and Environment for Conserving Beautiful Rich Nature (Act No. 82 of 2009; Washed-Ashore Articles Disposal Promotion Act), its provisions should be reviewed in accordance with supplementary provisions thereto to take necessary steps within FY2013.
- Support needs to be offered to collection, disposal, suppression of emissions and other activities concerning articles washed ashore conducted in accordance with local plans drawn up based on the Washed-Ashore Articles Disposal Promotion Act.
- To acquire an understanding of the actual state of articles on the seabed and study the measures for dealing with them, continue monitoring of nationwide distribution of such articles and its secular change and an investigation to determine the cause by analyzing the actual emission and outflow of major articles washed ashore in principal regions, and status surveys on articles that flows out of Japan. In accordance with the supplementary resolution of the Washed-Ashore Articles Disposal Promotion Act, take actions to understand the status of articles drifting or washed ashore to find the causes and study the methods of dealing with it.
- With respect to littering, illegal dumping and beautification of rivers, relevant institutions should work together to make the actual state known to the public for building public awareness and to step up surveillance and crackdown operations in efforts to reduce articles flowing via rivers into the sea.
- Provide support for disposal of articles washed ashore by local governments and for construction of articles disposal facilities necessary for disposal of articles including that washed ashore. Assistance should also be given in emergency disposal of driftwood by the administrative agency for the coast.
- The facts about waste plastic tanks and other articles washed ashore that come from outside the country should be understood in order to arouse attention of relevant local governments in Japan and to make necessary requests to their countries of origin.
- Participate in the Northwest Pacific Action Plan (NOWPAP), a plan aimed at conservation of ocean environment in the Sea of Japan and the Yellow Sea, and to provide assistance for the Partnerships in Environmental Management for the Seas of

- East Asia (PEMSEA), which aim to achieve harmony between ocean development and conservation of the ocean environment in the marine areas in East Asia and Southeast Asia, to upgrade the international system of coordination and cooperation in the field.
- To preserve the marine environment, collect articles and oil floating on the sea.

e. Construct coasts that are friendly to nature and users.

- Appropriately maintain sites with good natural scenic views as natural parks.
- Construct coastal protection facilities with full attention paid to users' convenience, including accessibility to the seashore, conservation of good seashore landscapes and the habitat of the organisms as well as to coastal protection from disasters.
- Develop parks and green spaces by fully utilizing the seashore space.

(3) Implementing coastal zone management in enclosed coastal seas

- For implementing the measures to prevent reproduction of pollutant load, expand advanced wastewater treatment. Related agencies should cooperate to implement countermeasures against point source load, such as drainage from houses, factories and other business establishments and livestock farms, against nonpoint source load, including urban zones and farmlands, to remove sludge and overlay sand in marine zones.
- For preventing eutrophication in enclosed coastal seas with poor seawater exchange, nitrogen and phosphorus emission concentration control should be in place and efforts to understand land-derived COD, nitrogen and phosphorus load and to survey water quality should be implemented.
- For creating rich seas, improve the structure of implementation based on collaboration among relevant parties to implement comprehensive efforts including environment monitoring and use of information-sharing systems. Other individual activities such as conservation, revitalization and creation of tidal flats and seagrass bed/algal bed with the use of dredged sludge and sediment, overlaying sand, backfilling of deep-drilled holes and increase of port structures symbiotic with organisms should be implemented in an integrated manner. Research on carbon fixation in the ocean (blue carbon) should be conducted.
- Reduce the total pollutant load in large enclosed coastal seas, specifically in Tokyo Bay, Ise Bay and the Seto Inland Sea. Take efforts toward achieving the targets under the seventh (FY2014 as the target year) and following basic policies to reduce the total pollution load.
- In efforts for improved environmental conservation and recovery in the Seto Inland Sea, change the basic plan under the Law concerning Special Measures for Conservation of the Environment of the Seto Inland Sea in accordance with the basic concept of environmental conservation and rehabilitation in the report of the Central Environment Council titled the Future Vision of the Seto Inland Sea and Environmental Conservation and Recovery.
- For recovery of the Ariake Sea, the Yatsushiro Sea and other seas, build a structure for collecting necessary data for identifying the causes of their environmental deterioration and for studying the vision and procedures of their recovery. Speed up deliberations under the

- Law concerning Special Measures for the Rejuvenation of Ariake Sea and Yatsushiro Sea.
- For Tokyo Bay, Osaka Bay, Ise Bay and Hiroshima Bay, draw up plans of action for revitalization of the seas in coordination between national and relevant local governments in the forms of Bay Renaissance Projects. Action should be implemented in coordination and collaboration with many different players in an orderly and comprehensive manner.

(4) Coordination of activities in coastal zones

- Conduct the process for establishment of sea surface utilization implement coordination rules in consideration of local actual status in coastal zones. Improve access to information on the utilization coordination rules in different regions and conduct awareness-raising and educational activities for users of coastal zones, including those engaged in marine recreational activities.
- As part of safety and environmental measures for small ships, take actions for decreasing the number of deaths and missing persons in small ship accidents, for eliminating and alleviating environmental issues, for increasing proper utilization and for stimulating related businesses. For accelerating development of the environment for proper use of small ships, take efforts such as construction of *umi no eki* (marine station) facilities. In addition, conduct actions against abandoned pleasure boats, based on a combination between boosting of the mooring and safekeeping capacity and regulatory actions for proper management of pleasure boats.

10 Preservation of Remote Islands

(1) Preservation and management of remote islands

a. Preserving and managing islands that give grounds for the EEZ and territorial seas, etc.

(i) Implementing stable preservation and management of remote islands and low-water lines

- Restrict activities of submarine drilling in the low-water line preservation areas in order to preserve the low-water line, which is a basis for the EEZ and continental shelves, in accordance with the Act on the Preservation of Low-Water Line and the Basic Plan for Preservation of Low-water Line. In addition, to understand the status of the low-water line, implement patrol by ships, helicopters and other equipment, periodically take aerial photographs, and promote surveys that use satellite images and other materials.
- Maintain and update the database of low-water lines for information-sharing among related institutions so as to integrate and manage various kind of information on low-water lines. To make widely known the importance of low-water line preservation zones, erect signboards and conduct activities for building awareness. In addition, from the perspective of territorial preservation, implement erosion-control measures and

maintenance management in coastal conservation zones together with the low-water lines.

- Update the national land information such as names of islands by contacting local governments and their equivalent for confirmation. Especially for properly conserving and managing islands serving as grounds for territorial seas and for increasing public understanding, check the names given to islands and, if they are uncertain, conduct deliberations among related agencies to determine the names so that standardized names will be used in maps and charts.
- Construct action bases with transport and supply capabilities on remote islands, namely Minami-Tori Shima Island and Okino-Tori Shima Island, to ensure that development and utilization of marine resources and marine surveys can be safely and stably implemented in marine zones distant from the mainland.

(ii) Securing safety of islands and implementing observation activities

- For securing safety of marine transport, improve lighthouses and other navigational aids established on islands and subject them to appropriate maintenance and management.
- For preventing and decreasing damages resulting from typhoons, earthquakes, tsunamis and other natural disasters, improve and properly maintain and manage meteorological and oceanographic observation facilities on islands. In parallel, continue ground and upper-air meteorological observation as well as observation of greenhouse gases, ozone and solar radiation.
- Construct for islands georeferencing infrastructure since it is helpful for observation of oceanic plates.

(iii) Preserving natural environment on islands and in surrounding marine zones

- Islands separated by the ocean from other regions and where unique ecosystems are formed are vulnerable to the impacts of human activities and introduction of alien species. Properly maintain, manage and restore valuable ecosystems on these islands in efforts to conserve biodiversity.
- Take efforts for disposal of articles washed ashore, control of invasive alien species and infectious disease control, and to maintain or restore ecosystems.
- There are valuable fishing grounds in marine zones around islands with seagrass bed/algal bed, tidal flats and coral reefs. Conserve and rehabilitate the environment of fishing grounds and improve the fishing grounds. Bolster activities of fishermen and local residents to maintain and manage seagrass bed/algal bed, tidal flats and coral reefs in efforts to improve the habitat environment for aquatic plants and animals and restore fishery resources.
- For the purpose of preserving sites with good natural views, appealing seashore landscapes and natural coasts, conduct activities for sound coastal utilization, proper use of the natural park system, decreasing the outflow of red clay and nutrients from land areas, cleaning with citizens, raising awareness against illegal dumping, removing articles drifting and washed ashore, moving such articles away from islands and constructing waste disposal facilities.

b. Efforts with regard to islands important to Japan's security and maintenance of the order of the sea

- For the purpose of Japan's security and maintenance of the order of the sea, implement appropriate surveillance and monitoring operations on key islands and in their surrounding marine zones.
- Implement programs for reinforcing the defense posture in islands regions including the Southwestern Islands. Implement information-gathering, surveillance and monitoring and security activities around Japan including its southwest region to conduct thorough preparation for occurrence of different kinds of events.
- In view of the circumstances surrounding islands, conduct studies on special preservation, management and development of islands of particular significance to maintenance of Japan's territorial zones, EEZs and their equivalent, and to ensuring Japan's security and marine resources (so-called border islands). Take necessary steps in accordance with the findings.

(2) Development of Remote Islands

a. Maintaining transport and communication

- Provide assistance in construction of facilities and introduction of equipment that are effective to streamlining of distribution on remote islands.
- From the perspective of providing convenience for inhabitants on remote islands and stimulating marine sightseeing with the use of local resources, provide support for stably maintaining sea and air routes to and from the remote islands. Construct island terminals for ensuring safety and stability of transport.
- Fuel oil prices are higher on islands than on the mainland. Aid should thus be offered to effectively reduce fuel oil prices.
- For increasing the efficiency of information distribution and for establishing a communication system including an advanced information and communication network, assistance should be offered in construction of facilities and transmission lines that give access to ultra-high speed broadband connection, cell phones and other services.

b. Maintaining medical and long-term care and fostering education and culture

- For maintaining medical care on islands and in other remote areas, create a close support system matched with local circumstances and take efforts to hire necessary medical doctors and other personnel, operate regular visiting medical care and construct a platform for cooperation among medical institutions.
- Economic burdens should be reduced for expecting mothers living on islands at the time of receiving medical checks and giving childbirth away from their islands.
- Economic burdens should be lowered for high school children living on islands without high school in the case of commuting to high school or living outside their islands for receiving high school education.

c. Developing industries on remote islands

- Take different actions for stimulating the local economy on islands and encouraging more people to live permanently on remote islands, including reduction of marine transport expenses for nurturing strategic industries and increasing job opportunities, sightseeing promotion for increasing exchange and acceleration of efforts to create safe and reassuring living conditions.
- For maintaining and boosting the multiple functions exerted by fisheries and fishing villages on islands, conduct efforts to revive fishery industries as core business on islands through assistance in fishery rehabilitation activities. Assistance should also be given in construction of an environment that gives impetus for new product development, cultivation of sales channels and other positive actions for speeding up the expansion of those engaging in agriculture, forestry and fisheries into manufacturing and service sectors.
- Facilitate new and additional machinery and other equipment for municipal governments which have plans for industrial development on islands manufacturing, hotel, information service and other businesses.
- For attaining constant and appropriate supply of energy and reducing environmental burdens, encourage utilization of renewable energy based on natural characteristics of islands.
- Implement a comprehensive study on a special zone system for islands in order to develop islands based on local innovative ideas.

d. Constructing infrastructure

- Conduct construction of infrastructure for industrial development on islands, including roads, ports and other infrastructure for agriculture, forestry and fisheries and living infrastructure for an improved environment for permanent living.

11 Securing International Coordination and Promoting International Cooperation

(1) Formation and development of the order of the sea

- To contribute to the formation and development of the order of the sea, Japan should actively work to establish various international agreements with regard to the sea. There are issues stemming from existence of marine zones where Japan's claims on jurisdiction over the EEZ and continental shelves are overlapping with those of neighboring countries. The government should make every possible effort to solve such issues based on international law in order to secure Japan's interests and further stabilize the order of the surrounding marine zones.
- To ensure appropriate implementation of UNCLOS and other international agreements, Japan should positively participate in ocean-related discussions at organizations such as the United Nations

and proactively participate in the development of international agreements regarding to the ocean at the IMO meetings and other opportunities and in international coordination and cooperation regarding to the ocean.

- To contribute to formation and development of the order of the sea, Japan should seek resolutions for marine-related conflicts based on international law and other international rules. Japan should place emphasis on active utilization of independent bodies such as international judicial bodies, and share this idea with other countries. And Japan should also proactively support activities of international judicial bodies in the marine-related fields, including those by the International Tribunal for the Law of the Sea.

(2) International coordination with regard to the sea

- Japan should actively participate in international frameworks with regard to the sea and try to take the initiative in activities carried out under the coordination and cooperation of international society. In particular, to secure freedom of navigation and safety on very long marine routes, which are the very basis for ensuring Japan's safety, including safety in economic aspects, Japan should strengthen cooperative relations with relevant countries concerning maritime safety and materialize cooperation by actively utilizing opportunities such as the ASEAN Regional Forum.
- Japan should deepen coordination with coast guard agencies of relevant countries through multilateral meetings such as the North Pacific Coast Guard Forum and the Heads of Asian Coast Guard Agencies Meeting and through bilateral meetings with India, The Republic of Korea, Russia and other countries. Japan should also strengthen the international coordination and cooperation systems with relevant countries concerning the marine environment through participation in NOWPAP, PEMSEA and other international frameworks.
- To promote appropriate conservation and management of international fishery resources, such as tuna and tuna-like species, Japan should take a leadership role in science-based discussions at regional fisheries management organizations.
- Japan should promote improvement of the environment and other measures by each country aimed at putting new conventions into effect with regard to securing of safety and preservation of the environment related to dismantling and recycling of ships.
- Drifting marine debris generated as a result of the Great East Japan Earthquake has washed ashore in countries including the United States, and still more drifting marine debris reportedly may be washed ashore in other countries. Japan should predict drift patterns of such marine debris, appropriately provide information to relevant countries and support private organizations working on this problem. Japan should continue the prediction of the drift patterns and keep providing information to relevant countries until FY2013 and should address the issue appropriately based on the actual drift patterns and experts' opinions in FY2014 and onward.
- Japan should continue to promote measures to address the problem of pirate attacks off the coast of Somalia and in the Gulf of Aden by cooperating with international society. Japan should establish systems for preventing terrorism in the sea and proliferation of weapons of mass destruction by maritime transport. Japan should also actively participate in maritime exercise and other exercises, etc. under PSI.

- With regard to prevention of terrorist attacks in the sea and proliferation of weapons of mass destruction by maritime transport, the Protocol of 2005 to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation and other agreements should be concluded at an early stage.
- Japan should support activities under ReCAAP, whose objectives include sharing of information on pirates among Contracting Parties to strengthen cooperation for combating piracy while respecting coastal countries' sovereignty, and encourage other relevant countries to join this agreement.
- The government should make concerted efforts to gain observer status at the Arctic Council.
- Concerning the issue of name of the Sea of Japan, Japan should strive to make more widely known the proper understanding, in the international community and among citizens of Japan that the Sea of Japan is the only internationally established name of the sea area concerned.

(3) International cooperation with regard to the sea

a. Marine surveys and marine science and technology

- To continue to address global issues such as global warming and ocean acidification, Japan should continue to participate in and contribute to international frameworks on marine observation plans, data exchanges, etc. implemented by the WMO, UNESCO/IOC and other organizations.
- Japan should actively promote international cooperation for marine observations conducted in coordination with related agencies of Japan and other countries, including bilateral cooperation based on agreements on cooperation in science and technology, etc. in order to promote marine observational research with a view to assessing the impacts of atmospheric fluctuations in the Arctic, Pacific and Indian Oceans on the environment, which have been drawing increasing attention globally.
- Japan should continue to participate actively in the Integrated Ocean Drilling Program (IODP), under which Chikyu, a Japanese deep sea drilling vessel, and drilling vessels of Europe and the United States are shared among nations. Japan should also establish a cooperative framework involving not only Japan, the United States, and Europe but also countries in Asia, Oceania and other regions.

b. Marine environment

- From the viewpoint of ensuring biodiversity, Japan should promote efforts for surveys and research on the marine environment and biosphere under international cooperation with regard to the protection of coral reefs and animals that migrate wide areas.
- At international conferences such as the International Conference on the Environmental Management of Enclosed Coastal Seas (EMECS), Japan should inform other countries of its measures for protecting the marine environment, such as the Total Pollutant Load Control System (TPLCS) and initiatives for creating *sato-umi* (a coastal area where biological productivity and biodiversity has increased through human interaction). In addition, to contribute to solving water pollution problems in Asian countries, Japan should transmit information by utilizing the guidelines on the TPLCS and help those countries introduce such a system.
- Japan should promote coordination and cooperation with Pacific island countries and other

countries toward solution of issues common to those states and islands of Japan, such as preservation and management of islands, management of the surrounding sea areas, management of fishery resources, and response to climate change.

c. Security measures for the sea and securement of navigation safety

- Among projects under the Cooperative Mechanism in the Straits of Malacca and Singapore, Japan should promote cooperation related to maintenance of Aids to Navigation and development of human resources to be involved in the maintenance and management of such facilities. At the same time, Japan should encourage a wide range of countries and parties using the facilities to participate in the Mechanism so that the Mechanism function effectively and measures for securing navigational safety and environmental preservation in the Straits of Malacca and Singapore be strengthened.
- Japan should provide support to related countries for enhancing their abilities to cope with piracy and promote coordination and cooperation with maritime safety agencies of other Asian countries for strengthening control of smuggling and illegal immigration and countermeasures against terrorism.
- To boost international coordination concerning port security, Japan should promote assistance for capacity-building and implement joint exercises.
- Japan should contribute to strengthening the qualities of seafarers in other countries through the International Cooperative Training Project for Asian Seafarers and other programs. Japan should also contribute to strengthening the qualities of people in other countries involved in maritime affairs through the World Maritime University and other institutions.

d. Support for disaster prevention and maritime search and rescue

- Japan should promote and disseminate its advanced disaster prevention technologies to countries vulnerable to disasters, including Asian countries. Above all, Japan should provide countries in Asia-Pacific and other regions with information on forecast of storm surges and high waves, technical advice and support for information network activities in order to prevent disasters caused by tsunamis, storm surges, high waves and other phenomena, which have been growing more severe due to global warming.
- For disaster preparedness and mitigation in Asia-Pacific and other regions, Japan should create models of earthquakes, tsunamis and other disasters to predict and verify them and continue the quick provision of tsunami information to countries where tsunami-related disasters are of concern.
- To conduct maritime search and rescue efficiently and effectively, Japan should strengthen coordination and cooperation with relevant countries by mutually exchanging information, implementing joint exercises, etc.

12 Enhancement of Citizens' Understanding of the Sea and Fostering of Human Resources

(1) Promotion of marine-related education

- The government should heighten marine-related education at elementary schools, junior high schools and high schools based on courses of study. In addition, based on measures actually implemented for this purpose, the government should discuss effective measures for ensuring marine-related education to be provided systematically in classes of related subjects and in the Period for Integrated Studies , including, as necessary, how to position such education in courses of study.
- The government should facilitate creation of supplementary materials for marine-related education. In addition, the government should create teaching materials such as manuals and documents showing case examples of marine-related education that was actually provided, and improve related training programs for teachers. Through these and other measures, the government should create an environment that will allow educators to independently and continuously provide marine-related education.
- From the viewpoint of developing a comprehensive support system for marine-related education, the government should facilitate organic coordination between school education and social educational facilities such as aquariums and museums, industrial facilities of the fisheries industry, maritime industries and other industries, organizations that provide opportunities to receive marine-related education, and others.
- Outreach efforts should be promoted, with cooperation from academic circles and associations, so that the citizens can, for example, feel the appeal of the sea and possess marine-related dreams and a sense of excitement.

(2) Fostering and securing human resources who will support an oceanic state

a. Fostering and securing human resources specialized in particular fields

- At high schools that provide education on the sea and fisheries, practical education should be promoted through onsite practice and other measures and more training vessels need be equipped and improved.
- Human resources specializing in maritime science and technologies, maritime affairs and fisheries should be fostered at technical colleges and universities and colleges specializing in maritime science and technologies, mercantile marines and fisheries. In addition, to secure human resources in the fisheries industries and related fields, measures should be implemented to, for example, encourage future leaders to enter the fisheries industries, improve practical specialized education and facilitate the participation of women. In order to secure Japanese seafarers in a planned manner, improvement of environment should also be continued to permit retired Maritime Self-Defense Force officials and other people to be employed as seafarers.
- To foster and secure human resources and technology experts in marine-related industry fields that are expected to grow in the future from medium- and long-term perspectives, the government

should promote measures implemented in an integrated manner through coordination between technology development at related organizations, etc. in the industrial world and the national government and education and research at universities and other institutes.

- To foster researchers who can exercise leadership in international research projects, the government should secure and expand opportunities that will permit researchers in different fields to conduct research in an international environment.

b. Fostering and securing human resources with wide-ranging knowledge with regard to the sea

- The government should promote basic and advanced research in marine-related fields at universities, research institutes, etc. to develop the spontaneity and creativity of young researchers as well as to develop the basic marine-related abilities of students and graduate students in science, engineering, agriculture and other fields.
- Improve curriculums at universities and other institutes so as to promote interdisciplinary education and research. At the same time, promote practical measures such as internship and reeducation of people in the working world under coordination with the industrial world.
- Japan should continue to contribute personnel to international organizations in the marine-related fields, such as in the IMO, UNESCO/IOC, the Commission on the Limits of the Continental Shelf, and the International Tribunal for the Law of the Sea (ITLOS).

c. Fostering human resources by utilizing regional characteristics

- From the viewpoint of creating diverse marine-related knowledge clusters that utilize regional characteristics and creating regionally based marine industries, etc., the government should promote creation of networks for industry-academia-government collaborations through various programs.
- The government should promote sharing of training ships, fisheries research laboratories, marine laboratories and other facilities by universities with marine-related departments, etc. so that they can engage in research and education reflecting characteristics of each region based on the individual educational philosophies.

(3) Heightening of citizens' understanding of the sea

- To stimulate citizens' understanding and interest in the sea, a variety of measures including public opening of training ships and other facilities, study tours of marine-industry-related facilities, work-study programs, beach cleaning campaigns, educational activities on conservation of the marine environment, marine safety and coastal zones, dissemination of marine leisure activities, and activities to deepen people's understanding of the sea, should be implemented under industry-academia-government collaborations and cooperation, through opportunities such as the 'Ocean Day' and 'Ocean Month', in consideration of the meaning of establishment of 'Ocean Day' as a national holiday.
- The government should continue to commend individuals and organizations that have made outstanding achievements in the marine-related fields, such as in awareness-raising activities,

advancement of science, research and industrial development, as contributors to promotion of an oceanic state.

- With a view to increasing opportunities for the citizens to enjoy the sea, efforts should be promoted to revitalize local communities by promoting measures including marine tourism that utilizes respective regions' potential marine resources, such as seafood, beautiful seashore landscape, unique climate created by their own history and culture, and marine space suitable for marine leisure activities.
- With regard to underwater archaeological sites as cultural heritage that is important for knowing the history and culture of Japan as a maritime country, the government should conduct surveys and research concerning how to preserve and utilize such sites while considering their use as tourism resources, etc.
- Marine-related information should be transmitted in an easily comprehensible manner via means such as the media and Internet.

Chapter 3 Requirements for Comprehensive and Planned Implementation of Ocean Measures

1 Revision of Headquarters for Ocean Policy for Effective Implementation of Measures

The government will work intensively on issues such as promotion and creation of marine industries and promotion of marine research. In relation to this, it is more important than ever that the entire country comprehensively and strategically work on the aforementioned issues through appropriate coordination and cooperation among not only related administrative organs but also related parties in the industrial world, universities and others. It will also be necessary to appropriately plan important ocean measures in response to, for instance, the rapid changes in social circumstances surrounding the sea in recent years.

For implementing measures established in the Basic Plan on Ocean Policy and realizing the vision of Japan as an oceanic state, it is important that, after establishment of the Plan, timetables for individual measures be developed, projects be implemented in a planned manner based on the timetables, comprehensive strategies be formulated, projects, etc. be comprehensively implemented based on the strategies, and specific initiatives such as development of required legal systems be promoted. At the same time, it is important to ensure effective implementation of those measures in accordance with assessment of implementation status, by refining focus, eliminating overlapping projects, etc.

From these perspectives, to ensure that the Headquarters for Ocean Policy fully demonstrates its planning functions and functions as the general coordinator, the government should implement the following measures concerning the Councilors' Meeting and Administrative Office, which consist of experts from a wide range of fields.

(1) Improvement of System for Study at Councilors' Meeting

- Follow-up on implementation status of measures established in the Basic Plan on Ocean Policy should be conducted regularly to assess such status. Measures that are deemed to be of particular significance should also be studied intensively in consideration of changes in social circumstances and other factors. After these assessments and studies are conducted, new measures that are believed to be necessary should be proposed to the director-general of the Headquarters for Ocean Policy.

In addition, to enable these assessments and studies, project teams, etc. should be set up as necessary to permit intensive assessment and study of each theme with participation of a wide variety of related parties other than councilors.

(2) Functional improvement of Administrative Office

- Coordination with relevant governmental institutions (including those related to fields other than

ocean measures) and the industrial world, etc. should be improved at the Administrative Office of the Headquarters for Ocean Policy in order to work on issues such as promotion and creation of marine industries, which should be promoted intensively in the future. Measures should also be implemented to establish a system under which the Administrative Office can fully demonstrate its functions. For example, officials on temporary assignment, etc. from the private sector or relevant governmental institutions should be allowed to play the central role in the comprehensive coordination of particular important issues.

2 Duties of Relevant Personnel and Mutual Coordination

- For promoting ocean measures comprehensively and in a planned manner it is important that the national government, local governments, marine business operators, universities and research institutes, and other parties involved in the measures work on them actively based on their individual roles and through mutual coordination.
- Local governments should, by sharing roles with the national government, take measures to preserve a favorable marine environment in accordance with respective regions' circumstances and characteristics, such as through promoting disposal of drifting marine debris on beaches, endeavor to promote marine industries, such as the fisheries industry and marine-related tourism that makes use of the regional resources, which are the key industries of the region, formulate regional plans for managing land areas and marine zones in an integrated, comprehensive manner, and strive to foster human resources by taking advantage of regional characteristics. In relation to this, it is also important that local governments strengthen mutual coordination, which applies where broad-based measures involving multiple local governments are required, and promote the above measures efficiently under close coordination between respective departments.
- Marine business operators have to try hard to preserve the marine environment through environmental measures such as the technological development to reduce environmental load, voluntarily manage fishery resources, and ensure efficient and stable maritime transport. Above all, from here forward it is necessary to intensively work on promotion and creation of marine industries, including development of marine energy and mineral resources and use of marine renewable energy. Under such circumstances, marine business operators are expected to strive to take actions, such as actively making new investments and developing new markets, by utilizing the private sector's vitality, originality and ingenuity, combined with the appropriate infrastructure development and support by the national government.
- It is important that universities, research institutes, and other organizations strive to promote research and development related to marine science and technology toward realization of an oceanic state. In relation to the above, they are also expected to strive to contribute greatly to creation and promotion of marine industries, development of human resources, etc. by building and utilizing frameworks for industry-academia-government collaborations.
- Citizens and NPOs are to make efforts to deepen their understanding of the sea by participating in marine-related meetings and events, interacting with marine business operators, and carrying out ordinary environmental conservation activities such as cleaning of beaches.

- When ocean measures are planned and implemented, opinions of the citizens and other related parties should be reflected so that the aforementioned efforts are promoted.

3 Proactive Publication of Information concerning Measures

To ensure that the Basic Plan on Ocean Policy will be widely known to citizens, information about the Plan should be provided via diverse media such as printed materials and the Internet. At the same time, the information should be translated into English for overseas publications and materials for young people should be created and distributed. It is also important to create a base for allowing related parties to share information so that parties related to measures can promote them through mutual coordination. Therefore, measures should be taken to, for example, easily facilitate reference to specific measures from the Plan, by providing links from the Basic Plan on Ocean Policy to related measures on the Internet.

In addition, each year follow-ups should be implemented concerning the progress of individual measures under the Basic Plan on Ocean Policy in consideration of the assessments by the Councilors' Meeting, etc., and the progress should be appropriately publicized.