

**Recommendations for
Developing a New Basic Plan on Ocean Policy**
—Ocean Policy for Society 5.0—

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Keidanren (Japan Business Federation)

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I. Introduction

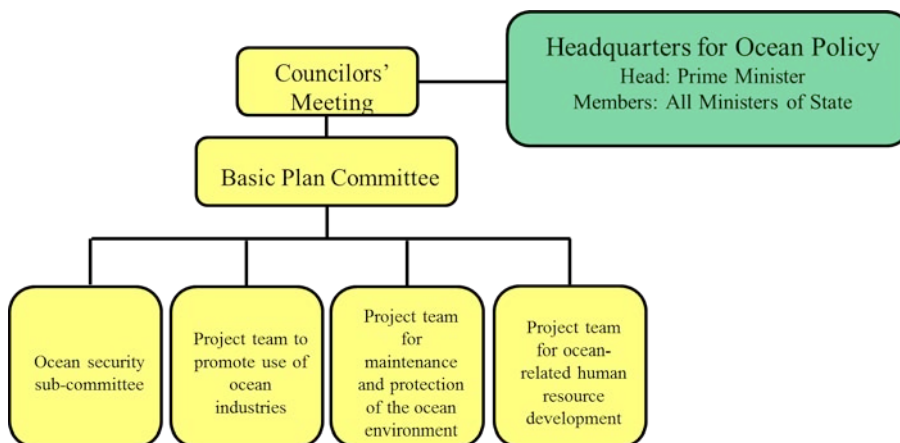
Japan is a maritime nation completely surrounded by ocean, and over the course of history its civilization has developed through maritime trade. It depends on imports for many foodstuffs and natural resources, and relies on sea transportation for more than 99% of imported and exported freight.¹ In such a country, day-to-day life is based on the premise of a safe maritime environment.

Ocean policy has recently grown in importance as the international situation surrounding Japan has become increasingly uncertain. Stronger national security and disaster prevention initiatives are matters of urgency. Increasing Competitiveness of marine industries and advances in development of marine resources also have critical significance, from the perspectives of both industrial development and economic security. Moreover, international attention has turned to the high seas in recent years, as it has been pointed out that risks relating to oceans and other global commons are heightening.² Recognizing the importance of oceans, the Government of Japan passed the Basic Act on Ocean Policy in 2007, and since then the Headquarters for Ocean Policy has implemented policy founded on the Basic Plan on Ocean Policy. This plan, determined by the Headquarters on the basis of the above Act, is generally reviewed every five years and approved by the Cabinet after seeking the views of a Councilors' Meeting that brings together experts appointed by the Prime Minister.

The third Basic Plan on Ocean Policy to begin in fiscal 2018 is the first to be considered under the National Security Strategy developed in 2013, and will also be shaped by the remarkable wave of technological innovation over recent years.

Recognizing such trends and aiming to utilize the latest advances in IT and data while devising comprehensive solutions for issues including security and industrial development, we propose that the following points should be incorporated into the plan.

Figure 1: Current structure of the Headquarters for Ocean Policy



Source: Prepared by the Keidanren Secretariat based on the website of the Headquarters for Ocean Policy and Councilors' Meeting documents

¹ Source: Ministry of Land, Infrastructure and Transport website

² In addition to the high seas, global commons include the atmosphere, outer space, and cyberspace.

II. Ensuring Ocean Safety and Security

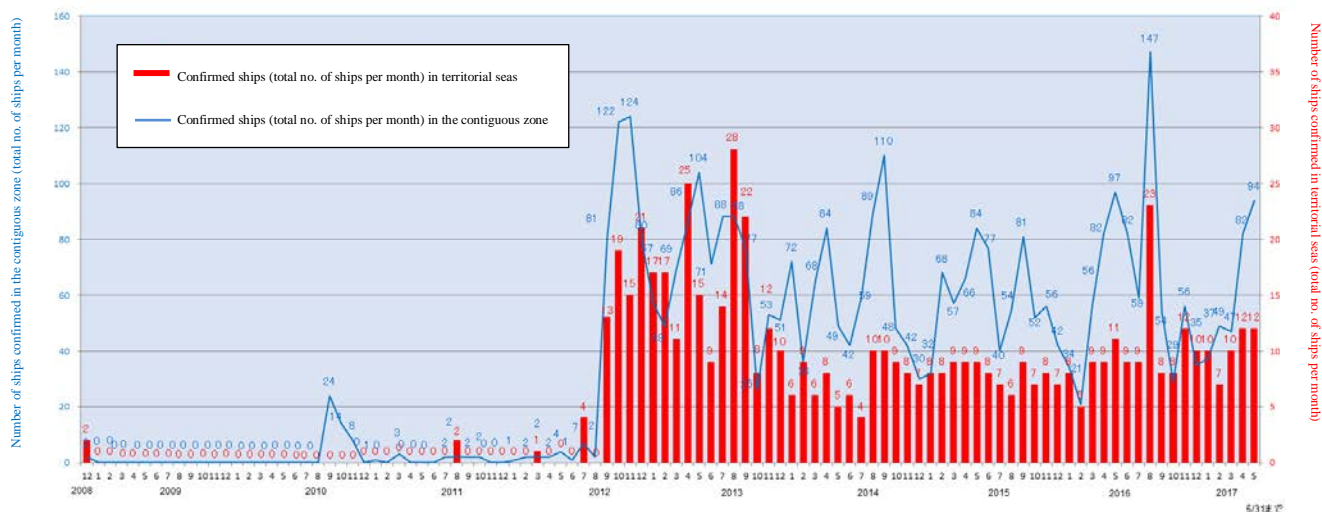
1. Enhancing Security

(1) Reinforcing security measures in Japan's territorial seas and managing the Exclusive Economic Zone (EEZ)

As Chinese public vessels and fishing boats have become increasingly active in the East China Sea and other parts of Japan's territorial seas, a pressing need has emerged to enhance ocean security in order to ensure that the people of Japan can live in safety and security.

Japan's territorial seas and EEZ together comprise an expanse approximately 12 times the size of our country's land area³. Thus Japan should continue to enhance systems to appropriately guard its territorial seas and manage EEZ, including those for real-time collection and utilization of data. There is a particular need for systematic development of Maritime Self-Defense Force vessels and aircraft as well as Japan Coast Guard patrol vessels and aircraft.

Figure 2: Number of ships confirmed present in Japan's territorial seas and contiguous zone



Source: Prepared by the Keidanren Secretariat based on Japan Coast Guard website

(2) Preservation of remote islands

Preserving Japan's territory and territorial seas and properly managing the EEZ requires appropriate preservation and management of 6,847 remote islands⁴.

As well as steadily registering unowned, uninhabited remote islands as property of the state, the government is making progress on preserving and managing inhabited remote islands, having enacted legislation including the Remote Islands Development Act and, in April 2016, the Inhabited Remote

³ Combined area of approximately 4,470,000 km².

⁴ Islands 0.1 km or more in circumference, excluding Hokkaido, Honshu, Shikoku, Kyushu, and the main island of Okinawa.

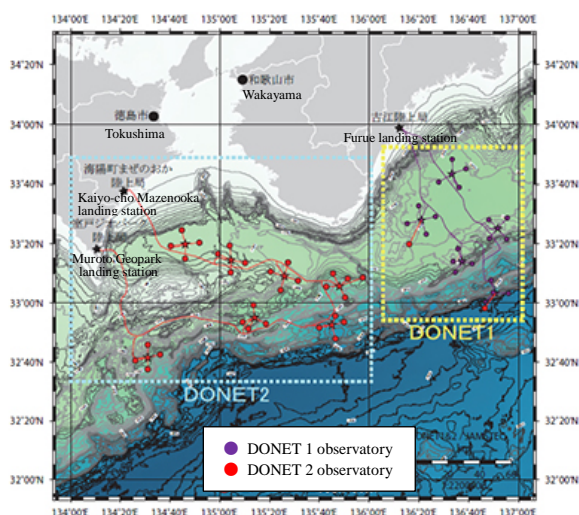
Islands Borders Act⁵. Moreover, the Japan Coast Guard is improving its facilities on remote islands and the Ministry of Defense is creating new units, reinforcing existing ones, and enhancing equipment capabilities. Such efforts to improve security capabilities are advancing. In order to continue preserving and managing remote islands, the government should take adequate steps to ensure that the necessary legislation, systems, and budgets are in place.

2. Disaster Preparedness and Mitigation

Ocean data also contributes to coping with natural disaster. For example, researchers have suggested the possibility of large earthquakes in the Tokai/Tonankai/Nankai regions, and sophisticated simulations based on seabed data concerning strata movement are required in order to enable forecasting of future earthquakes and tsunami.

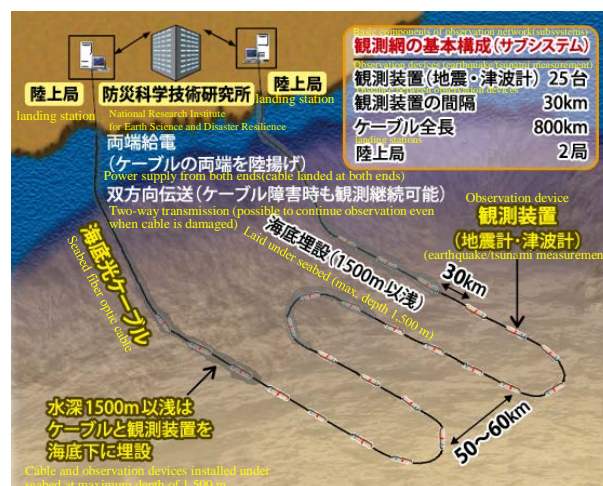
A seabed observation network has been constructed comprising the DONET⁶ earthquake and tsunami measurement system located off the Kii Peninsula (DONET 1) and extending from Cape Shionomisaki to Cape Muroto (DONET 2), as well as the S-NET⁷ system stretching from Hokkaido to the seabed off Boso. In order to protect the lives and property of the citizenry, it is necessary to enable the most accurate forecasts possible of unavoidable natural disasters by utilizing the data gathered from such observation systems.

Figure 3: DONET observatory



Source: Prepared by the Keidanren Secretariat based on Japan Agency for Marine-Earth Science and Technology website

Figure 4: Basic configuration of the S-NET observation system



Source: National Research Institute for Earth Science and Disaster Resilience website

⁵ Other legislation enacted is the Act on Special Measures for the Promotion and Development of Okinawa, the Act on Special Measures for the Amami Islands Promotion and Development, and the Act on Special Measures for the Ogasawara Islands Development.

⁶ Defense-Oceanfloor Network system for Earthquakes and Tsunamis

⁷ Seafloor Observation Network for Earthquakes and Tsunamis along the Japan Trench

3. Promoting International Cooperation

International cooperation is essential to ensure the security of oceans extending between states. As demonstrated by Japan's ratification of the United Nations Convention on the Law of the Sea in 1996 and its financial and human resource support for international organizations, this country places priority on the rule of law at sea. Following the judgment announced in July 2016 by an international tribunal mediating the South China Sea dispute between China and the Philippines⁸, the Government of Japan has issued statements urging the parties concerned to abide by the ruling. It should continue its efforts to build stable order at sea.

The Government of Japan has also provided six newly-built patrol vessels to Vietnam and 10 patrol vessels to the Philippines. We urge the government to continue strategic international cooperation efforts aimed at ensuring ocean security.

III. Ensuring Economic Security

1. Reinforcing the International Competitiveness of Marine Industries

Japan's marine industries, such as maritime transport, shipbuilding, and maritime equipment, possess advanced manufacturing techniques and have supported ocean logistics while providing meticulous transportation services. Amid rising protectionism in many countries, Japan continues to promote free and open trade systems. Considering the growing trend for companies to seek out optimal locations for their operations regardless of country, logistics networks linking such bases are likely to become even more crucial over the medium to long term.

However, in the face of fierce international competition such industries are locked in a constant battle for survival with overseas companies, and in recent years have also been confronted with sluggish demand for cargo services, downward pressure on freight charges, and sparse orders for new vessels.

According to "The Ocean Economy 2030" published by the Organisation for Economic Co-operation and Development (OECD) in 2016, growth in marine industries may exceed overall global economic growth in terms of both added value and employment, and will constitute a new economic frontier.

Marine industries underpin people's lives and livelihoods in Japan, and maintaining and developing the foundations of such industries, and reinforcing their international competitiveness, are requirements for economic security and industrial policy. The public and private sectors need to adopt a unified approach to development of marine industries.

⁸ After considering the dispute between China and the Philippines over sovereign rights in the South China Sea, the arbitration tribunal, which was established pursuant to the United Nations Convention on the Law of the Sea, ruled that China's claims and activities in the relevant waters were not legitimate.

(1) Promoting a productivity revolution in marine industries

As united public- and private-sector efforts to realize the Society 5.0⁹ progress, marine industries should maximize their use of cutting-edge information technology. The government is incorporating IT into all phases of marine industries from vessel development and construction to shipping operations, and promoting i-shipping aimed at enhancing the competitiveness of the shipbuilding and maritime transport industries and expanding ship-building market share, as well as the j-Ocean initiative aimed at improving technological capabilities and productivity in the ocean development field. If the full emergence of the IoT¹⁰ era enables real-time acquisition of cargos' positioning data, this will facilitate the construction of more efficient and resilient logistical networks. The public and private sectors should unite in their efforts to reinforce the competitiveness of marine industries in such ways. They also need to jointly develop advanced technologies for vessels such as low-carbon ships.

Figure 5: Overview of i-shipping

Promoting a productivity revolution in all phases of marine industries,
from development and design to construction and operations



- Boosting efficiency of sea transport, which underpins Japan's trade
- Expanding ship-building exports and revitalizing regions

	Now	2025
Share of ship-building market	20%	30%
Ship-building sales	2.4 trillion yen	6 trillion yen

Source: Prepared by the Keidanren Secretariat based on Ministry of Land, Infrastructure, Transport and Tourism documents

Figure 6: Overview of j-Ocean

Improving technological capabilities and productivity
in ship design, manufacturing, and operations



Secure ocean development markets

	Total in 2010s	Total in 2020s
Sales in the ocean development field	3.5 trillion yen (projection)	4.6 trillion yen

Source: Prepared by the Keidanren Secretariat based on Ministry of Land, Infrastructure, Transport and Tourism documents

⁹ The Japanese government's 5th Science and Technology Basic Plan sets forth the concept of a "super-smart society" following on from the hunter-gatherer society, agricultural society, industrial society, and information society. A super smart society (Society 5.0) is characterized as follows: "a society that is capable of providing the necessary goods and services to the people who need them at the required time and in just the right amount; a society that is able to respond precisely to a wide variety of social needs; a society in which all kinds of people can readily obtain high quality services, overcome differences of age, gender, region, and language, and live vigorous and comfortable lives."

¹⁰ Internet of Things: denotes the concept of widespread interconnection of people, goods, and data via the Internet.

(2) A level playing field for competition

For marine industries that constantly face fierce international competition, disparities in tax systems have a major impact on business competitiveness. In this context, we welcome the bill adopted this year for partial revision of the Marine Transportation Act and the Mariners Act pertaining to expansion of the tonnage tax system in the aim of creating a level playing field for international competition. There is a need for further ongoing review of maritime transport tax systems that takes into account circumstances and trends in other countries with a view to placing competitors on an equal footing.

2. Development of Domestic Marine Resources

Japan lacks natural resources, including energy resources, and relies heavily on imports. As worldwide demand for resources is projected to increase in conjunction with economic growth in emerging countries, successful commercial mining of various seabed resources lying within Japan's territorial seas and EEZ, which are the six-largest in the world, would secure domestic production of marine resources and contribute to economic security. It would also enhance bargaining power when importing resources, enabling resources to be secured more economically. Moreover, it would generate new domestic growth industries including petroleum, natural gas, and methane hydrate.

(1) Marine energy development

Japan's energy self-sufficiency rate ranks almost the lowest among OECD member countries¹¹. In 2016 Japan imported approximately 12 trillion yen's worth¹² of mineral fuels¹³, and improving the energy self-sufficiency rate by developing domestic production of energy sources is a key issue.

a. Methane hydrate

Methane hydrate resource volumes are being evaluated, and technology development is under way with a view to commercialization around the mid-2020s.

The first offshore production test on sand layer deposits took place in March 2013, followed by a second test in May and June 2017. The Headquarters for Ocean Policy Councilors' Meeting has drawn up a road map leading to commercialization around the mid-2020s¹⁴. Given that China, India, and other countries are currently also developing technologies in this field, Japan should accelerate its own technology development with a view to early commercialization.

As for surface-layer deposits, the National Institute of Advanced Industrial Science and Technology estimates the existence of approximately 600 million m³ of methane-gas-equivalent resources off the

¹¹ As of 2014, the rate stood at 6.0%, ranking 33rd out of 34 OECD member countries. Source: Ministry of Economy, Trade and Industry website.

¹² Source: *Nihon boeki no genjo 2017 (Foreign Trade 2017)*

¹³ Petroleum, LNG, LPG, and coal

¹⁴ 2016 proposal of the Headquarters for Ocean Policy Councilors' Meeting: Project Team Report on New Marine Industry Promotion and Mining

Joetsu region. Explorations should progress steadily in the aim of ascertaining resource volumes and distribution.

Image 1: Gas production during the second methane hydrate offshore production test



Source: MH21 Research Consortium website

b. Renewable energy

Markets for offshore wind power energy and other renewable energy sources are expanding worldwide. It is expected to spur economic growth and curb greenhouse gas emissions by promoting the widespread use of renewable energy while constraining burdens on the general public.

Offshore wind power generation projects require unified public- and private-sector efforts to reduce costs. Specifically, those involved should aim to develop larger turbines, and build necessary vessels and improve the durability of mooring cables for wind turbine construction and maintenance. The government should also take the lead in gathering data on wind strength and direction and creating the right environment for wind power projects, including zoning initiatives¹⁵ enabling turbines to be installed in locations suited to stable, large-scale power generation. In addition, it needs to take steps to remove system constraints.

On the legislative front, revisions to the Ports and Harbors Act in July 2016 enabled long-term exclusive use of port areas. However, rules regarding use of general sea areas are still unclear. The operators' guide¹⁶ prepared by the Agency for Natural Resources and Energy in March 2017 should be enhanced, and rules concerning permits, etc. required to operate in general waters should be clarified.

¹⁵ Efforts to comprehensively assess zones (areas for protection and areas for development) to achieve the aims of environmental preservation and introduction of renewable energy, based on discussion among interested parties. Source: Ministry of the Environment website.

¹⁶ *Ippan kaiiki ni okeru riyo chousei ni kan suru gaido* (Guide to usage coordination in general ocean areas) (first edition), Agency for Natural Resources and Energy, March 31, 2017

Furthermore, R&D and trials should move ahead for wave, tidal, ocean current and ocean thermal energy conversion.

Image 2: The Fukushima Hamakaze 5 MW floating offshore wind turbine



Source: Fukushima Offshore Wind Consortium website

c. Petroleum and natural gas

The three-dimensional geophysical survey vessel *Shigen* is conducting fundamental geophysical surveys, on the basis of which exploratory drilling is being carried out. Since the results of this exploration will expand the areas in which commercial drilling and production is feasible, the government should continue taking the initiative in conducting fundamental geological surveys and exploratory drilling.

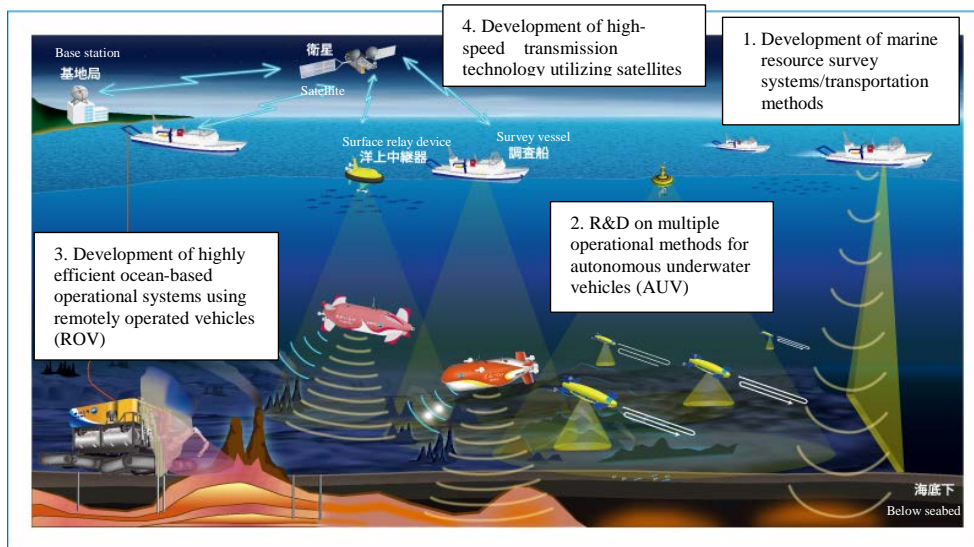
(2) Domestic marine mineral resource development

Japan's EEZ is believed to harbor natural resources other than energy resources, but to date there have been no examples of commercial production. Combined industry-government-academia efforts centered around the Cross-ministerial Strategic Innovation Program (SIP)¹⁷ and the Japan Oil, Gas and Metals National Corporation (JOGMEC) should move ahead.

¹⁷ Cross-ministerial Strategic Innovation Promotion Program

A newly-established program through which the Cabinet Office Council for Science, Technology and Innovation (CSTI) plays an overarching role to manage scientific and technological innovation in a manner that goes beyond government agency frameworks and conventional boundaries between fields.

Figure 7: Marine resource survey technologies developed as part of the Zipangu in the Ocean program



Source: Prepared by the Keidanren Secretariat based on website of the Cabinet Office Council for Science, Technology and Innovation

a. Seafloor massive sulfide

Quantities of known seafloor massive sulfide resources are being identified and surveys of the new sea floor are under way with a view to evaluating resource volumes. At the same time, SIP's Zipangu in the Ocean program is developing technologies aimed at construction of highly efficient systems to survey concealed seafloor massive sulfide, for which survey methods have yet to be developed. In addition to these efforts, the Headquarters for Ocean Policy Councilors' Meeting has also drawn up a road map aiming for commercialization around the mid-2020s, including production technologies and environmental impact assessment.

Steady progress should be made toward identifying 50 million tons of resources, deemed to be the amount required for commercialization, and the public and private sectors should unite in developing production technologies and environmental impact assessment methodology.

b. Cobalt-rich crusts, polymetallic nodules, and rare earth mud

Surveys of resource volumes and production technologies are under way for Cobalt-rich crusts, polymetallic nodules, and rare earth mud, and SIP's Zipangu in the Ocean program is conducting research aimed at clarifying the origins of these resources.

Surveys should proceed steadily with a view to future commercialization.

3. Development of Overseas Marine Resources

Orders for overseas resource development projects involving export of infrastructure packages make a major contribution to Japan's economic growth. Technology transfer from overseas enterprises, alliances, and acquisitions are effective in making Japanese marine resource development companies more internationally competitive. We urge the government to back long-term feasibility studies¹⁸ for companies trying to bolster their competitiveness through funding support and guidance policy finance in the form of low-interest loans. The government should also establish schemes to compensate for losses resulting from risks beyond the control of Japanese companies taking part in overseas projects, such as rule changes and corruption on the part of partner governments and state-owned enterprises.

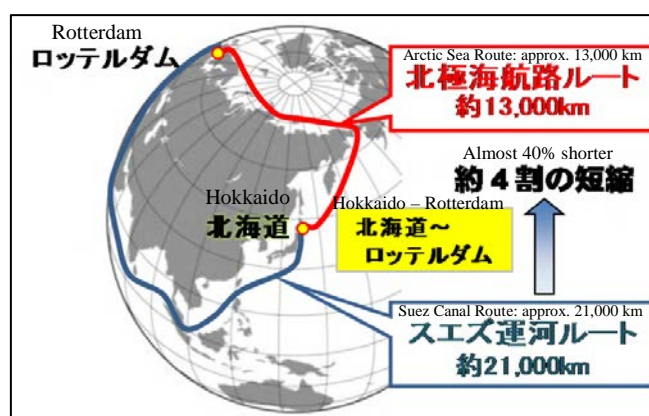
4. The Arctic

Amid growing international interest in the Arctic, the government has developed "Japan's Arctic Policy" and is moving ahead with R&D and sustainable development initiatives.

Melting of sea ice is opening up investigation of the Arctic Sea Route for marine transportation. Considering the future potential of this route, examination of its usability should continue.

Undiscovered resources are also assumed to exist in and around the Arctic Sea, but development projects in such severely cold conditions present challenges. Japan needs to collaborate with countries around the Arctic Sea looking ahead to future use of such resources.

Figure 8: The Arctic Sea Route and the Suez Canal Route



Source: Hokkaido Prefecture website

IV. Building a Platform for Policy Implementation

1. Strengthening Implementation Systems

(1) Government implementation systems

Pursuant to the Basic Act on Ocean Policy, the government has established the Headquarters for Ocean

¹⁸ Survey and examination of project viability.

Policy led by the Prime Minister, but given changes in the security environment and rapid technological innovation in recent years, the Headquarters needs to work more closely with relevant government ministries and agencies.

As a first step in such efforts, systems should be established for government-wide follow-up of the Basic Plan on Ocean Policy currently being implemented by the Headquarters for Ocean Policy Councilors' Meeting. Specifically, the next Basic Plan on Ocean Policy should include a timetable for cabinet approval that lists key players and terms for individual projects, similar to the Basic Plan for Space Policy. Considering that the timetable in the Basic Plan for Space Policy has made it easier for companies to forecast outcomes and helped to encourage investment, drawing up a timetable in conjunction with the next Basic Plan on Ocean Policy can be expected to attract private investment.

(2) Joint public-private development of marine resources

As well as surveying resources and securing interests, some state-funded resource development enterprises in other countries drill for, produce, and export such resources as entities leading resource development projects. Since resource development entails high risks and extensive up-front investment, it is difficult for the private sector to act alone, and Japan also needs structures for joint public-private resource development under government leadership.

Knowledge and contacts gained from Technology platform on marine resource development established in fiscal 2017 should be used to build structures for joint public- and private-sector approaches.

2. Human Resource Development

In order to promote ocean development, a field with multi-faceted value, frameworks such as the The Nippon Foundation Ocean Innovation Consortium¹⁹ should be used to broadly communicate its attractions, and draw in talented human resources. To this end, events such as those held on Marine Day should provide opportunities to consider the significance of oceans right from the elementary and secondary education. Higher education needs to instill knowledge required for employment in marine industries after graduation.

3. Development and Utilization of Ocean Databases

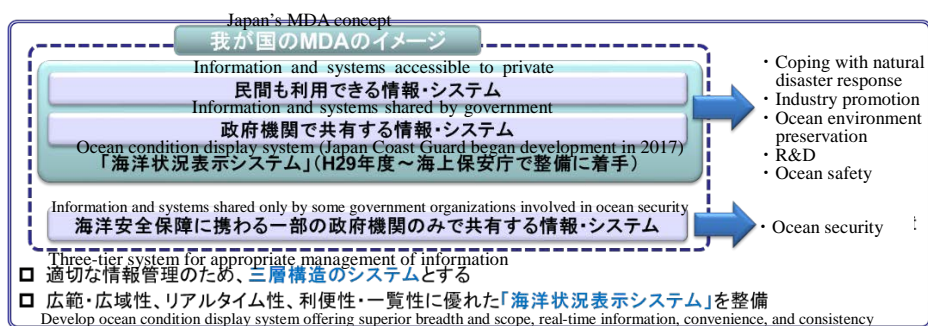
In fiscal 2017 the Japan Coast Guard began developing multi-faceted Maritime Domain Awareness (MDA)²⁰ systems. To develop truly effective systems, information currently managed separately, such as ocean survey data held by the Japan Agency for Marine-Earth Technology (JAMSTEC) and satellite data held by the Japan Aerospace Exploration Agency (JAXA) as well as other data held by

¹⁹ An organization established by the Nippon Foundation to promote the nationwide development of technical experts involved in ocean development.

²⁰ MDA systems seek to effectively gather and share diverse data about oceans, bearing in mind the careful handling of such information, and efficiently monitor ocean conditions.

the Japan Coast Guard or the Japan Meteorological Agency, should be amalgamated into the system so that various forms of data can be combined, enabling continuous and wide-ranging monitoring and analysis of current circumstances. In so doing, it will be vital to strictly distinguish between confidential information that should be protected by the state and information that can be publicly disclosed, and to allow for dual use of ocean data for security purposes and commercial purposes. Commercial information should be available in open, editable formats, enabling organizations to use as big data to improve marine industry productivity and develop highly convenient new applications.

Figure 9: Japan’s MDA Concept



Source: Prepared by the Keidanren Secretariat based on Headquarters for Ocean Policy secretariat documents

V. Conclusion: Ocean Policy for Society 5.0

The Sustainable Development Goals (SDGs)²¹ adopted by the United Nations in 2015 include ocean conservation, and international interest in oceans is on the rise. If use of the latest IT and data in the ocean field can not only promote economic growth, but also help to resolve issues in areas such as security and environmental protection, it may demonstrate a model for achieving SDGs through Society 5.0.

Recognizing that changes in the international situation and technological advances are propelling ocean policy into a new phase, the government needs to formulate an ambitious Basic Plan on Ocean Policy. Industry is committed to cooperating with government to forge ahead with ocean development that harnesses sophisticated technological capabilities and offers multi-faceted value, and helping to ensure that the people of Japan can live in prosperity and security.

²¹ Adopted by the UN in September 2015, the SDGs set out a concrete action plan in an outcome document titled “Transforming our world: the 2030 Agenda for Sustainable Development.” Conservation of the ocean environment is one theme of the document.