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Japan's Evolving Efforts toward Sustainable Development of the Arctic

Yoko Kamikawa and Tomoko Hamachi

AS a country with a direct connection to the Arctic by sea, there has been growing recognition within Japan that environmental change at the top of the world is an issue that could impact the whole earth, including this maritime nation. At the same time, however, Japan recognizes its link to and role in the environmental changes occurring in the Arctic. The unprecedented rate of change is, on the one hand, too fast for Arctic ecosystems and communities to adapt to, yet, on the other hand, the emerging economic opportunities of an ice-free Arctic could be substantial.

In order to address these multifaceted and interrelated issues, the Japanese government, led by a few dedicated parliamentarians, initiated an effort to understand the impacts of such changes and how that understanding could be harnessed to effect positive outcomes in a region that is home to about four million people, including four-hundred-thousand indigenous people. On October 16, 2015, Japan's prime minister, Shinzo Abe, with unanimous support from his cabinet ministers, adopted a national Arctic policy at the fourteenth meeting of the Headquarters for Ocean Policy held at the Prime Minister's Office.

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Japan's Arctic policy rests on a foundation of science and technology, which is an indispensable tool for designing effective solutions to global challenges. Through its Arctic policy the Japanese government has declared its intention to address the negative impacts of environmental change by leveraging its strengths to enhance cross-border scientific and technological cooperation (i.e., science and technology diplomacy) and to incorporate the outcomes into design and implementation of national policy and international rule making. As a nation that derives significant benefits from the ocean while simultaneously influencing climate change in the Arctic, and as an Arctic Council (AC) Observer, it is Japan's responsibility to play an active role in Arctic issues.

Japan's Long History of Arctic Research

The history of Japan's interaction with Arctic countries in natural science goes back more than a hundred years. In the early years of the twentieth century, Torahiko Terada, a Japanese physicist and associate professor at Tokyo Imperial University, deepened exchanges with Kristian Birkeland, a professor at the University of Oslo in Norway. In the late 1950s, Ukichiro Nakaya, a Japanese physicist as well as a noted science essayist, carried out research on climate and cryospheric science—the study of snow and ice—in Greenland and the Arctic Ocean. Nakaya's research on snow crystals using the ice from the Mendenhall Glacier in Alaska is well respected within the polar community. These early collaborative endeavors provided the basis for a more recent acceleration of Japan's international engagement in Arctic scientific affairs and science diplomatic efforts.

In addition to expanding the scope of collaboration with international partners, Japan opened a research base in Ny-Ålesund, Norway, in 1991 and the following year became the first non-Arctic member to join the International Arctic Science Committee. In the late 1990s the International Arctic Research Center (IARC) was established at the University of Alaska, Fairbanks (UAF) with the funding from both the Japanese and U.S. governments, enabling researchers from various nations to carry out joint research programs that build an integrated understanding of the Arctic within a regional and global context. It is noteworthy that Syun-Ichi Akasofu, who earned a PhD in Geophysics at the campus, was appointed as the first director of the IARC. Thus, the level of Arctic cooperation has expanded from individual scientific collaborations to international research coordination.

Twenty-First Century Efforts to Engage in Arctic Affairs

The Japanese government and parliamentarians have begun to focus their attention on the Arctic due to the accelerated decline of Arctic sea ice over the past two decades and a concomitant increase in economic opportunities within the

region. Consequently, a number of formal bodies have been established to allow Japan to actively engage in Arctic affairs.

The Headquarters for Ocean Policy was established in 2007 followed two years later by an application for observer status in the AC. Meanwhile, relevant ministries in the Japanese government set up taskforces and working groups to deepen understanding of the region and the existing programs of countries that are active in the Arctic. The year 2013 was memorable in Japan's Arctic history for two events: the appointment of the first ambassador in charge of Arctic Affairs at the Ministry of Foreign Affairs (MOFA) and acquisition of observer status in the Ministerial Meeting of the AC, in Kiruna, Sweden, along with four other Asian nations—China, India, Korea, and Singapore—and Italy. The government moved quickly to establish the Government Council on Arctic Ocean Policy within the Headquarters of Ocean Policy, which allows director-level officials from participating ministries to share information and coordinate planning of Arctic-related programs.

Also within this timeframe, the author (Kamikawa) along with other parliamentarians established the Parliamentary League of Arctic Frontier Study (PLAFS) with the objective of initiating policy discussions on the Arctic in the Japanese National Assembly. The PLAFS encouraged the government to take a leading role in generating novel ideas and pursuing efforts to tackle Arctic issues while respecting both the natural world and the people living within it. The league's call to prepare a national Arctic strategy led directly to the formulation of Japan's Arctic policy. A representative of the PLAFS took part in the Conference of Arctic Parliamentarians for the first time in June 2016 in Russia and thereby expressed Japan's strong commitment to the Arctic.

The importance of science in addressing Arctic issues was reaffirmed on the diplomatic side as well. In July 2014, the Advisory Panel in Science and Technology Diplomacy was established under Minister of Foreign Affairs Fumio Kishida to "examine new challenges of science and technology diplomacy as well as MOFA's and whole-of-government approaches to addressing such challenges."¹ Placing a high value on the necessity of urgent action to address the rapid environmental changes in the Arctic, and now with the additional responsibility of being an AC Observer, the panel highlighted the fact that Japan views the Arctic as a diplomatic challenge that requires scientific and technological knowledge to produce effective solutions.

Seven Basic Perspectives of Japan's New Arctic Policy

The Government Council on Arctic Ocean Policy recognized the confluence of rising attention to the Arctic in science, politics, and diplomacy and started discussions toward formulating a new Arctic policy. The aspiration of the policy is to make a solid contribution to the international community in addressing Arctic issues by taking actions with cross-sectional purposes, such as diplomacy, national

security, environment, transportation, exploitation of natural resources, and information communication technology—all of which require a strong science and technology underpinning. To achieve this objective, the government has defined three specific initiatives for further advancement: research and development, international cooperation, and sustainable utilization of the Arctic. These initiatives will be fulfilled through seven interrelated perspectives:

1. making full use of Japanese scientific and technological strength within a global context,
2. giving full consideration to the fragile Arctic environment and ecosystem,
3. ensuring the rule of law and promoting international cooperation in a peaceful and orderly manner,
4. respecting the right of indigenous peoples to continue pursuing their traditional economic and social practices,
5. paying full attention to security developments in the Arctic,
6. aiming for economic and social compatibility with climate and environmental changes, and
7. seeking possible economic opportunities for the use of the Arctic Sea Route and for the development of natural resources.²

Three Reasons to Emphasize Science and Technology in the Arctic Policy

As highlighted in the Arctic policy, the strength of Japan's science and technology sector is one of the key ways it can contribute to resolving Arctic issues. There are three primary ways Japan intends to leverage its science and technology capabilities in the Arctic.

Firstly, scientific research in the Arctic is necessary to understand natural phenomena, such as polar amplification and ocean acidification, in greater detail. For example, the Fifth Assessment Report, issued by the Intergovernmental Panel on Climate Change in 2013, documented that Arctic sea ice declined faster than the estimate given in the Fourth Assessment Report published just six years earlier. In "Demystifying the Arctic," issued in January 2014 by the Members of the World Economic Forum Global Agenda Council on the Arctic (GAC-Arctic), it was pointed out that "despite intense global interest, the Arctic remains one of the world's least-studied environments."³

Scientists are working diligently to get a full picture of the environmental changes occurring in the Arctic, but meanwhile, the Arctic environment continues to evolve. Without a more detailed understanding of the mechanisms of such climate and environmental changes, effective measures to mitigate or to adapt to its effects cannot reliably be undertaken. Recently some researchers have pointed out that the environmental changes in the Arctic exert an influence on weather in

the middle latitudes. Conversely, Japan itself could influence the changes occurring in the Arctic. Consequently, Japan has a sense of mission to generate scientific data and knowledge and make it more broadly available as the common property of humankind.

Secondly, Japan's technological expertise has great potential for sustainable development of Arctic communities. For example, material technologies could help build resilient infrastructure in communities suffering from the ill effects of thawing permafrost. Information and communications technologies might improve connection and communication within and between communities, and telemedicine could expand access to quality healthcare. Advanced technologies developed within the Japanese private sector could be utilized to enhance quality of life in isolated and often underserved communities.

Thirdly, science and technology is valuable to Japan from a diplomatic standpoint. Currently the AC functions as a high-level intergovernmental forum aimed at promoting cooperation on Arctic issues and facilitating coordination and interaction among the Arctic states. AC Observers are encouraged to contribute to the AC, but under the existing framework they have little say in decision making at high-level meetings. The only way for AC Observers to contribute to the AC, and thus to Arctic communities, is to provide AC Working Groups with scientific findings to address specific issues. This September, the White House will hold the first ministerial meeting on Arctic issues with ministers in charge of science and technology, chief science advisors and other pertinent authorities from around the world, including Japan. Thus, science and technology now enables a non-Arctic nation to join such core dialogues on Arctic cooperation.

An Epoch-Making Research Project to Inaugurate the Policy

In the fall of 2015, responding to the acquisition of AC Observer status and the initiatives suggested in the Arctic policy, the Ministry of Education, Culture, Sports, Science and Technology launched a new five-year project called Arctic Challenge for Sustainability (ArCS). This project is non-conventional in that it aims to deliver robust scientific information to diverse stakeholders—such as policy makers, industry, and citizens in Arctic and non-Arctic nations—to guide rational decision making, investment, and development. The project is built on three pillars: (1) encourage international joint research projects that include a social science perspective, (2) improve and establish research centers and stations in Arctic states, and (3) promote the exchange of young researchers and the dispatch of experts to Arctic-related meetings.

The third pillar is especially notable in terms of giving young researchers an opportunity to not only develop their technical expertise but also to understand how science and technology play a vital role in diplomacy by interacting with international experts in a science diplomacy context. Moreover, ArCS places a high

value on interdisciplinary research spanning diverse subjects in both the natural and social sciences. As a result, a Japanese student who studies International Law was just as likely as a research scientist to take part in the Model Arctic Council at UAF in March 2016 alongside about seventy graduate and undergraduate students from across the world. In this way, the ArCS project seeks to assemble a broader range of expertise to address the multifaceted and interrelated issues facing the Arctic today.

Utilization of Scientific Knowledge for Sustainable Development of the Arctic

Through the Arctic policy, Japan has reaffirmed its determination to engage positively in the Arctic. However, to make such a project more effective and promote sustainable development in the region without adverse environmental effects, the results of scientific research should be incorporated into policymaking and implementation. As Atsushi Sunami has stated, the application of scientific findings to policy- and rule-making is all the more indispensable in the midst of rapid changes in environment and increasing economic activity in the region, since people are largely dependent on the natural environment for living resources.⁴

Sustainable development efforts based on this perspective started internationally. For example, the GAC-Arctic, for which one of the authors (Kamikawa) served as a member, discussed responsible investment for sustainable development of the Arctic over the course of nearly two years. The result was a report, "Arctic Investment Protocol: Guidelines for Responsible Investment in the Arctic,"⁵ which was formally presented as an output of the team's work regarding global public and private sector cooperation for sustainable development in the region during the annual meeting of the World Economic Forum in Davos, Switzerland, in January 2016. This is not a binding scheme but rather private sector organizations are encouraged to observe six principles that would contribute to responsible development of the region, one of which is "consulting and integrating science and traditional ecological knowledge."

In Japan's Arctic policy, the government has stated its intention to ensure the rule of law in the Arctic by appropriately getting involved in formulating international agreements and rules as well as by utilizing its scientific knowledge and advanced technologies. Moreover, it also professes an intention to promote involvement of the private sector in economic activities, including navigation through the Arctic Ocean, and developing mineral and marine living resources. If a company abroad conducts commercial activity that doesn't take the local community into consideration, the result will be an impairment of diplomatic relations between the two countries. Japan is no exception, and in this sense should undertake utilization of scientific knowledge for sustainable development of the Arctic to a maximum extent.

Japan's Further Commitment by Orchestrating Relevant Organizations' Expertise and Knowledge

Japan has accumulated substantial experience on observation and research in the Arctic region. However, the mechanisms to transform this knowledge into relevant policies and international rule-making have only just begun to be developed, and many challenges still remain.

In order for Japan to successfully engage in the Arctic, multiple sectors within society will have to contribute to the effort, including academia, government, industry, and parliament. Researchers in the natural and social sciences should proactively provide stakeholders with the latest scientific data for science-based policy- and rule-making both in the domestic and the international realms. The government must establish a mechanism to incorporate such valuable outcomes into the policy- and rule-making process. In addition, it is essential for the government to position the Arctic as one of the highest priority issues, both in science and technology and in foreign policy. The private sector should explore the potential of their technologies to improve the quality of life in the Arctic. And finally, the parliament must provide the government sufficient resources for Arctic-related activities and reinforce relevant institutions, making them robust enough to implement the policy.

The formulation of Japan's Arctic policy has already allowed the country to make strides toward meeting challenges in the Arctic. When the Japanese government mobilizes relevant organizations' expertise and knowledge of science and technology and implements science-based policies and rules, Japan's contribution will become more efficient and truly beneficial to the environment and people of the Arctic. **SD**

Endnotes

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3. The Members of the World Economic Forum Global Agenda Council on the Arctic, "Demystifying the Arctic" (paper presented at World Economic Forum Annual Meeting, Davos-Klosters, Switzerland, January 21–24, 2014).
4. "Nippon Hokkyoku-seiaku Sekkyokuteki Kanyo wo (Japan should be more actively involved in formulating Arctic policy)," Sunami Atsushi, *Nikkei*, January 15, 2016.
5. "Arctic Investment Protocol: Guidelines for Responsible Investment in the Arctic," (Geneva, Switzerland: World Economic forum, 2015), http://www3.weforum.org/docs/WEF_Arctic_Investment_Protocol.pdf.