

PART VI

OPPORTUNITIES FOR INTERNATIONAL COOPERATION IN A CHANGING ARCTIC

Perspective

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Mineral development in the Arctic has several distinctive features: increased costs, high technological and environmental risks, and a seasonal nature due to the fact that most production is carried out during short summers.

Implementation requires the use of modern technology and methods of project organization. Not all companies in the countries around the Arctic Basin have the requisite experience and technological capacity. Moreover, they do not always have adequate financial capacity to run complex and expensive projects. Equally important is the fact that mineral resources development projects are generally characterized by a “predisposition” to increase in cost from the very beginning of their implementation. Thus, in the course of two years, expenditures on LNG plant construction in the port of Sabetta on the Yamal Peninsula increased by almost 80% (from 18 to 27 billion USD). The same thing happened to the Trans-Alaska Pipeline System and the new LNG plant. Estimates of the project costs vary from 25 to 65 billion USD.

It is worth mentioning that projects in the Arctic, due to their high cost, are sensitive to market price fluctuations. This factor is relevant both to the Mackenzie Valley Gas Project and the Trans-Alaska Gas Pipeline construction project at a preliminary stage.

Taken together, these factors—geological, technical, environmental, and economic—are responsible for the substantial risks these projects carry. As a result, one of the most important tasks when implementing projects in the Arctic becomes risk management. In addition to specific forms of risk management (such as the development of special procedures for timely warning of emerging deviations in a particular geological, technological or environmental area), a critical challenge is the development of approaches to joint participation in implementing projects in order to distribute the risks among several participants.

The countries in the Arctic region and the companies involved in specific projects, tend to form inter-enterprise project teams or alliances. At the same time, the country that owns a field or a source of natural resources (at the intergovernmental level or at the level of individual national companies) is typically committed to the creation of such alliances,

which would help with:

- a) Funding (not because of a lack of its own funds or the ability to attract them, but because of the significant risks related to the implementation of projects in the Arctic);
- b) Gaining access to advanced technologies and methods of project implementation (including personnel training, especially the transfer of certain skills and abilities). This approach is exemplified by an agreement between Rosneft and Exxon/Mobil signed in 2012 but now derailed due to Western sanctions). The agreement included both the participation of the American company in the study of the Arctic shelf area as part of a cooperative project with the Russian company, and the participation of the Russian company in the projects of the American company in Alaska and the Gulf of Mexico; and
- c) Getting access to markets in the framework of a specific project (for example, the LNG plant project on the Yamal Peninsula involving sales in France and China. Earlier projects of this sort, e.g., on Sakhalin, were aimed at the Japanese market from the outset).

The success of such collaborations depends largely on whether more experienced, technologically advanced, and skillful partners are involved in a project. In the case of Russia, these are mostly foreign partners. In the case of other countries (e.g., Norway, the United States, Canada), these are both foreign partners and domestic companies. China is especially active. In 2014, China agreed to enter into a number of Arctic oil and gas projects in Russia (e.g., Yamal LNG led by Novatek and the Vankor oil and gas field¹ led after Rosneft. Together with the Norwegian companies Statoil and Petoro, China started exploration in the eastern part of the Norwegian sector of the Barents Sea² and in the Icelandic shelf area.

The most preferred form is a joint venture. In this case, all participants not only have similar rights but can also include reserves of minerals when maintaining accounting for their assets (and, as a result, attract additional financial resources).

However, in the case of Russia, this approach is only one possibility. In the last 20-25 years, Russia has used and executed various schemes and approaches to the creation of international inter-enterprise alliances. The main methods are as follows:

- a) Foreign companies with unique engineering know-how and financial capacity to implement projects in the mineral resource sector have direct access (e.g., the Canadian Kinross Gold company owns gold deposits in Chukotka Autonomous Okrug, including 100% of the Kupol mine as well as 100% ownership of the Dvoynoye deposit and the Vodorazdelnaya property located 100 km to the north of the Kupol mine);
- b) Foreign companies may have a share in the authorized capital of the companies established to carry out projects in the mineral sector. For example, shares of Yamal LNG, besides Novatek belong to Total and CNPC. In recent years in Russia, there has emerged a trend to form project alliances in order to create internal competition between the Russian companies and improve the economic performance of projects. Examples of this tendency include the Trebs and Titov oil fields in the Nenets Autonomous Okrug³ as well as Russian platinum LLC entering the Norilsk Industrial District where JSC Norilsk Nickel enjoys a monopoly;
- c) Special tax regimes and conditions for project implementation, primarily production sharing agreements (one of the most common forms of concessions in the world). Unfortunately, this type of concession is no longer used in Russia, which is the main reason for a significant increase in costs and a significant reduction in the state's profit share. As shown by the projects carried out in the Kharyaga oil field in the Nenets Autonomous Okrug (participants are French Total S.A., both participant and executor, Norwegian Statoil, JSC Zarubezhneft, and Nenets Oil Company), as well as gas projects (including Sakhalin-1 with EksonNeftegaz as executor and Sakhalin-2 with Sakhalin Energy as executor and Shell playing a key role in operational management and solving technical issues), this regime is highly efficient as individual projects were accomplished on a tight schedule; and
- d) Alliances between Russia's key state-owned companies (e.g., Gazprom and Rosneft) and world leaders to search, explore and develop oil and gas fields. Essentially, these alliances are modified risk contracts where foreign participants are mostly responsible for the costs of the project at the initial stage and, if successful, receive a share of resources produced. Such a scheme was proposed for the project in the Shtokman gas condensate field in the Russian sector of

the Barents Sea, but it was delayed due to the uncertain position of natural gas demand on foreign markets.

Rosneft signed a series of agreements on strategic cooperation in the Arctic shelf with BP (UK) and ExxonMobil (U.S.) in 2011, and with Statoil (Norway) in 2012⁴. Under the collaboration with ExxonMobil, drilling of a well at the Universitetskaya-1 site in the Kara Sea started in August 2014.⁵ The result confirmed predictions about the presence of oil and gas in the eastern part of the Kara Sea.

Among the internal forms of joint participation are project consortia and project implementation in the form of public-private partnerships. In the latter case, the state acts as a co-investor in the project's infrastructure (for example, the Port of Sabetta).

A problematic issue for Russia arises from the fact that in 2008 a huge number of minerals received the status of strategic deposits. This designation, which meant that fields could only be developed by state-owned companies, significantly reduced the possibility for both private domestic and foreign companies to participate in future projects. The list of strategic mineral deposits was finalized and approved in March 2009. This restricts direct access for foreign companies to large fields.

Since 2012, access for private companies to the sites in the Arctic shelf has been restricted. For a company to receive a license for a site in the shelf areas, it must meet two main criteria:

- a) It should have at least five years of experience in shelf exploration, and
- b) The state's share in its capital should account for more than 50%.

Unfortunately, only two companies in Russia meet these requirements, Rosneft and Gazprom. Although JSC Lukoil does not meet the second requirement, it retained a few sites in the Caspian Sea that belonged to it before.

When working in the Arctic—and much less than working on the shelf—what is important is the experience of those who perform work on the site. A customer (JSC Gazprom and JSC Rosneft in the case of Russia) only organizes projects and partially finances them. For instance, in the Sakhalin offshore projects currently being implemented, the real executors are their foreign partners.

Such demands, including both the strategic status of deposits and the exceptional role of state-owned companies, are redundant in many ways. State ownership of the subsoil provides many opportunities for state control. The redundant requirements are associated with the desire of the state to avoid expending unallocated subsoil reserve funds on the exploration of shelf sites.

Further events showed that the exceptional status of strategic deposits, both oil and gold, appeared to be an obstacle to attracting investment and using the experience and skills of the most successful foreign companies. Therefore, amendments and addenda were adopted to allow the formation of strategic alliances between Russian state-owned companies and foreign companies. All the projects of the mineral sector executed in Russia's Arctic zone can be divided into two major groups:

- a) Projects implemented in "subsoil plots of federal significance." In this case, the foreign investor's share in the assets of an applicant cannot exceed 51%, and if a licensee company sells 10% to foreign agents, it should be approved by the government; and
- b) Other projects in which both private Russian companies and Russian companies with predominantly foreign capital can participate.

In conclusion, we should note that a vast variety of forms of and approaches to joint participation may be used in the Arctic: from the creation of joint ventures with equity participation in projects by the partners to risk contracts where foreign companies conduct exploration at their peril but get a share of the project at a later stage.

Despite the circumstances described above, the common trend is to move toward the conditions of participation in projects that are more pragmatic and more attractive for real investors. New projects in the Arctic, such as drilling of a well at the Universitetskaya-1 site in the Kara Sea during summer–fall of 2014 by the Rosneft–ExxonMobil alliance, have extra high capital intensity. The Universitetskaya-1 well is worth an amazing and unbelievable total of 700 million USD.

It should also be noted that the international sanctions imposed on Russia in the second half of 2014 will have a significant impact not only on how rapidly projects for the study of hydrocarbons in the Russian Arctic will be executed. They also will influence the implementation of projects in the shelf area at lower latitudes and the development of oil–shale deposits

on land in Western Siberia and the European part of Russia.

Notes

1. Мельников Кирилл. Китаю отольют «Роснефти». - «Коммерсантъ». [“China will have some Rosneft” by Kirill Melnikov. Kommersant]. September 2, 2014. URL: <http://www.kommersant.ru/doc/2557830>
2. Norway welcomes China as partner in Arctic energy development. November 17, 2014. URL: <http://www.arcticgas.gov/2014/norway-welcomes-china-partner-arctic-energy-development>
3. Alas, this project is postponed due to state claims on one of the participating companies, JSC Bashneft.
4. Agreements on joint bidding for licenses in the Norwegian section of the Barents Sea and joint technical evaluation of tight oil resources in Russia. URL: <http://www.rosneft.com/news/pressrelease/210620122.html>
5. Путин дал старт разведочному бурению на платформе West Alpha в Карском море. - Экономика и бизнес. [Putin launches exploration drilling at the West Alpha rig in the Kara Sea. Economics and business]. August 09, 2014. URL: <http://itar-tass.com/ekonomika/1370442>

Perspective¹

David L. VanderZwaag

INTRODUCTION

Two images help capture likely directions in international cooperation related to the Arctic. First is the descriptor of “clear currents.” To address the environmental protection and sustainable development needs of the Arctic, many avenues for international cooperation already exist, and they seem bound to continue at multiple levels—global, interregional, Arctic-wide, Arctic 5, sub-regional and bilateral. A second image is “hazy horizons.” While general directions for international cooperation are quite clear, a host of challenges loom on the horizon at all levels of governance with corresponding opportunities but also uncertainties as to exactly how cooperative efforts will proceed. A brief survey of the two cooperative realities follows.

CLEAR CURRENTS

Global Currents

Global avenues of cooperation relevant to the Arctic have been driven by the need to address multiple sources of world-wide pollution that carry regional threats and impacts. The climate change regime, founded on the UN Framework Convention on Climate Change (UNFCCC) (1992) and the Kyoto Protocol (1997), is still the main cooperative process for seeking to control greenhouse gas emissions. The Montreal Protocol on Substances that Deplete the Ozone Layer (1987), although originally driven by the need to address ozone depletion over the Antarctic, continues the process of phasing out the production and use of ozone-depleting substances, such as hydrochlorofluorocarbons and methyl bromide. The 2001 Stockholm Convention on Persistent Organic Pollutants (POPs), specifically negotiated to address the long-range transport of toxic pollutants into the Arctic, has facilitated the listing of 23 chemicals for elimination or restriction. More listings will be required in the future.

The Minamata Convention on Mercury, concluded in October 2013,

offers a further global venue to address transboundary pollution in the Arctic. About 100 tonnes of mercury are estimated to enter the Arctic Ocean from the air each year, while another 100 tonnes is thought to flow into the Arctic from the Atlantic and Pacific Oceans, rivers and coastal erosion.² Total anthropogenic emissions of mercury into the atmosphere in 2010 are estimated at 1,960 tonnes, with Asia considered the main source region, contributing nearly 50% of the global total.³ The convention contains numerous cooperative promises for reducing mercury emissions around the globe, such as requiring the phase-out of mercury mining and of many products containing mercury.

The global nature of the shipping industry and the need to ensure appropriate ship safety and marine pollution standards for the Arctic, especially for areas of the high seas where special coastal state shipping standards would not apply, spurred negotiations for a Polar Shipping Code under the auspices of the International Maritime Organization. The code, now in the final stage of negotiation, promises to usher in a new era of global cooperation relating to Arctic shipping, with numerous opportunities for collaboration. Examples would be in the training of northern seafarers and sharing national implementation approaches and challenges.

Interregional Currents

Interregional cooperative tracks have also been set. Heavy metal and persistent organic pollutant protocols have been adopted under the auspices of the UN Economic Commission for Europe (UNECE). A further protocol, the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground Level Ozone, was amended in 2012 to include national emission reduction commitments for black carbon, a short-lived climate pollutant of special concern in the Arctic. Interregional efforts to protect migratory bird species also stand out. The African-Eurasian Migratory Waterbirds Agreement (1995) covers a vast area from Africa up to Greenland and the Canadian Archipelago. The Partnership for the East Asian-Australasian Flyway seeks to enhance the protection of over 50 million waterbirds, many of which breed in Northern Russia and Alaska.

Regional Currents

The central forum for region-wide cooperation in the Arctic continues

to be the Arctic Council. The Council has through the use of task forces facilitated the adoption of two regional agreements on search and rescue and marine oil pollution preparedness and response. Three additional regional priorities, oil pollution prevention, black carbon and methane emission reductions, and scientific research cooperation, are in the process of being considered by task forces.

Arctic 5 Currents

Cooperation among the five Arctic Ocean coastal states (Arctic 5) has addressed two issues of special concern: the extension of jurisdiction over continental shelves beyond 200 nautical miles in the Arctic and the potential for future commercial fisheries in the central Arctic Ocean (CAO) in areas beyond national jurisdiction. The Ilulissat Declaration, issued at the meeting of representatives from the Arctic 5 in May 2008, emphasized that the law of the sea provides a solid foundation for managing human uses of the Arctic Ocean and for determining the rights to extended continental shelves in the region. Two meetings of officials from the five Arctic coastal states occurred to discuss possible future fisheries in the CAO, from April 29 to May 1, 2013 in Washington, DC and February 24-26, 2014 in Nuuk, Greenland. An agreement in principle has been reached for the Arctic 5 to lead an initiative to develop interim measures to prevent unregulated fishing and to further enhance scientific research on CAO ecosystems.

Bilateral Currents

Bilateral cooperation in the Arctic remains a somewhat neglected topic. The Arctic Council's Arctic Ocean Review (AOR) Report, issued in May 2013, aimed at providing options and recommendations for strengthening international cooperation in protecting the Arctic marine environment, excluded a review of bilateral agreements in the region and focused on the status of regional and global agreements and arrangements. Bilateral agreements that have been forged between various Arctic states have largely served to address: ocean boundary issues; scientific cooperation; transboundary resource management challenges, such as shared fish stocks and hydrocarbon pools straddling boundaries; cooperation in search and rescue, and joint contingency planning for marine oil spills.

HAZY HORIZONS

Global Challenges

- **Reaching international agreement on effective measures to mitigate CO₂ and other greenhouse gas emissions pursuant to the UNFCCC**

Parties to the UNFCCC have agreed to adopt a new legal agreement/instrument in 2015, with entry into force by 2020. Such a commitment offers substantial opportunities for both Arctic and non-Arctic states to take seriously the threats of climate change and ocean acidification to Arctic waters and communities. However, hurdles include sorting out financial and technical assistance provisions, application of the common but differentiated responsibility principle and an appropriate compliance regime.

- **Phasing out the production and use of hydrofluorocarbons (HFCs)**

HFCs, once considered “wonder substances” for replacing ozone-depleting substances, such as hydrochlorofluorocarbons, are now known to be potent greenhouse gases. An ongoing challenge is to phase out the use of HFCs, which are currently listed as greenhouse gases under the Kyoto Protocol and are not seen to have ozone-depleting potential. Canada and the United States have been trying to reach an agreement under the Montreal Protocol on Ozone Depleting Substances for an amendment to control HFCs under the protocol, but consensus has not been possible.⁴ Thus, the opportunity exists for increased international cooperation to support addressing HFCs promptly in light of climate change threats to the Arctic.

- **Strengthening the international regulation of POPs**

Listing of new chemicals for elimination or restriction under the Stockholm Convention continues to be a major challenge. While about 4,300 organic chemicals are thought to have Arctic accumulation properties,⁵ only 23 POPs have been listed to date. The listing procedure is cumbersome, requiring a detailed scientific risk analysis before listing can be considered, and listing has been slowed by the practice of requiring consensus by the Persistent Organic Pollutants Review Committee. Academic calls for more proactive approaches to controlling toxic chemicals have not been heeded.⁶ For example, a more comprehensive chemical convention might invoke a “reverse listing” approach where only chemicals listed on a global “safe list” would be allowed to be produced and marketed.

- **Ensuring timely and effective implementation of the Minamata Convention**

Numerous implementation challenges surround the new mercury convention. Entry into force will require 50 ratifications/acceptances. However, as of August 7, 2014, while there were 101 signatories, only one country, the United States, had formally accepted the convention. The extent to which parties will actually reduce mercury air emissions remains to be seen, since parties are only obligated to control and not reduce emissions. Guidance on the use of best available technologies and best environmental practices, key measures to control emissions, is left to be decided at the first meeting of the Conference of the Parties (COP). Ensuring adequate financing for capacity building and technology transfers has yet to be worked out, with financial details to be decided by the COP.

- **Working through the IMO to further address shipping issues**

A long list of vessel-source emission and discharge challenges will remain even after adoption of the Polar Code. These challenges include: getting sufficient ratifications for entry into force of the Ballast Water Convention and ensuring timely implementation of required ballast water management systems; reaching agreement on appropriate control measures for black carbon; taking further measures to reduce greenhouse gas emissions from ships; considering the regulation of gray water discharge from cruise ships, which on average may generate 3.8 million liters of wastewater per week from such sources as sinks, showers and laundries,⁷ and deciding whether to designate one or more areas of the Arctic as special emission control areas (ECAs) where the maximum sulphur content of fuel would be set lower than the general standard.

While a decision was reached during Polar Code negotiations not to ban the use of heavy fuel oil (HFO) in the Arctic as in the Antarctic, the door remains open for the issue to be reconsidered in the future. Areas around Svalbard have already been subject to a ban on the use of heavy fuel oil. Further environmentally sensitive areas in the Arctic could be proposed for HFO prohibitions.

Interregional Challenges

- **Strengthening international research and protective efforts for Arctic migratory birds**

The need to further develop international agreements and arrangements to better understand and protect marine-related species shared between and among regions was one of the key recommendations of the Arctic Biodiversity Assessment, published by the Conservation of Arctic Flora and Fauna (CAFF) Working Group in 2013. A first priority was suggested for the East Asian-Australasian Flyway. In April 2013, CAFF signed a resolution of cooperation with the Convention on the Conservation of Migratory Species to better integrate efforts to protect Arctic migratory species. In June 2013, CAFF signed a further resolution on waterbird conservation with the Partnership for the East Asian-Australasian Flyway. Substantial windows of opportunity for greater interregional cooperation have thus been opened. CAFF is further promoting cooperation in improving the conservation status of priority species through a project initiated in December 2013, the Arctic Migratory Birds Initiative (AMBI).

- **Considering future directions for the North Pacific Arctic Conferences**

The North Pacific Arctic Conference initiative, which might be categorized as a further interregional cooperative effort, also raises challenges and possible opportunities for international cooperation if the process continues. Key issues are whether the initiative might be linked in some fashion to the Arctic Council and whether the conferencing approach might be expanded to include a supportive network of Asia-Arctic researchers and possibly research institutions.

Regional Challenges

- **Finalizing and implementing an updated Arctic Marine Strategic Plan**

The PAME Working Group is in the process of developing an Arctic Council Arctic Marine Strategic Plan (AMSP) 2015-2025. The most recent workshop to review drafting progress was held on September 15, 2014. The new AMSP promises to be a major facilitator of further international strategic actions. Among other actions, the AMSP will likely encourage the strengthening of scientific cooperation among Arctic states and other countries involved in Arctic research and promote further cooperation among Arctic and non-Arctic states to address threats to migratory marine species. Conducting a 2nd Arctic Marine Shipping Assessment also has been raised as a possible strategic action, but agreement has yet to be reached on that point.

- **Following through on recommendations from the Arctic Ocean Review Report**

The AOR report's 24 recommendations tend to be general and follow-up plans are uncertain, but the report does offer some key directions for future international cooperation. For example, the report urges Arctic states to: explore the possible development of port state control guidelines or arrangements to encourage implementation of the Polar Code (Recommendation 5); increase international cooperation in addressing the threats of ocean noise and ship strikes on cetaceans (Recommendation 11); further engage the oil and gas industry and regulators by utilizing existing industry forums or by convening an Arctic-specific oil and gas dialogue (Recommendation 17); increase their leadership role in the study of ocean acidification (Recommendation 19), and through the Arctic Council, promote the periodic convening of meetings to share knowledge and experiences in ecosystem-based management (Recommendation 21).

- **Addressing key limitations of the Arctic Council**

Three limitations in the Arctic Council system continue to stand out as major challenges. First, ensuring adequate funding for Arctic Council projects and Permanent Participant involvement remains an ongoing struggle. Second, providing for accountability regarding follow through with regional commitments might be described as nascent. The Arctic Marine Shipping Assessment is the only example where detailed and sustained monitoring and reporting has been imposed to ensure the 17 key recommendations agreed to are being implemented. A third limitation is the restricted opportunities for engagement with observers, including non-Arctic states.

Various ways to firm up Arctic Council cooperation might be envisaged. For example, with the addition of six new observer states in 2013, perhaps the time has come to consider the establishment of a special fund or funds to support project activities and Indigenous capacity development and participation. A broad reporting obligation might be instituted covering not just AMSA implementation but all key council-related commitments, including the Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-based Activities. Various avenues for enhancing engagements with observers might be considered, such as an Arctic Council observer forum or the periodic convening of an Arctic Ocean assembly or conference.

Arctic 5 Challenges

- **Sorting out engagements with indigenous organizations/communities and non-Arctic states**

At the Nuuk meeting in February 2014, officials from the Arctic 5 agreed to move forward with adopting interim measures to deter future unregulated fishing in the high seas of the Central Arctic Ocean. However, they left considerable uncertainty about how Arctic residents and other states might be involved. Officials agreed to develop a ministerial declaration for signature or adoption by the Arctic 5, preferably in June 2014, but the process has reportedly been slowed by the Russia-Ukraine conflict. The Meeting Statement simply noted the interests of Arctic residents, particularly the Arctic indigenous peoples, and expressed an interest to engage with them as appropriate. The meeting also reaffirmed the interest of other states in the topic of interim measures and looked forward to a broader process involving additional states beginning before the end of 2014. A final outcome of a binding international agreement was suggested as a possibility.

- **Addressing scientific cooperation on ecosystems of the CAO**

The Meeting Statement from Nuuk committed states participating in the interim measures to establish a joint program of scientific research with the aim of improving understanding of ecosystems in the CAO. A looming challenge is not only to work out the practical details of a joint scientific research program but also to determine how such a program would relate to the existing avenues of scientific cooperation.

Bilateral Challenges

- **Resolving existing and potential ocean boundary disputes**

Ocean boundary challenges, along with future cooperative possibilities, stand out in the Arctic. Canada and the United States have yet to enter into formal negotiations over their disputed boundary in the Beaufort Sea. Transboundary cooperative arrangements might be described as minimal, with a bilateral agreement on marine spill contingency response planning and an informal moratorium on allowing oil and gas activities in the disputed zone.

Once extended continental shelf claims are finalized, the potential exists

for further boundary disputes in areas beyond 200 nautical mile Exclusive Economic Zones and for further policy issues. To what extent should a commercialization versus a conservation future be encouraged on extended continental shelf areas, assuming mineral resources are located there? What are the interests of indigenous organizations and communities and how might those interests be accommodated?

- **Putting the ecosystem approach into transboundary practice**

A further challenge is to put the ecosystem approach into bilateral practice. Three main routes for moving from concept to practice would be through the establishment of bilateral networks of marine protected areas, encouraging integrated ecosystem-based management on a transboundary basis, and applying the ecosystem approach to fish stocks exploited jointly.

Cross-Cutting Challenges

With so many forums available to address Arctic-related issues, a growing challenge will be to track and possibly coordinate the fragmented array of cooperative initiatives which may span all levels of governance. A good example is the present quest to reduce emissions of short-lived climate pollutants, which include black carbon, methane, tropospheric ozone and some HFCs. Methane is a greenhouse gas already controlled under the Kyoto Protocol. The Climate and Clean Air Coalition, a voluntary international coalition launched in February 2012 to address short-lived climate pollutants, now has over 90 partners, including 40 country partners and over 50 non-state entities. Black carbon is being addressed already under the auspices of the UNECE. Future actions to reduce black carbon and methane emissions are presently being considered by an Arctic Council task force. The United States and China also have been tackling climate change and air pollution, including black carbon emissions and HFC production and consumption, pursuant to their U.S.–China Strategic and Economic Dialogue process.⁸ A U.S.–China Climate Change Working Group is overseeing numerous private sector partnerships, for example, to advance carbon capture and storage and to reduce HFCs in refrigeration and air conditioning units.

Notes

1. Due to page restrictions, only a few selected references are provided.
2. Arctic Monitoring and Assessment Programme (AMAP), *Arctic Pollution 2011* (Oslo, Norway: AMAP, 2011) at iv.
3. UNEP, *Global Mercury Assessment 2013: Sources, Emissions, Releases and Environmental Transport* (Geneva: UNEP Chemicals Branch, 2013) at 9 and 11.
4. For a summary of the debates, see the International Institute for Sustainable Development, “Summary of the Thirty-fourth Meeting of the Open-ended Working Group for Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, 14-18 July 2014” (2014) 19 (101) *Earth Negotiations Bulletin* 1-17.
5. AMAP, *Arctic Pollution 2009* (Oslo: AMAP 2009) at 22.
6. Arctic Council, *Arctic Marine Shipping Assessment Report* (2009) at 137.
7. See, e.g., David L. VanderZwaag, “The Precautionary Approach and the International Control of Toxic Chemicals: Beacon of Hope, Sea of Confusion and Dilution” (2011), 33 *Houston Journal of International Law*, 605-630.
8. U.S. Department of State, “Key Achievements of U.S. – China Climate Change Cooperation under the Strategic and Economic Dialogue” (July 9, 2014), <http://www.state.gov/r/pa/prs/ps/2014/07/228917.htm>

Perspective

Sung Jin Kim

INTRODUCTION

Toward the end of the 40-year Cold War era, in 1991, the creation of the Arctic Environmental Protection Strategy by the Arctic states signaled a gradual transformation from opposition to cooperation or from conflict to collaboration in the Arctic. The Arctic Council, founded by the 1996 Ottawa Declaration, has become a nonbinding, intergovernmental forum dealing with various issues – except for military security affairs – related to the Arctic for the past 20 years. It has tried to create a mechanism where the eight member states of the Arctic and six Permanent Participants can respond to the changing environment, life, and socioeconomic conditions of the region. Since 2011, the Arctic Council has demonstrated success in bringing about agreement among Arctic states through task forces, providing a more effective response system to newly challenging issues. The Council is expected to become the most important arena to discuss Arctic issues and to forge consensus between governments and Indigenous peoples.

At the same time, the melting of ice in the Arctic Ocean, technological advancements to overcome problems posed in the Arctic, and the instability of resources and the global economy are driving Arctic development. The biophysical and socioeconomic environments surrounding the Arctic are changing rapidly, and all eyes are currently focused on the region. Arctic issues have become global concerns to be treated and solved through various approaches.

Many of the challenges faced by the Arctic cannot be dealt with or resolved exclusively within the Arctic region. Participation by related international organizations, non-Arctic states, and nongovernmental organizations with professional competence in a more globalized Arctic agenda is unavoidable. Moreover, non-diplomatic cooperation in various sectors such as science, technology, academics, culture, and the private economy will be enlarged to interstate and regional levels. Cooperation in the Arctic will lead not only to quantitative, but also qualitative change.

Based on these understandings, the North Pacific Arctic Conference

(NPAC) series was launched in 2011 to provide for the first time a non-formal dialogue platform in the North Pacific region. Experts from the Arctic states of the United States, Canada and Russia, non-Arctic states of Korea, China, and Japan, and a number of representatives from the European Union, Norway, and Indigenous people gathered to discuss the Northern Sea Route and other Arctic-related issues.

For the past four years, NPAC has explored various issues such as Arctic shipping, resource development, biodiversity, environment protection, Indigenous people's lives, and governance. Moreover, it has successfully contributed to providing avenues of communication and creating networks between the Arctic Council and international organizations. There has been a profound consideration of various ways to promote cooperation and communication between the Council and non-Arctic states to solve Arctic issues and provide opportunities to brainstorm about the way forward for NPAC. Thus, the conference has proposed the operation of an informal forum that can contribute to the policy and decision-making process in the Arctic. This year, cooperation has deepened, as can be seen from the founding of the North Pacific Arctic Research Community, a new research community composed of research institutes from Korea, China and Japan.

Based on NPAC's achievements so far, this presentation explores some of the future challenges to prepare for upcoming qualitative changes in the Arctic and makes suggestions about ways to approach these issues through international cooperation.

FUTURE CHALLENGES

Proactive Conformance with Existing International Norms

An action frame to assess global issues such as climate change mitigation, marine environment protection, conservation of biodiversity, and management of marine resources and the high seas is vital. Duties and responsibilities regulated by the United Nations Convention on the Law of the Sea and the United Nations Declaration on the Rights of Indigenous People also should be observed and applied.

If necessary, an agreed regulation reflecting the unique situation of the Arctic could be examined by the Arctic Council or a relevant international organization that diverse stakeholders could accept. However, careful

attention must be given to the details of such an international norm where balanced participation by the stakeholders can take place and where appropriate duties and responsibilities are bestowed by a governance system.

The five Arctic coastal states are currently in the process of imposing a temporary ban on commercial fishing in the high seas of the Arctic. Considering the ecosystem vulnerability, as many scientists and experts have made clear, this seems like a logical procedure. On the other hand, a more cautious approach may be necessary as well. A comprehensive response mechanism such as respecting legal rights bequeathed by international law, a thorough and clear investigation into the process of making the final decision, and establishing a regional fisheries management organization could take place through the participation of various stakeholders.

From the perspective of a non-Arctic state, it is important to pursue multilateral cooperation that follows existing international regulations and obtains information and knowledge through scientific research needed to ensure that binding processes stay within the boundaries of international norms.

Implementing Response Systems to Address Security and Safety Issues

The Arctic Council has already agreed not to deal with military security issues. However, security in the 21st century is both directly and indirectly related to human lives, security, the environment, resources, and economic benefits. These issues involve imminent threats to the Arctic. In addition, a majority of the strategies of Arctic states deal with security as an important issue. With increasing activities in the Arctic region, these concerns and responses are expected to grow. Implementing intergovernmental and regional agreements relating to potential security threats such as terrorism and accidents can contribute to strengthening cooperation in the Arctic region.

Increased activities in the Arctic region also require new perspectives on safety issues for the people involved. Discourses on safety measures not only for Indigenous people but also for outside users are necessary. For example, a research icebreaker of a non-Arctic state operating in the Arctic region could be used in a rescue operation. At other times, it could just as well be the subject to be rescued. The current Arctic Search and Rescue Agreement fails to address these issues clearly. A joint rescue

operation by Russia, China, and the United States in Antarctica last January and the cooperation between the Korean research icebreaker Araon and a Russian ship in Antarctic could serve as models.

It is expected that there will be 39 ice-class vessels enlisted by the Korean government. These vessels have the potential to transit Arctic waters, and will need to observe the Search and Rescue Agreement of the Arctic. Training and education for the crews of these vessels is another assignment that requires cooperation with Arctic states.

Securing Preventive and Responsive Measures Relating to Increased Economic Activity

Economic activity in the Arctic region will involve not only massive-scale industries, such as energy resource development, but also local businesses. These will, hopefully, contribute to sustainable development in the Arctic. For instance, Arctic products may appeal to many global consumers for their “pristine” quality. The unique environmental features of the Arctic, covered with snow and ice, will be attractive to those in other regions. These activities can have large impacts of the region and the Indigenous peoples.

The Polar Code of the International Maritime Organization reflects the influence of new economic activities. Participation by private firms is essential to ensure a fair and thoughtful discussion of such issues. The Arctic Economic Council needs to take into consideration how to implement such arrangements.

It is notable that the businesses included in the Arctic Economic Council are limited to small and medium-sized Arctic enterprises. But those enterprises that can invest, despite the uncertainties, are multinational corporations. There is discord among the subjects of businesses, and it seems rather difficult to set standards by the size of businesses in today’s corporate culture. Moreover, if businesses of non-Arctic states are either excluded from or limited in their ability to participate in the Council, there is only so much local development that can take place. Therefore, the Council will need to consider the public and private companies of non-Arctic states that are already preparing to operate in the region.

Information on small and medium-sized businesses in the Arctic is severely limited at the moment, and this could pose a limitation in verifying whether they are appropriate for international cooperation.

Developing Mechanisms to Increase Investment in Infrastructure

Transporting resources and cargos through the Arctic, connecting the Arctic land to the sea, and improving the lives of Indigenous peoples may require large-scale infrastructure investments. This involves not just supporting emerging businesses, but also strengthening safety and transit arrangements. High maintenance costs are expected as well given the extreme climatic conditions. Therefore, the attraction and management of investment appear to be important factors for sustainable development of the Arctic region.

Investment in the Arctic region will include regional businesses, such as on-site development. It also has the potential to be associated with global businesses, such as in information, communication and technology (ICT). In particular, education and medicine using ICT will directly improve the livelihoods of Indigenous peoples in remote areas.

This building of infrastructure has the potential to rely on public-private partnerships. A joint investment by the public and private sectors to establish infrastructure and operations, and management by the private sector has already occurred around the globe, and can be applicable to the Arctic region. It is also noteworthy that local governments within the Arctic states are taking initiatives to set up industrial complexes and infrastructure. In the shipping sector, more consideration should take place regarding the construction of ice-class vessels, facilities for search and rescue, and arrangements for pollution prevention and mitigation. Public-private partnerships can take the forms of direct investment, indirect bonds, or stock options. If standards compatible with international norms to protect investors are introduced, more investments will flow into the region. It is hereby suggested that NPAC should deal with such issues.

Developing a Management System to Share Knowledge, Information and Experience

Knowledge of the Arctic region is not just limited to modern academic knowledge such as biophysical, economic, and social issues, but goes beyond to include local and traditional knowledge. As research into the Arctic progresses, so too does the knowledge, information and experience of stakeholders from non-Arctic regions. These will contribute to making important decisions for a sustainable Arctic society. The current efforts by the Arctic Council to reveal and manage traditional knowledge are indeed

laudable.

However, development of such knowledge and information systems faces many challenges due to technological, cultural and regional gaps; collateral efforts by global actors are needed. Cooperation to manage the knowledge effectively is an assignment for all. Thus, a thorough investigation into Arctic information services by experts participating in NPAC is suggested. Conferences dealing with the Arctic are increasingly common around the world. But the synergy created by the interaction among them is far from sufficient.

Since 2011, NPAC has been engaged in meaningful efforts to spread knowledge and understanding among North Pacific nations along with various stakeholders, including the Arctic Council. It is now necessary for bodies like the NPAC Organizing Committee to set up a website, operate a tele-study group for communication between alumni, and search for ways to increase solidarity and interaction among different regions.

Sharing Arctic visions, expanding business participation, enhancing cooperative efforts on convergence with science, and finding new research areas are just some of the benefits that can be expected to arise from these efforts.

CONCLUSION

The Arctic region is entering into a transitional period in terms of climate, environment, politics, economy, and society. This will produce quantitative changes, such as increases in the number of stakeholders, and qualitative changes, such as a broader range of issues.

However, there yet remains much to accomplish with regard to the qualitative changes. Whether there is an effective governance system that can utilize and respond to the scientific, technological and resource problems arising from these changes also needs to be examined.

Sustainable development in the Arctic requires “securing the well-being of the indigenous people and carrying out common interests within the carrying capacity of the best available capability.”

To realize this goal, it is imperative to create mechanisms to provide platforms for discourse, develop strategies to constructively accept and control increasing economic interests, and establish a comprehensive response system to widen common ground for both the stakeholders and

Indigenous people who are the rights holders.

As discussed above, many opportunities and challenges surrounding the Arctic are complex and intertwined. Every piece of knowledge and wisdom from humankind needs to be gathered in order to use the new opportunities efficiently. The emerging challenges should be overcome, while the accompanying side effects are minimized. At the hub of these activities, NPAC should find ways to achieve a bright and better future. It is emphasized here that the NPAC Organizing Committee should hold a central place in the mid-term development plan and review the need to create a road map.

Lastly, we should remind ourselves that when dealing with Arctic issues, “we shall not be in haste, but take small steps slowly and surely for the right direction.”

Perspective

Michael Aumond

INTRODUCTION

The Arctic comprises a vast geographic area, many parts of which are virtually inaccessible for a significant portion of the year. At the same time, the climate and environment of the Arctic are changing rapidly. This presents challenges to local communities, scientists, private sector companies and governments alike with respect to climate change adaptation, sustainable economic development, and growth that respects the aspirations and traditions of local communities as well as broader sovereignty issues.

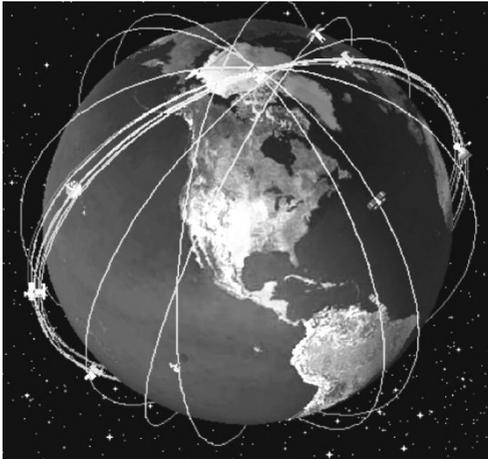
A key requirement in the management of these issues is access to real-time, accurate information. One of the important sources of information about this region comes from an increasing number of national and international remote sensing satellites that are placed in low-Earth polar orbits. These satellites provide a wide variety of high-resolution images that can be downloaded and processed at northern satellite receiving stations, and provide virtually real-time information to the scientific community, local communities, companies operating in the Arctic and both regional and national governments.

This presentation describes the current activities and applications of data received at the Inuvik Satellite Station Facility in Canada's Northwest Territories, and discusses the potential for international cooperation, using both private and public resources, in this sector.

TECHNICAL BACKGROUND

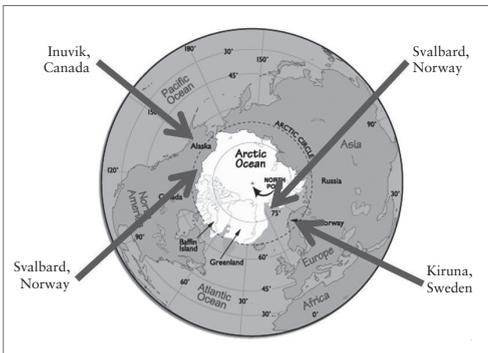
Earth observation satellites have been used for several decades to provide valuable information about changes in the Arctic. Most of the early satellite observations were driven mainly by science projects. More recently, however, a new generation of remote sensing satellites have been designed specifically to meet the needs of both public and private sector applications.

Typically, Earth observation satellites are in low-Earth, near-polar orbits.



- Each satellite goes around the earth approximately 14 times a day, and is at an altitude of between 600 km and 800 km.
- There are approximately 500 earth observation satellites currently in low earth orbits, ranging from all weather radar satellites (particularly good for ice, ship, and environmental observations), to high resolution optical satellites

The best places for downloading data from these satellites are typically at the poles. In the Northern Hemisphere, the principal international satellite receiving stations are located as shown below:



- The four principal satellite ground receiving stations in the Northern Hemisphere offer both competitive image download and processing pricing, and also enhanced reliability by providing backup in the event of a station failure.
- For example, Inuvik can receive 11 of the 14 daily orbits. Together with Kiruna (Sweden), all 14 daily orbits can be downloaded.

There are many emerging applications for Arctic remote sensing, but they can be broadly categorized into four areas:

- Environment, including climate change tracking
- Resources and land/marine management
- Science and technology innovation
- Security, including disaster mitigation and emergency relief

This presentation focuses on two potential areas for international cooperation: understanding and monitoring the effects of climate change, and sustainable resource development.

CLIMATE CHANGE APPLICATIONS

Climate change is having a major impact in the Arctic. These impacts are having a significant effect on public institutions, government and private sector firms.

Monitoring Forest Fires

This topic is currently of interest for the Government of the Northwest Territories (GNWT), having experienced this year the worst wildfire season and drought in the Northwest Territories in over 30 years.

Permafrost Changes

Changes in the characteristics of the active and transition layers of permafrost and the permanently frozen layer have major implications for northern and





Fairbanks, Alaska, USA (1)

Arctic infrastructure, including roads, pipelines, and buildings. Relatively small temperature changes, and changes in the characteristics of Arctic microclimates, can have a profound and lasting effect on the mechanical stability of permafrost. This applies both to areas characterized by discontinuous permafrost and to areas of extensive permafrost. In both situations, localized and often unpredictable ground collapse (“slumping”) can occur.



Fairbanks, Alaska, USA (2)

Biodiversity Changes

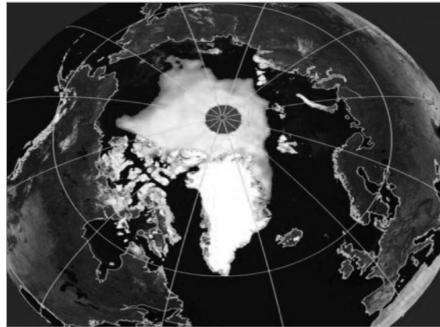
Biodiversity in the Arctic is particularly sensitive to the effects of climate change. In addition to the well-publicized reduction of the extent of sea ice, Arctic land biodiversity also is affected from the changes in migratory routes of land mammals and birds attributable to changing flora and fauna.

SUSTAINABLE DEVELOPMENT APPLICATIONS

Changes to the climate of the Arctic represent both opportunities and challenges for sustainable economic development.

Transport

One of the more significant changes in the Arctic relates to transportation. This can be both positive (less ice cover in the Arctic, with potentially new commercial sea routes using the northern passages that have previously been ice bound), and negative (shorter seasons for ice and winter roads, and more variability in Arctic climate patterns).



Satellite images over the last decade have documented the changes in Arctic sea ice together with the variability in sea ice coverage from year to year.

Recent advances in data processing and satellite image download technologies are assisting mariners and operators of Arctic infrastructure through the provision of near real time (NRT) reporting of ice conditions.

Sustainable Resource Development

For resource companies, the Arctic represents enormous potential coupled with one of the most challenging operating environments in the world.

The availability of real-time satellite data to companies operating in the North is one of the key ingredients to successful and sustainable northern development. For infrastructure located in the Arctic Ocean, accurate sea ice data is imperative to safe operations. For resource development on land, availability of accurate data regarding winter road networks (both ice roads and winter roads constructed on permafrost and frozen ground) is as important as the availability of barge transportation options along northern and Arctic rivers.

Environmental Monitoring

A critical element of any northern resource development is compliance with environmental regulations. Typically, this has principal components:

- a) Obtaining permission to implement a project, including identification of key risk areas, and the acceptance by environmental regulators of risk mitigation plans and ongoing monitoring.
- b) Ongoing monitoring to ensure compliance with the environmental regulations and, in the worst case, execution of risk mitigation plans in the event of an unforeseen accident or spill.

In Southern Canada, similar to other southern administrative areas, repeat satellite observations are being used successfully for both compliance and risk mitigation operations. This technology could be applied relatively easily to northern and Arctic projects.



- Information from satellites flying over affected areas can be relayed to fire authorities in as little as 15 minutes from data reception.
- A combination of optical, infrared and radar images provides significant information about the extent, likely direction and temperature characteristics of wildfires.
- Modern radar, all-weather, based satellite observations can measure surface variations in the order of millimeters to provide an accurate long term history of changes in the permafrost.
- These measurements are particularly important in the monitoring of roads and pipelines.

FUTURE POSSIBILITIES FOR INTERNATIONAL COOPERATION

Satellite remote sensing and data processing have evolved from an area of principally scientific interest to one with applications to a wide variety of public and private sector interests.

The satellite industry is by its nature international, with many nation states and private companies participating in this growing sector.

The two key requirements for the successful use of satellite assets are:

- Satellites with the right observation instruments on board, and with a reliable “re-visit” time for consistent and comparable observations.
- Over the next decade, the number of earth observation satellites is predicted to increase by a factor of three.
- Real-time access to processed data (15 minutes or less) that can be interpreted real-easily by “non-satellite” experts.
- This means connecting satellite ground stations with high-speed fibre optic systems, and real-time access to data processing facilities.

The GNWT has experience working in partnership with both international public and private sector enterprises to benefit the residents and communities of Canada’s Northwest Territories.

The GNWT looks forward to discussions with interested parties in the Earth observation sector, using resources and facilities in the NWT, and exploring other sustainable development projects in the NWT.

Perspective

Sheila Watt-Cloutier

Given the lightning speed at which resource development is bulldozing its way north, the members of the Arctic Council appear to be caught in a contradiction regarding the future of the Arctic. Can the Arctic Council or any similar body be truly effective in promoting sustainable development and environmental protection, so long as it is dominated by government officials who have been “educated” more than most regarding the challenges faced by northern communities but who still remain intent on making the Arctic the next global energy superpower?

The Arctic Council was established in 1996 with eight member states (Canada, USA, Russia, Iceland, Finland, Sweden, Norway, and Denmark/Greenland) as a “high level forum” to promote cooperation in the circumpolar world regarding sustainable development and environmental protection. In the Council, the Indigenous peoples of the Arctic have the status of Permanent Participants and are represented by the Inuit Circumpolar Council, the Aleut International Association, the Gwich’in Council International, the Saami Council, RAIPON, and the Arctic Athabaskan Council. Although they are not voting members, the Permanent Participants sit at the same table as the governmental members of the Arctic Council and are consulted regarding all actions of the Council.

My observations about the Council are based on my own experiences as President of ICC Canada from 1995-2002 and as Chair of ICC International from 2002-2006. My assessment of both the achievements and the shortcomings of the Arctic Council reflects activities occurring during a period in which the environmental challenges involving toxins in our food chain (POPs) and the onset of climate change leading to the collapse of Arctic sea ice and resulting in environmental, cultural and social changes for the people of the Arctic were on the table as issues requiring urgent action. Unlike most places in the world, the problems of POPs and climate change have affected the Arctic simultaneously. They both impact the health and cultural well-being of Inuit living off the land and sea.

As the newly elected president of ICC Canada, I entered the political arena in 1996, just as the Arctic Council, the successor to the Arctic Environmental Protection Strategy, was officially established and the

global negotiations on POPs were about to begin. During the initial meetings of the Arctic Council, we had to walk the Senior Arctic Officials through some very fundamental yet vital information about the social, health, and economic conditions that our communities were facing. Many representatives of the member states had not ventured north to experience life in the Arctic as we live it. What is more, although the Inuit and other indigenous peoples had participated in UN processes for many years, we could not assume that participants in the Arctic Council and in broader international arenas fully understood the perspective of Inuit on these issues.

We wanted to avoid wasting the potential of the Arctic Council. Many people in our communities were understandably worried that the Council would become yet another body intent on ‘fixing’ things as outsiders saw them with no real connection to our lives. Showing the Council what was happening on the ground on a day-to-day basis would be the best way to convince representatives of member countries that we needed an holistic approach to dealing with Arctic problems.

It took years of repetitive presentations, interventions, and oppositional stances in many venues to work out differences between nation states and Permanent Participants and to reconcile differences among research institutions with their own research standards, which often led to disagreements about how to interpret the data on the urgent issue of toxins in our food chain. Resolving these differences among scientists, industry representatives, politicians, consultants, and lawyers, all of whom had their own agendas, was essential as it otherwise would have been difficult for the Arctic Council to operate as a “block,” taking a strong stance as we began the global negotiations on POPs.

The equally urgent issue of climate change proved to be even more challenging on the scientific as well as the political level. Through our work on the Arctic Climate Impact Assessment (ACIA), the ice-dependent Inuit once again were caught in the middle as the scientific community became mired in technical debates over the validity of climate science. This resulted in a global debate on climate science that sidelined the urgent situation arising from climate change in the Arctic. We worked furiously to prevent our concerns from being derailed as a side effect of the debate about western science. Politics became more pronounced within the Arctic Council during the production of the ACIA, which included traditional knowledge of the Indigenous peoples of the Arctic as well as western

science. It took enormous efforts to get the Arctic Council back on track to produce an assessment that would help to protect our Arctic homelands from the ravages of climate change.

My point in sharing these stories is to observe that even with the stellar work of the Arctic Council's Working Groups, it is still hard to find ways to translate the results into tangible solutions at the community level. Have governments and industry understood these findings and made significant changes in their environmental and economic policies to reflect the dire conditions of poverty, suicide, unemployment and environmental degradation to the Arctic region that Inuit and other Indigenous peoples call home?

We have had some success in translating the scientific assessments into international policy. The POPs treaty, which makes our country food safer on several levels, is a good example. But the issue of climate change is not being addressed as urgently as needed to avoid the wholesale destruction of the sea ice that is essential to Inuit in hunting for food.

If we want to explore new forms of cooperation in the Arctic, it will be essential to learn from the shortcomings of the Arctic Council in which a lack of financial and human resources has hindered the ability of the Permanent Participants to engage fully and to exert a strong influence on the important debates affecting their communities.

New institutions must achieve a balance between the development of the Arctic's resources and stewardship informed by the knowledge of the peoples of the Arctic and providing opportunities for their voices to be heard.

Perspective

Peiqing Guo

Due to globalization and the “rapidly changing” circumstances in the Arctic region, the fragile environment and challenges of sustainable development in the region pose numerous governance requirements for the international community. Arctic change is triggering unprecedented opportunities and challenges for Arctic nations, as well as for countries that do not have Arctic territories but are eager to engage with and invest in the region. Vast energy and mineral reserves, local and transpolar shipping, fishing and tourism are the main opportunities provided by the melting ice in the Arctic Ocean. As far as relations between preservation and development are concerned, people see more comprehensive cooperation emerging within Arctic states, as well as between Arctic and non-Arctic states. More and more actors are seeking to play an active role in Arctic cooperation.

WHAT DECIDES THE MODE AND SCALE OF ARCTIC DEVELOPMENT COOPERATION?

To achieve the goals of preservation and sustainable development, international cooperation has been recognized as the most effective, even the only, way to deal with new challenges. Of all the kinds of Arctic cooperation, development cooperation is being highlighted recently. What and how many kinds of cooperation does Arctic development need? Is there a need for Arctic states to cooperate with actors from non-Arctic states? Or is it possible for them to do all the work by themselves?

Most of the Arctic issues are global problems of the cross-border and cross-regional kind such as black carbon, ice shipping, Arctic oscillation, fisheries management of the Central Arctic Ocean, and so on. One cause is the constant exchange of products/raw materials, capital, staff, and information between the Arctic region and the “southern regions,” mainly referring to non-Arctic states, which is growing more active and difficult to cut off. It is apparent that these problems cannot be resolved without interested stakeholder collaboration. One outstanding example is Arctic fisheries management. With global warming and rapidly melting sea ice,

Arctic fisheries have attracted a lot of attention from all over the world. However, the Central Arctic Ocean is an area beyond national jurisdiction.¹ These international waters are not at present governed by any specific international fisheries agreements or regulations. The management of Arctic fisheries is being discussed in many forums. Now is the time for the international community to create a precautionary management system for these resources. It is imperative since this region is no more remote from major fishing ports and fishing fleets than many areas of the world to which pelagic fleets already have access due to the ice melting significantly in the past three decades.² Article 88 of UNCLOS stipulates that states concerned shall cooperate to establish regional fisheries management organizations that include important stakeholders in this field. Without cooperation on the part of non-Arctic states, the authority and legitimacy of proposed Central Arctic Ocean fisheries management will be suspect, and even challenged when put into effect.

Through international cooperation involving interested stakeholders, cross-regional issues can be resolved. Some cross-border issues, however, like the delimitation of the Barents Sea boundary between Russia and Norway, should be addressed by the interested parties without outside intervention. Therefore, the mode and scale of Arctic cooperation is largely decided by the attributes of specific issues.

In the divisions of world industries, the Arctic cannot be expected to become a manufacturing base, whether in the past, at the moment or in the future. Due to the abundant resources and limited consumption capacity of the region, the Arctic is integrated into the world economy as an energy and resource base for the rest of world, as well as for tertiary industries, especially transportation and tourism.

A key point to focus on is Arctic development cooperation. With the warming Arctic climate, Arctic development is being discussed comprehensively among Arctic states, and has been elevated to the level of national strategy in some states like Russia and Canada. Most of the Arctic states share a strong resistance to so-called “internationalization” of the Arctic allegedly proposed by non-Arctic states, and hope to address most of the issues by themselves or through cooperation with other Arctic states. None of the documents issued by the Arctic Economic Council (AEC) has mentioned the role of non-Arctic states. The Agreement on the Arctic Economic Council: Facilitating the Creation of the Arctic Economic Council, reached by the Arctic Council states clearly that the main objective

is to “strengthen the Arctic Council by enhancing regional economic cooperation.” All policies implemented by the AEC must conform to this principle.³ Leona Aglukkaq, the Canadian Minister of the Environment, Minister of the Canadian Northern Economic Development Agency and Minister for the Arctic Council, called for Arctic-to-Arctic dialogue and communication twice in the inaugural meeting of the Arctic Economic Council. She insisted that participation will be limited to entities from Arctic states.⁴ In speeches to the media, the first chair of the AEC, Tom Paddon, also stressed “establishing strong market connections between the Arctic states.”⁵ In short, we have not found any documents stipulating the AEC’s relationship with non-Arctic states. Is it possible to accomplish their development objectives with a large number of Arctic stakeholders remaining excluded from participating in Arctic development?⁶

Any economic activity, including regional development, must cover three elements: capital, technology and markets. There is no exception for the Arctic. Of course, environmental protection and Indigenous culture must be taken into account in the Arctic. Let us engage in an in-depth analysis of these aspects. As the biggest Arctic state, Russia can be chosen as the sample for study.

The technology for Arctic development, especially oil and gas exploitation, is attracting more attention. The European Union and the United States possess superior drilling technology for deep water and Arctic Ocean operations. Sanctions on Russia, including the West’s suspension of exports of energy technology, are thought to be a blow to Russia’s energy industry, which is critical to the country’s economy. However, China is concentrating many resources on improving deep sea drilling techniques and equipments, and has made great progress. The 981 oil rigs in the South China Sea constitute a milestone. The disputes and competition in the East and South China Seas provide a strong impetus for China to develop deep seabed technologies. Before the sanction policy agreed on by the EU and the United States, some of the capital for the development of Russian Arctic oil and gas originated in the EU and the United States. Russia raised almost half of its €15.8 billion (26.4 billion USD) in capital in EU markets last year.⁷ But with Chinese energy companies like the China National Petroleum Corporation (CNPC) stepping into the Yamal Oil and Gas Project, some Chinese public capital is moving northward. The landmark 400 billion USD deal signed in May between Russia and China means that 400 billion USD will flow into Russia,⁸ and even more investment is being

considered in the future.

As a potential energy/resources base, most of the exploitation in the Arctic will be consumed by “southern” countries, primarily in Northeast Asia and Southern Asia, where most of the emerging economies are thirsty for energy. In short, it is impossible to cut off the relationship between the Arctic and the non-Arctic region.

In particular, cross-border cooperation usually occurs in certain circumstances. The scenario of Arctic development cooperation depends heavily on the level of engagement of key participants, so Arctic domestic politics and international politics play important roles. Russia is a typical example.

Russia takes the lead in international cooperation for Arctic development. Energy extraction and export play major roles in the Russian economy. With oil accounting for more than half of Russia’s export income, representing up to 30% of the country’s GDP and half of its GDP growth since 2000, hydrocarbons provided at least half of the state’s revenues in 2012. In short, oil and gas are paramount politically as guarantors of the security and stability of the Russian state.⁹ Russia must keep energy production rising. With declining oil production in the West Siberia basin - the biggest oil field currently accounting for 70% of all raw oil¹⁰ - Russia has to seek new oil fields to ensure its hydrocarbon production reaches a higher level. The Russian Arctic Strategy document, “The fundamentals of state policy of the Russian Federation in the Arctic in the period up to 2020 and beyond,” published in September 2008, pledged to transform the Arctic into Russia’s top strategic base for natural resources by 2020, and preserve the country’s role as a leading Arctic power.¹¹ With the sanctions by the EU and United States, foreign capital and the stable market of Northeast Asia, including Chinese capital, are regarded as an important guarantee for Russia’s economy and domestic stability.

The United States and the EU have carried out strict sanctions targeting Russia’s state-owned banks, weapons makers, and oil companies. The traditional energy cooperation between the EU/U.S. and Russia is facing serious challenges. Before the Ukraine crisis, Russia had taken some active steps regarding cooperation for Arctic development and the introduction of foreign capital. As recently as June 2012, Russia’s Rosneft signed an agreement with ExxonMobil on Arctic oil and gas exploration. Then, a record energy agreement, the 400 billion USD, 30-year China-Russia gas deal, was signed in Shanghai on May 21, 2014, succeeding a triangular agreement involving Russia’s Novatek, France’s Total and CNPC. Recently,

the international community has witnessed the rapid pace at which Northeast Asian nations, the biggest potential buyers of Russian oil and gas, are moving in terms of Arctic development cooperation. Daewoo Shipbuilding & Marine Engineering Co. of Korea received a large order for nine LNG carriers to serve the Yamal project from a joint venture between two major Asian companies, Mitsui OSK of Japan and the China Shipping Development Company. The three Northeast Asian states are contributing greatly to Russian Arctic development. The reform of energy arrangements provides an important impetus for the three states to play an active role in Arctic oil and gas development cooperation.¹² Russian determination to forge ahead with oil exploration projects solidifies the base of this cooperation.¹³

Besides Russia, Nordic countries are also showing a strong interest in attracting domestic and particularly foreign investment in their Arctic development. Of the five Nordic states, Iceland is pushing ahead at a rapid pace. To play the Arctic card is an important part of the Icelandic national strategy in the long term. As Eyjólfur Á. Rafnsson, the chair of the Icelandic-Arctic Chamber of Commerce described it, “if we play our cards right, there is every possibility that the country could become a commercial center for the region.”¹⁴

A free trade agreement (FTA) between Iceland and China that came into effect on July 1 provides a strong impetus for foreign investment. Lots of foreign companies are preparing to launch a series of grand investment schemes. Germany’s Bremen Ports is already developing a harbor in Finafjörður in the northeastern part of Iceland. Another four companies, United Silicon Carbide, Silicor Materials, Thorsil and PCC Silicon Metal Production Plant, are planning to build silicon plants in Iceland. Iceland is expected to become one of the major silicon bases of the world. The FTA with China is one of the reasons these companies decided to invest in Iceland.¹⁵

Compared to Russia and the Nordic states, Canada and the United States are less active in their Arctic development. As the current chair of the Arctic Council, Canada’s attention to Arctic economic development is currently limited to within Canada and a few international cooperation agreements. One of the reasons for this is that Canada’s critical industries are the manufacture of high technology, the mining industry, and the construction industry. Less than 10% of Canada’s gross domestic product is pulled from the Arctic.¹⁶ Arctic development cooperation has not been

prioritized in its national strategy. Accordingly, Ottawa made clear that economic development, through an “Arctic-to-Arctic” dialogue, would be one of its primary focuses.¹⁷ Canada prefers to call on representatives from the Arctic Council states and Permanent Participant organizations only to determine the ground rules for the Arctic Economic Council; there is no mention of non-Arctic states.¹⁸

For the United States, the value of the Arctic lies mainly in its strategic and energy potential. With the collapse of the Soviet Union, however, the Arctic’s strategic value declined significantly, even though Russia is a target of U.S. sanctions. Additionally, Alaskan oil production has experienced a steep decline since the late 1980s, when production peaked at over two million barrels per day.¹⁹ Production will continue to decline as shale gas is developed in the U.S. mainland in coming years.

These facts prove that the motivation for Arctic development is decided by multiple aspects combining Arctic states’ domestic politics, international politics, and market forces, rather than one dominant factor. As a result, the form, pattern and scale of Arctic development cooperation vary with different circumstances, independent of human consciousness, including the Arctic Council’s will. With gradual change, development in the Arctic will be open to the capital of non-Arctic states, as this region is an integral part of economic globalization, and it is also of extreme importance in the world economy. Taking Russia as an example, no matter what result comes out of the international investigation into the crash of Malaysian Airlines flight MH17 in eastern Ukraine, Russia is under great pressure due to the potential negative repercussions this event may cause. With the EU deciding to shift its position, standing together with the United States and expanding sanctions against Russia to include energy exploration, Northeast Asia-Russia Arctic development cooperation will be strengthened and solidified. Russia has recently demonstrated its determination to forge ahead with its oil exploration projects, fighting off the threat of the West imposing sanctions on the energy sector over the Ukrainian crisis.²⁰ No doubt, the confrontation between the West and Russia will have a negative impact on Northeast Asia-Russia cooperation in the long term.

THE ROLE OF PUBLIC AND PRIVATE CAPITAL

Of all the non-Arctic states, China has been a focus of “special” attention

on the part of the Arctic states. In the past years, promoting the idea of a rising Chinese Arctic threat has been a fashion in some research reports. The role Chinese state-owned enterprises will play is a big concern among Arctic states, and some analysts regard these enterprises as tools to implement China's global strategy. However, one fact is ignored, and that is the profound change happening silently to Chinese state enterprises. At present, China is conducting reforms of state-owned enterprises, and trying to dismantle the monopolies they have created. One of the effective ways to accomplish this is to change the stock shares of current state-owned enterprises. This implies that a large amount of Chinese private capital can be invested in stocks of state-owned companies, which will change the original nature of these companies. In a few years, it will probably be hard to identify whether these former state-owned enterprises are state-owned or privately owned. More precisely, these companies will have "mixed ownership." When China finalizes this great reform, Arctic states will face a challenge to set special criteria for Chinese companies' investment in Arctic development. In brief, it is one-sided to discriminate between state-owned capital/public capital and private capital, and it is neither possible nor practical to do so. By then, the former so-called state-owned capital from non-Arctic states may be used to better serve the interests of Arctic states in line with local laws, including environmental laws, as well as market regulations. People will realize that the attributes of capital, public/state-owned or private, mean nothing to Arctic development. Capital of a profit-driven nature will be the driving force. An investment wave is arriving. According to the London-based think tank Lloyd's/Chatham House, an estimated investment of 100 billion USD will be spent in the Arctic over the next decade.²¹

As the Arctic is an integral part of the global ocean currents and atmospheric circulation, the region is greatly affected and has been a victim of global warming. In turn, the Arctic is becoming a driver of global warming that is imperiling the low and mid-latitude regions. Whether Arctic and non-Arctic states share the common responsibility and obligation of Arctic environmental preservation and sustainable development is an ongoing question. To find a balance between protection and development is their common goal. Non-Arctic states' capital should be recognized or used as a constructive force, and their participation in Arctic development may support the goal of Arctic preservation.

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