Journal of Strategic Security

Volume 5
Number 3 *Volume 5, No. 3, Fall 2012: Energy Security*

Article 5

Arctic Energy Resources: Security and Environmental Implications

Peter Johnston
Defence Research and Development Canada, johnstonp@smtp.gc.ca

pp. 13-32

Recommended Citation
Johnston, Peter. "Arctic Energy Resources: Security and Environmental Implications." *Journal of Strategic Security* 5, no. 3 (2012) : 13-32.
DOI:
http://dx.doi.org/10.5038/1944-0472.5.3.2

Available at: https://scholarcommons.usf.edu/jss/vol5/iss3/5

Arctic Energy Resources: Security and Environmental Implications

Abstract

In recent years, there has been considerable interest in the Arctic as a source for resources, as a potential zone for commercial shipping, and as a region that might experience conflict due to its strategic importance. With regards to energy resources, some studies suggest that the region contains upwards of 13 percent of global undiscovered oil, 30 percent of undiscovered gas, and multiples more of gas hydrates. The decreasing amount and duration of Arctic ice cover suggests that extraction of these resources will be increasingly commercially viable. Arctic and non-arctic states wish to benefit from the region's resources and the potential circum-polar navigation possibilities. This has led to concerns about the environmental risks of these operations as well as the fear that competition between states for resources might result in conflict. Unresolved offshore boundaries between the Arctic states exacerbate these fears. Yet, the risk of conflict seems overstated considering the bilateral and multilateral steps undertaken by the Arctic states to resolve contentious issues. This article will examine the potential impact of Arctic energy resources on global security as well as the regional environment and examine the actions of concerned states to promote their interests in the region.

Journal of Strategic Security
Volume 5 Issue 3 2012, pp. 13-32
DOI: 10.5038/1944-0472.5.3.2

Published Quarterly by Henley-Putnam University Press
with support from the University of South Florida Libraries

Arctic Energy Resources: Security and Environmental Implications

Peter F. Johnston
Defence Research and Development Canada[1]

Abstract

In recent years, there has been considerable interest in the Arctic as a source for resources, as a potential zone for commercial shipping, and as a region that might experience conflict due to its strategic importance. With regards to energy resources, some studies suggest that the region contains upwards of 13 percent of global undiscovered oil, 30 percent of undiscovered gas, and multiples more of gas hydrates. The decreasing amount and duration of Arctic ice cover suggests that extraction of these resources will be increasingly commercially viable. Arctic and non-arctic states wish to benefit from the region's resources and the potential circum-polar navigation possibilities. This has led to concerns about the environmental risks of these operations as well as the fear that competition between states for resources might result in conflict. Unresolved offshore boundaries between the Arctic states exacerbate these fears. Yet, the risk of conflict seems overstated considering the bilateral and multilateral steps undertaken by the Arctic states to resolve contentious issues. This article will examine the potential impact of Arctic energy resources on global security as well as the regional environment and examine the actions of concerned states to promote their interests in the region.[2]

Introduction

In recent years, there has been considerable interest in the Arctic as a source for resources, a zone of commercial transit, and as the potential site of future conflict. Contemporary focus on the region has increased because of the apparent reduction in ice-cover and the lengthening of ice-

free navigation periods attributed to climate change. There is speculation that this trend will continue and open up the Arctic for more use. Many of the analyses concerning the development of this region suggest that it will occur with great haste, lead to significant environmental damage, and will take place with a heightened risk of conflict amongst the competing powers. While this view makes for compelling reading, it is dubious for several reasons that will be explored below by examining three key components to Arctic security.

The first component is the consideration of energy resources. Sources forecast that global population and economic growth will continue increasing for the future, suggesting that there will also be a rising requirement for energy resources to sustain this increase. This has led to concerns about how this future energy demand will be met. To meet this need, the global oil and gas industry has continued to seek new reserves to satisfy the demand for these strategic resources. Since the so-called "easy" reserves have been claimed and are subsequently being developed, exploration has taken companies to more remote and challenging oil and gas properties. One area that has sparked considerable interest in recent years has been the Arctic. This interest is based primarily on the assessment that there are considerable oil and gas resources there, particularly offshore, as well as the perception that the ice coverage is diminishing, thereby easing access to these reserves. This alignment of factors has some observers speculating that there will be a massive increase in Arctic oil and gas operations in the near term.

The second component is the examination of Arctic shipping routes. The reduced ice coverage has also sparked interest in using the Arctic, particularly the Northern Sea Route (NSR) in Russia's territorial waters, as a route for transporting goods between Asia and Europe. This route reduces the distance and time required to move these goods to market thereby cutting shipping costs. It is anticipated that use of the Arctic for transporting goods will increase dramatically in the coming years.

The third and final component analysed is the issue of boundary disputes and the potential for conflict. Complicating the use and development of the region are the unresolved boundary disputes among the Arctic countries. These disagreements have led some analysts and media pundits to suggest that there will be an increased likelihood of armed conflict as countries and companies vie for resources in contested areas.

This article will deconstruct the perception that Arctic development will occur rapidly, accompanied by environmental damage and with much potential for conflict, by offering reasons why events might occur in a

https://scholarcommons.usf.edu/jss/vol5/iss3/5
DOI: http://dx.doi.org/10.5038/1944-0472.5.3.2

more benign manner. To accomplish this, the article will examine the energy resource potential of the region, the opening of sea transit routes, and the likelihood of conflict attributable to Arctic development. Finally, the potential environmental risks that the energy and shipping developments pose to the region will be briefly explored in each of the identified sections.

Arctic Energy Resource Developments

Potential Resources

Oil and gas recovery operations have occurred in the Arctic region for several decades, making the presence of resources there old news. The combination of climate and terrain has increased the operating costs, thereby maintaining a brake on rapid development. The sustained high cost of energy resources, especially oil, has renewed the interest of companies and some governments in the region. So, too, has the loss of access to reserves for International Oil Companies (IOCs) due to the nationalization of many areas of the world. The ratio of National Oil Companies (NOCs) to IOCs has changed dramatically since the 1970s when the major IOCs controlled a majority of global reserves and, in 1972, produced roughly 93 percent of global crude. However, this balance was reversed by 2008 when nationalized companies held approximately 92 percent of total global reserves and the NOCs accounted for 81.5 percent of total global oil production.[3] From these statistics, it is clear that NOCs dominate contemporary oil markets. Furthermore, this trend is unlikely to change in the near-term given the tendency in countries like Venezuela and Ecuador to continue nationalizing their internal operations as well as the substantial global reserve acquisition efforts of Chinese, Indian, and other NOCs.

Reserve ownership by NOCs does not necessarily exclude participation by IOCs in the development of these resources. However, recent history is replete with cases where contractual agreements were changed to the disadvantage of the IOCs by the host country after significant development of the reserves had taken place. Thus, the IOCs put themselves at considerable financial risk entering into agreements with some countries that operate nationalized companies. This risk has led many IOCs to seek development opportunities in areas that are not controlled by NOCs, and many regions of the Arctic meet this criterion.

IOCs are not the only companies looking to benefit from the potential to develop these resources at profit. Two of the Arctic states, Norway and Russia, both operate NOCs that are already extensively engaged in operations in the region. Both Russia and Norway also have plans to increase their extraction operations in the Arctic as existing fields in other areas mature and become less productive. Indeed, a recently discovered oil field in Norway's Barents Sea is estimated to hold 3.66 billion barrels and is expected to be producing by 2013.[4] For both Russia and Norway, expanded operations in the Arctic will enable them to meet ongoing contractual sales obligations. In Russia's case, increased activity in the Arctic will also enable it to sell more oil and gas to the Asian market. China is another country that operates NOCs and has also expressed interest in gaining access to Arctic resources. Hence, the Arctic not only offers opportunities for IOCs seeking unclaimed reserves, but also for NOCs seeking to maintain or increase their output.

Underlying this interest in the Arctic is the prospect that oil and gas resources are present in sufficient quantities to justify the expenditure of billions of dollars to develop them. A 2008 United States Geological Survey (USGS) report suggested that there are substantial amounts of undiscovered oil and gas throughout the Arctic. The report states that the mean estimates indicate "that 90 billion barrels of oil [BBO], 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids may remain to be found in the Arctic, of which approximately 84 percent is expected to occur offshore."[5] This amount represents roughly 13 percent of the global mean estimate of undiscovered oil and 40 percent of the global mean estimate of undiscovered gas.[6] While the amounts that are recoverable may vary significantly—either up or down, the potential for oil and gas extraction in the Arctic is substantial.

An important resource that was not analyzed in the USGS report is gas hydrates, which is another energy source that might become viable in the future. It is estimated that there are between 6–600 times the amounts of gas hydrates versus conventional gas deposits in the world, so they could extend the fossil fuel age well into the future. Gas hydrates are comprised of methane and water frozen into a solid beneath the seafloor or under permafrost. The methane is concentrated due to the crystal structure of the hydrates resulting in a density of 164 m^3 of methane gas in each 1 m^3 of methane hydrate, making it much denser than conventional methane reserves. However, with contemporary technology, gas hydrates are difficult to extract without risking environmental damage—particularly

https://scholarcommons.usf.edu/jss/vol5/iss3/5
DOI: http://dx.doi.org/10.5038/1944-0472.5.3.2

Arctic Energy Resources: Security and Environmental Implications

the uncontrolled escape of green house gases. Research to develop a safe extraction process continues and may be commercially viable before 2030, making the Arctic a potential source of future gas hydrate exploitation.[7]

Extraction Challenges

While there are interested parties taking on projects in the region, the pace of developments in the Arctic is likely to be slower than many of the forecasts suggest. This is primarily due to the two factors examined below. The first is the difficult operating environment and climate. The second is the availability of other development opportunities in less challenging areas.

It is generally believed that Arctic ice cover might become thinner and permit longer periods of navigable water than was the case in the past. However, the degree to which this will occur remains to be seen. Furthermore, even with reduced ice cover for parts of the year, there will still be a substantial amount of ice hampering transportation and operations. This ice has a profound effect on operations. It increases costs since the platforms, pipelines, and ships used in the exploration, extraction, and transportation of oil and gas must all be built to a tougher standard in order to reduce the risk of destruction or damage from the ice packs. Moreover, a system of ice flow monitoring must be put in place to keep watch for icebergs that might cause damage to facilities, equipment, or personnel. Strengthened construction and surveillance and warning systems add to the cost of operating in the Arctic and reduce the profit margin for oil and gas companies.

An additional cost factor related to Arctic operations is the very limited drilling season. Generally, weather and ice coverage limits drilling in the region to less than two months per year. Hence, for drilling operations to take place the equipment has to be transported to a staging area and assembled as required prior to the drilling season; this includes the crews who have to wait until the ice coverage diminishes sufficiently before commencing operations. Since these sites are remote, the transportation and sustenance costs are often quite high. Storms or unanticipated ice can delay operations or lead to their cancellation. Once the drilling season reaches its end, the drilling site must be capped and the rig removed to a safe location that could be quite distant from the work area. This cycle occurs each year as the wells are drilled, adding significant costs to Arctic operations as compared to drilling in other less inhospitable regions.

Another consideration in the Arctic is the increased challenge of protecting the environment. The region is a very fragile habitat given its unique characteristics—waters that are ice-free for limited periods, if at all, and a collection of flora and fauna that have adapted to the harsh environment and are subsequently unique to the Arctic. The water's depths are also generally shallow, creating a situation where any spills would be concentrated and their impact potentially more severe than they might be in deeper waters where more dissipation occurs. A nightmare scenario involving an oil spill covered by ice is also possible. Should this come to pass, it could defy detection and clean up for a very long time, thereby increasing the damage to the environment.

The sensitive nature of the Arctic environment combined with the increased risks posed by the climate and ice necessitates more rigorous disaster response protocols than in most other regions. The companies operating in the Arctic have taken steps to plan for and prepare to deal with spills and other disasters related to accidents. However, these safeguards have not been tested in real-life situations, so it is not clear that they will be adequate if required. This creates uncertainty over the ability to manage accidents and disasters in the region. The British Petroleum (BP) Deepwater Horizon accident in the Gulf of Mexico is illustrative in that the crisis management teams were pushed to the limit and arguably not successful in managing the immediate disaster even though this event occurred in a region where there was ready access to all types of response equipment and personnel.[8] It is unlikely that the same resources could be so easily accessed in or transported to many parts of the Arctic given its remoteness and harsh climate.

The isolation of the region also leads to a transportation challenge, especially in terms of getting the product to market. Pipelines might be an option in some cases, although pipelines across permafrost—particularly thawing permafrost—are subject to frost heave or sinking, meaning they can buckle and develop leaks as a result. This would increase the risk of environmental disaster. Another option is shipping, although that too is subject to the vagaries of the local conditions. The Arctic's environment, climate, and distance to markets will not only increase the challenges that developers face, but will also increase the operating costs. These costs might not be prohibitive, but they might dissuade some companies from operating in the region.

Finally, the global economy has not fully recovered from the economic downturn that struck in 2008, so demand is lower than many analysts forecast it would be by this time.[9] This situation has already affected the long-awaited development of the Shtokman gas field in Russia's Barents

https://scholarcommons.usf.edu/jss/vol5/iss3/5
DOI: http://dx.doi.org/10.5038/1944-0472.5.3.2

Sea sector. The initial plan was for a consortium, controlled by Gazprom and including France's Total and Norway's Statoil, to begin marketing Shtokman gas in 2013, but this date has been pushed to 2015.[10] It remains to be seen if the planned investment in Arctic oil and gas operations will actually occur.

Alternatives to Arctic Energy Investments

Another issue when considering the pace of possible Arctic oil and gas operations is the potential for other developments in different parts of the world. As noted, there is considerable competition for access to lucrative properties. There are other options that are less risky and, therefore, might slow the pace of Arctic developments. Some of these alternatives are considered in this section.

Perhaps the most influential contemporary development is that of shale gas in the United States. Until recently, shale gas was considered too difficult to extract profitably; however, with improvements in horizontal drilling and hydraulic fracturing (fracking), some of these reserves are now commercially viable. Shale gas production in the United States has consequently soared to the point where it comprised roughly 23 percent of gas produced in 2010. However, earlier estimates of recoverable shale gas reserves in the United States were too high, leading some experts to question the sustainability of the resource.[11]

Shale gas is not limited to the United States. A recent United States Energy Information Administration report indicated that there are 48 shale gas basins in 32 countries. The study further estimated that the technically recoverable amount of gas in these basins is 6,622 trillion cubic feet (tcf). Total global recoverable gas, not including shale gas, is estimated at 16,000 tcf, so the added shale gas boosts the total over 40 percent to 22,622 tcf.[12] Since these estimates were made without substantial drilling, they may be inaccurate. Still, this boost in the global potential recoverable gas might reduce the desire of some companies to invest in more risky Arctic extraction operations.

There are also questions concerning the environmental sustainability of fracking given that its critics suggest that it has a negative impact on the environment and water tables. The depletion rate of shale gas reserves is also faster than conventional gas reserves, necessitating re-drilling to access the resource more frequently than is the case with conventional gas operations. These factors might cool the interest and viability in shale gas in some areas, although it seems that in other markets production will continue to rise. The world is undergoing a slow transition that will see

gas replace oil in many uses. Consequently, reliance on gas is expected to rise, and this trend might trigger an increase in Arctic gas extraction operations. However, it seems likely that the short-term focus will be on shale gas and other options in more hospitable environments.

Shale gas is only one alternative for companies and countries seeking to increase their energy supply. Coal Bed Methane (CBM) extraction technology has improved to the point where it is becoming viable in areas where the resource is present. A longer-term alternative to traditional piped gas has been Liquefied Natural Gas (LNG) that, along with shale gas and CBM, has had a dramatic impact on global gas markets. For instance, in some markets gas now trades as a fungible product with spot prices instead of prices linked to that of oil, as it did previously. Consequently, gas prices in some markets have dropped significantly in recent years. According to a Bloomberg report, prices in North America have recently dropped to a 10-year low and market analysts anticipate the price to stay near this range at least through 2012.[13] However, as the cold 2011–2012 winter in Europe demonstrated, some markets can still experience painful price spikes when demand remains high for long periods. This suggests that the development of alternative gas supplies has not permeated the entire global market. Until it does, there may still be pressure to push on with Arctic development.

Additionally, there have recently been large conventional gas discoveries in areas outside the Arctic. Since the late 2000s, for example, a few key discoveries in the eastern Mediterranean offshore have dramatically improved the prospects that gas will be developed there in significant quantities. In 2009, Noble Energy confirmed that its Tamar field is estimated to contain 238 billion cubic metres (bcm) of gas. In 2010, Noble announced the discovery of the Leviathan field, also in the eastern Mediterranean, with an estimated 453 bcm, making it the largest deepwater gas discovery of the last decade.[14] While there is considerable investment required to develop these fields, and some tensions surrounding the location of continental shelf boundaries in the region, it is possible that these finds could dramatically alter the balance of gas available to Europe, the Middle East, and North Africa in the future.

Although not as plentiful as gas, there are also potential alternative options for companies seeking to extract more oil in the future. For example, reserves offshore of Brazil are estimated to be significant enough that their extraction might put that country near the top of global annual producers in the future. Unfortunately, these reserves are found at great depth and below thick layers of salt, which creates significant technical challenges. However, recent advancements show promise that these hur-

https://scholarcommons.usf.edu/jss/vol5/iss3/5
DOI: http://dx.doi.org/10.5038/1944-0472.5.3.2

dles will be overcome in the coming years. Another region that might be capable of increased annual production is the Canadian Oil Sands. While rendering the bitumen into synthetic crude is energy intensive and more expensive than conventional oil production, with consistent sustained high prices, oil sands crude production is economically viable and companies continue to invest and expand operations. The relative political stability in Canada as compared to other countries with marketable oil reserves is a major selling point for many companies.

In addition to options such as Brazil offshore or the Canadian Oil Sands, the sustained high price of oil is making many reserves around the world—once considered too difficult to extract—now seem viable for production. Generally, these reserves, like the gas options mentioned above, are located in regions where development can continue year-round, thereby lowering the investment risk for companies and offering stable supply options for markets.

Thus, while there are prospects for increasing global oil and gas production by developing potential Arctic reserves, there are also many compelling reasons that suggest these developments will evolve slowly. For instance, the conditions in the Arctic, while increasingly ice-free in some regions, are still extremely difficult to operate in and the drilling season is quite short compared to other year-round options. The environmental risks also increase, contributing to higher cost infrastructure and accident response protocols. These factors increase the operating costs in comparison to other less restrictive locations. The distance to markets is significant in most cases leading to more expenditure on transport or pipelines. Finally, while it is true that the so-called "easy oil" is gone, there are still lucrative reserves of oil and gas in other parts of the world that often have more accommodating circumstances. In light of these considerations, development of Arctic oil and gas operations is more likely to occur gradually than rapidly.

Arctic Shipping

Aside from the potential access to resources that the diminishing ice cover affords, there is much interest in using the periodic open water to enhance global shipping. The opportunity to make use of the Northern Sea Route (NSR) in Russia's Arctic waters, as well as the Northwest Passage (NWP) in Canada's Arctic waters, might dramatically increase the amount of shipping that transits the Arctic, particularly between Asia and Europe. The NWP could cut as much as 2,500 statute miles off the route between Europe and Asia, while the NSR would reduce voyages by

approximately 3,000 nautical miles (3,453 statute miles) and save roughly twenty-two days sailing time.[15] With rising fuel costs, these shorter distances would result in significant savings for shippers and would enhance supply chains by decreasing the time for products to arrive to market. Finally, these routes provide alternatives to the key intercontinental shipping chokepoints: The Malacca Strait, Suez Canal, and Panama Canal.

Russia is intent on opening up its passage for more shipping traffic. In its 2009 Arctic strategy document, the Russian Government indicated that developing the region's resources and improving the NSR were its fundamental goals.[16] Expanding the use of the NSR will permit Russia to export more of the oil and gas it intends to produce, as well as to market other resources extracted in the Russian North. This approach, in turn, will generate revenue for the Russian ice-breaker fleet since Russia has made escort by one of its ice-breakers, for a fee, a requirement for ships transiting the NSR.[17] In short, the Russian Government views the opening of this route a key component of its revenue generating capacity.

While it is possible that the NWP will open to more frequent commercial shipping and could become a regular summer route for commercial shipping, it is not as developed as, nor as ice free for as long a time as is the NSR. Given these realities, it seems unlikely that the NWP will experience a shipping increase to the same extent as the NSR.

More frequent shipping traffic in the Arctic does entail increased environmental risk, although the degree of risk remains to be seen. It will depend on the amount of traffic that opts for these northern lanes, the type of cargoes, the condition of the vessels, and the extent to which the transits are monitored and supported. In the NSR, for example, icebreakers escort ships as a matter of routine. This reduces the likelihood of any vessels being trapped in the ice. Search and rescue in the Arctic is constrained by the vast distances between populated centres and the climate. So, it is possible that response to a shipping accident might not be as robust as it would be in other more accessible areas. Therefore, while it is logical that the risk of accident and thus environmental damage will be heightened due to potential increased shipping activity, it remains to be seen what the real impact might be.

Another environmental concern will be the increase in pollution resulting from more frequent passage of ships. In spite of safeguards and procedures to minimize pollution, it is inevitable that passing ships will leave behind some level of pollution, be it minor or major. This, too, will have a negative consequence on the region unless it is managed effectively.

https://scholarcommons.usf.edu/jss/vol5/iss3/5
DOI: http://dx.doi.org/10.5038/1944-0472.5.3.2

Increased shipping in the Arctic might have positive environmental impact elsewhere on the planet. One of the positive aspects of opening up these routes is that it will lessen shipping traffic using one of the other major chokepoint routes. With fewer vessels on these routes, the local environmental risks will be somewhat reduced. Another security related benefit that might result from decreased shipping in some regions, particularly the Malacca Strait, is the potential reduction of piracy. With fewer ships passing through, security services will have more time to concentrate on anti-piracy activities and pirates will have fewer targets, possibly leading some to seek other opportunities. There will be negative impact for states that charge transit fees along these routes and the ports and businesses that service the ships since diminished traffic will translate into reduced revenue, although lost revenue along the traditional routes will mean increased revenues in the Arctic region. The degree to which these potential outcomes occur will depend on the numbers of ships that opt for a northern route over the traditional choices.

Conflict Risk

Discussion of the development of Arctic resources and the opening of the region for increased ship transit is replete with suggestions that these developments might lead to conflict. Some proponents of this view argue that there will be fierce competition between companies and states to access reserves in contested areas. Others suggest that there will be a struggle between the Arctic states over the disputed boundaries.[18] On the surface, there may be some justification for these concerns given that the boundaries along the continental shelves of the Arctic states have not yet been settled. While these speculations make for interesting discussions, conflict seems unlikely, barring a major disruptive change in the international system.

To understand the potential for conflict, it is necessary to gain an appreciation of where the anticipated oil and gas resources are believed to lie. The USGS report mentioned previously outlines this in detail. It suggests that the Arctic region is divided into thirds with one-third onshore, one-third continental shelf, and one-third deep ocean basin. The study also notes that the deep ocean basin areas—areas over which there are border disagreements—contain few hydrocarbon resources. Most of the resources lie on the continental shelves or onshore.[19] According to the report, 60 percent of the estimated oil resource is located in six locations: The Alaska Platform, Canning-Mackenzie Basin, North Barents Basin, Northwest Greenland Rifted Margin, South Danmarkshavn Basin, and the North Danmarkshavn Salt Basin. Of these, the Alaska Platform is the

most significant in that it is estimated to contain approximately 31 percent of the undiscovered Arctic oil. Similarly, approximately 66 percent of undiscovered gas is believed to lie in just four areas: The South Kara Sea, South Barents Basin, North Barents Basin, and the Alaska Platform. Of these, the South Kara Sea, a Russian possession, is believed to contain nearly 39 percent of undiscovered gas.[20] The borders claimed by the Arctic states are generally not disputed in the areas anticipated to contain significant hydrocarbon deposits; hence, neither are the resources that lie within them. This somewhat belies the notion that there will be conflict over resource deposits in the Arctic.

Moreover, the Arctic countries have agreed to resolve their boundary disputes through the United Nations Convention on the Law of the Sea (UNCLOS).[21] Under UNCLOS, the UN Commission on the Limits of the Continental Shelf (CLCS) was established to adjudicate the delineation of the outer limits of continental shelves and maritime boundaries. Arctic states, in turn, must submit their boundary claims to the CLCS within ten years of ratifying UNCLOS.[22] Russia and Norway have already submitted their claims while Canada has until 2013 and Denmark has until 2014 to do so. The United States has not ratified UNCLOS because of the concern on the part of some senators that doing so would cede too much power to the United Nations. The perception that the United States might lose out on its claims if it is the only Arctic state not to file a submission to CLCS may lead the Senate to agree to ratification in the near-term, although this remains to be seen.[23] Despite not ratifying UNCLOS, the United States joined the other four Arctic states in issuing the Ilulissat Declaration on May 28, 2008, affirming that each state would resort to the legal framework of the law of the sea to resolve any claims.[24] While the declaration did not refer to UNCLOS by name, it did note that the law of the sea is the overarching framework to resolve any disputes. The agreement by the Arctic states to resolve their disputes through this framework suggests that the overlapping boundary issues will be settled amicably, although it is likely that they will take some time to be finalized.

Another multilateral forum that the Arctic states make use of to enhance cooperation in the region is the Arctic Council. All the region's countries are members of the Council through which they periodically meet to discuss and manage issues that affect the Arctic. Its membership includes Canada, Denmark (due to its tie with Greenland and the Faroe Islands), Finland, Iceland, Norway, Russia, Sweden, and the United States. Additionally, there are six permanent observer states including France, Germany, The Netherlands, Poland, Spain, and the United Kingdom. Other states can apply to attend meetings of the Council as observers on an ad hoc basis. China has applied for permanent observer status, but its appli-

https://scholarcommons.usf.edu/jss/vol5/iss3/5
DOI: http://dx.doi.org/10.5038/1944-0472.5.3.2

cation has not yet been accepted. China is interested in increasing its voice regarding Arctic issues since it hopes to benefit from the resource potential of the region and the shorter shipping routes. While generally a forum for discussion and consultation, the Arctic Council set a milestone in May 2011 by signing the Aeronautical and Maritime Search and Rescue Agreement, the first legally binding agreement negotiated under its auspices.[25] This agreement will increase the cooperation between the Arctic states when search and rescue operations are required. Furthermore, the document is indicative of the cooperation amongst the members of the Arctic Council.

While there are many examples of cooperation amongst the Arctic states, some uncertainty regarding Russia's intentions has persisted. This occurred particularly during the first presidency of Vladimir Putin when his statements asserting Russia's intent to defend its claims in the Arctic stepped up considerably. In fact, some military action did occur to back up this rhetoric as noted in the recommencement of long-range bomber flights (used extensively throughout the Cold War period) and increased activity on the part of Russia's Northern Fleet.[26] Additionally, there were pledges made to increase the number and role of Russian security forces in the region. Perhaps most symbolic of all this activity was the August 2007 planting of the Russian flag underwater in a contested area of the Lomonsov Ridge.[27] In addition to these acts, the Russian Government also made announcements indicating that they were taking steps to enhance border security and their military ground forces in the Arctic. These actions were interpreted by the West as potentially hostile and worrisome. However, it is important to view them in the context of the setbacks Russia perceived in the early years of Putin's presidency. Putin, for instance, felt slighted by the West over the NATO-led bombing campaign against Serbia, as well as by the development of closer ties between Ukraine and Georgia and the West. Against this backdrop, Putin's actions in the Arctic were in part aimed at shoring up nationalist sentiments in Russia in order to support his government rather than sending provocative signals to Russia's Arctic neighbours. It is useful to compare the very militaristic Russian Arctic policy document published in 2001 with the one published in 2009. The latter document is far less bellicose than its predecessor and refers to cooperation with Arctic neighbours as the preferred course, suggesting a moderating tone and intent in Russia's Arctic policy.[28]

Russia's actions, more importantly, need to be considered in the context of the difficulties that the country faces due to its economic and demographic challenges. The Russian economy, for instance, is decidedly dependent on oil and gas exports, thereby limiting the development of

other sectors and leaving it vulnerable to boom and bust cycles. Russia's economy is also notoriously corrupt and lacks legal protection for investors, which reduces its ability to attract new capital and potential business partners. Yet, its oil and gas companies need external investors and partners to successfully develop the Arctic reserves. Demographically, Russia has suffered from a sustained decline in population that also threatens to undermine its economy in the coming years. These structural challenges, in turn, have limited Russia's ability to improve its military capabilities.[29] These limits on Russia's national power militate toward a cooperative military and diplomatic agenda rather than a confrontational one.

Indeed, a review of Russia's cooperation with its Arctic neighbours reinforces this view. Consider that Russia has agreed to work within the framework of the UN to settle its delimitation. Russia was also able to reach a bilateral agreement with Norway in September 2010 to settle their ongoing boundary dispute in the Barents Sea.[30] In another announcement around that time, Russian Foreign Minister, Sergei Lavrov, affirmed Russia's commitment to resolving the boundary dispute with Canada regarding the Lamonsov Ridge through the UNCLOS process.[31] Moreover, Russia has cooperated with the other Arctic countries to coordinate and assist in Arctic search and rescue missions. These are the substantive issues pertaining to the Arctic making it clear that Russia has been generally cooperative despite its occasional provocative rhetoric and associated activity.

There are many additional recent examples of cooperation amongst the Arctic countries to settle potentially contentious issues. As noted above, Russia and Norway were able to bilaterally settle their ongoing Barents Sea boundary disagreement. Canada and Denmark have agreed to settle their territorial dispute over Hans Island on the boundary between Greenland's and Canada's territorial waters. Iceland and Norway agreed to jointly develop a potential oil and gas reserve that straddles the boundary between their respective territorial waters. These are all examples of the cooperation between the Arctic countries in settling potentially fractious issues and suggest that their relations will continue to be managed in a cooperative manner rather than a conflicted one.[32]

The Chinese Government's desire to access the Arctic resources as well as to use the region as an option for the transport of its goods is sometimes cited as another conflict risk. China does have a great stake in the Arctic in that 46 percent of its GDP is dependent on shipping, and shortened sailing times would enhance its economy significantly. Its economic growth is also dependent on energy and other resources that it can obtain from the Arctic region. China's support for Iceland during its recent banking crisis

https://scholarcommons.usf.edu/jss/vol5/iss3/5
DOI: http://dx.doi.org/10.5038/1944-0472.5.3.2

Arctic Energy Resources: Security and Environmental Implications

was viewed by many as an attempt by Beijing to gain influence in order to use Iceland as a trans-shipment point in the future should the NSR open up. The thinking is that Chinese shippers will use very large cargo container vessels to cross the Arctic on the NSR, and then divide the cargoes to smaller carriers in Iceland to be sent to their final destinations in Europe as well as along the Eastern Seaboard of North America.[33] In light of this, it appears that China is focused on making use of the NSR to move its goods to market. China is also interested in seeking out resources in the Arctic to sustain its economy. This fits the pattern that the Chinese exhibit throughout the world where their firms are busy securing energy supplies. The idea that either of these activities should create conflict seem unlikely in that China already ships its goods around the world, and is already engaged in global energy markets to acquire resources. Neither of these activities has led to contemporary conflict with the Chinese nor is there currently any reason to suspect they will in the foreseeable future.

A final consideration regarding the potential for conflict in the region is the status of the Arctic countries themselves. Both Russia and the United States are nuclear weapons powers who possess substantial conventional forces, and they hold permanent seats with veto power within the UN Security Council. Five of the Arctic Council members also belong to NATO; these include: Canada, Denmark, Iceland, Norway and the United States. Another member of the Arctic Council, Sweden, cooperates closely with NATO. It seems unlikely that any country would risk starting a conflict in such a strategic environment.

Conclusion

There are potentially large reserves of gas and oil in the Arctic region that will be developed in the future. However, given the difficult operating conditions due to the climate and geography, it seems that this development will take place gradually rather than rapidly as some analysts suggest. Aside from the difficult operational environment, there are other options outside of the Arctic, as noted above, that will occupy some of the companies that might otherwise invest in the Arctic region. The degree to which these trends will impact the pace of Arctic development is not clear but it seems likely that development will occur slowly.

Another issue that will place limits on the pace of Arctic oil and gas development is the heightened environmental risk that these operations involve. While companies have contingency plans, equipment, and some Arctic-specific emergency response procedures developed, these have not been tested in a real situation creating some uncertainty regarding the

ability to manage accidents in the region. Given that BP is still settling its liabilities stemming from the recent disaster in the Gulf of Mexico, it seems likely that other companies will tread cautiously in the Arctic due to the risk of environmental disaster. This is not to say that these concerns will halt activity in the region, but it appears likely that new operations will evolve slowly in order to mitigate environmental risk and subsequent loss of revenue due to any mishap.

There is additional uncertainty surrounding the potential for conflict between Arctic countries or others from outside the region. While there has been various provocative actions and rhetoric in the recent past by some of the Arctic countries, it seems that these occurred for domestic political consumption more than they were intended as signals to other countries. Indeed, the record of cooperation amongst the Arctic countries in resolving contentious issues to date has been good. Moreover, these countries have all agreed to abide by the UNCLOS to resolve the delimitation of their continental shelves. In fact, the generally accepted study on the oil and gas deposits in the regions suggest that most of the major reserves will be found within the continental shelf areas of the Arctic countries in areas that are not contested. This suggests that most of the development will occur in regions not likely to result in tensions or conflicts.

About the Author

Since 2000, Peter Johnston has been a Defense Scientist conducting Strategic Analysis for the Centre for Operational Research and Analysis, a part of Defense Research and Development Canada. Previously, he was an infantry officer in the Canadian Forces, gaining experience in operational and non-operational environments. He holds an M.A. in War Studies from the Royal Military College of Canada. He has conducted energy security research for ten years, examining topics including the link between oil and conflict in Africa, nationalization, the threat posed by terrorism on oil and gas infrastructure, Arctic energy geopolitics, and energy security more broadly. He has been published in conference proceedings and journals including *Baltic Rim Economies*, the *Journal of Military and Strategic Studies*, and *Pomorskiego Przegladu Gospodarczego* (Pomeranian Economic Review). He has presented his research at events in North America and Europe.

https://scholarcommons.usf.edu/jss/vol5/iss3/5
DOI: http://dx.doi.org/10.5038/1944-0472.5.3.2

References

1 Peter Johnston is a Strategic Analyst working for Defence Research and Development Canada – Centre for Operational Research and Analysis. The reported results, their interpretation, and any opinions expressed herein remain those of the author and do not represent, or otherwise reflect, an official position of the Department of National Defence or the Government of Canada.

2 This article benefited from comments received following its presentation as a paper at the International Studies Association Annual Convention in San Diego, April 2012.

3 Peter Johnston, "The Security Impact of Oil Nationalization: Alternate Futures Scenarios," *Journal of Strategic Security* 3:4 (Winter 2010): 4.

4 Reiner Gatermann, "Norway regains faith in its oil future," *European Energy Review*. 29 November 2011.

5 "Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle," *USGS Fact Sheet 2008–3049*, (2008).

6 Donald Gautier, Kenneth J. Bird, Ronald R. Charpentier, Arthur Grantz, David W. Houseknecht, Timothy R. Klett, Thomas E. Moore, Janet K. Pitman, Christopher J. Schenk, John H. Schuenemeyer, Kai Sørensen, Marilyn E. Tennyson, Zenon C. Valin, and Craig J. Wandrey, "Assessment of Undiscovered Oil and Gas in the Arctic," *Science*, 324:5931 (May 29, 2009): 1177–1178.

7 R.A. Dawe and S. Thomas "A Large Potential Methane Source—Natural Gas Hydrates," *Energy Sources, Part A*. 29 (2007):217–229. See also: Keith A. Kvenvolden, "Gas Hydrates—Geological Perspective and Global Change," *Reviews of Geophysics* 31:2 (May 1993): 173–187.

8 David Barstow, David Rohde and Stephanie Saul, "Deepwater Horizon's Final Hours," *The New York Times*, December 25, 2010. See also: *Deepwater: The Gulf Oil Disaster and the Future of Offshore Drilling*, Report to the President, National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, January 2011.

9 Peter Truscott, "European Energy Security – Facing a Future of Increasing Dependency?" *Royal United Services Institute Whitehall Paper*, No. 73 (2009): 8–11.

10 "No need for haste on Shtokman project," *Barents Observer*, November 26, 2009.

11 Christine Buurma, "U.S. Cuts Estimate for Marcellus Shale Gas Reserves by 66%," *Bloomberg*, January 23, 2012.

12 "Shale Gas is a Global Phenomenon," *U.S. Energy Information Administration*, April 5, 2011, available at: *http://www.eia.gov/todayinenergy/detail.cfm?id=811*.

13 Dinakar Sethuraman, "Morgan Stanley Cuts 2012 U.S. Natural Gas Futures Forecast 30%," *Bloomberg*, January 31, 2012. See also: Eduard Gismatullin and Brian Swint, "Shells Voser to Shift U.S. Focus to Oil Shale from Gas," *Bloomberg*, February 2, 2012.

14 Vlad Popovici, "Europe's new energy frontier," *European Energy Review*, October 27, 2011.

15 Margaret Blunden, "Geopolitics and the Northern Sea Route," *International Affairs* 88:1 (2012): 118. See also: Vsevolod Gunitskiy, "On Thin Ice: Water Rights and Resource Disputes in the Arctic Ocean," *Journal of International Affairs* 16:2 (Spring/Summer 2008): 261.

16 Katarzyna Zysk, "Russia's Arctic Strategy: Ambitions and Constraints," *Joint Force Quarterly*, 57 (2010): 105.

17 Trude Pettersen, "Rosatomflot is ready for more cargo on the Northern Sea Route, *Barents Observer*, December 14, 2011.

18 See for example Scott G. Borgerson, "The Great Game Moves North," *Foreign Affairs*, March 25, 2009. See also: Jessa Gamble, "Arctic Landgrab," *Scientific American Earth 3.0*. 19:1 (2009): 58–63; George Kolisnek, "Canadian Arctic Energy Security," *Journal of Energy Security* (December 2008); Christoph Seidler, "Who is Winning the Race for the Arctic?" *Business Week*. June 12, 2009; Barry S. Zellen, "Viewpoint: Cold Front Rising—As Climate Change Thins Polar Ice, A New Race for Arctic Resources Begins," *Strategic Insights* (February 2008).

19 Gauthier, et. al., 1175–1176.

20 Ibid, 1178.

21 Kristian Åtland. "Security implications of climate change in the Arctic," *FFI-rapport 2010/01097* (May 18, 2010): 15.

22 Vsevolod Gunitskiy, "On Thin Ice: Water Rights and Resource Disputes in the Arctic Ocean," *Journal of International Affairs* 61:2 (Spring/Summer 2008): 261–262.

23 Gamble.

24 "The Ilulissat Declaration," *Arctic Ocean Conference*. Ilulissat, Greenland, May 27–29, 2008.

25 "Search and Rescue in the Arctic," June 22, 2011, available at: *http://tinyurl.com/c8hkd65 (www.arctic-council.org/index.php/en/oceans/search-and-rescue/157-sar-agreement)*.

26 Michael L. Roi, "Russia: The Greatest Arctic Power?" *Journal of Slavic Military Studies* 23 (2010): 558.

27 Arik Hesseldahl, "Who Owns Rights to Melting Arctic?" *Newsweek*, January 28, 2009.

28 Zysk, "Russia's Arctic Strategy: Ambitions and Constraints," 103–110.

29 Roi, 567–570.

30 James Baker and Michael Byers, "Crossed Lines: The Curious Case of the Beaufort Sea Maritime Boundary Dispute," *Ocean Development and International Law* 43 (2012): 86. See also: Nataliya Vasilyeva, "Putin dismisses the possibility of armed clash over Arctic resources," *The Globe and Mail*, September 23, 2010.

https://scholarcommons.usf.edu/jss/vol5/iss3/5
DOI: http://dx.doi.org/10.5038/1944-0472.5.3.2

31 "Russia, Canada agree to resolve Arctic dispute based on UN Law," *RIA Novosti*, September 16, 2010.

32 Åtland, 32–33.

33 Blunden, 124–125.

Journal of Strategic Security

https://scholarcommons.usf.edu/jss/vol5/iss3/5
DOI: http://dx.doi.org/10.5038/1944-0472.5.3.2