INTERNATIONAL

CLIMATE CHANGE & INTERNATIONAL SECURITY: THE ARCTIC AS A BELLWETHER

CENTER FOR CLIMATE AND ENERGY SOLUTIONS

by

Rob Huebert
University of Calgary

Heather Exner-Pirot
University of Saskatchewan

Adam Lajeunesse
University of Calgary

Jay Gulledge
Center for Climate and Energy Solutions

May 2012

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Rob Huebert
University of Calgary

Heather Exner-Pirot
University of Saskatchewan

Adam Lajeunesse
University of Calgary

Jay Gulledge
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Huebert, R., H. Exner-Pirot, A. Lajeunesse, J. Gulledge (2012) "Climate change & international security: The Arctic as a Bellwether." Arlington, Virginia: Center for Climate and Energy Solutions. Available at: http://www.c2es.org/publications/climate-change-international-arctic-security/

CONTENTS

ACKNOWLEDGMENTS

The Center for Climate and Energy Solutions (C2ES) extends sincere thanks to the following individuals for sharing their thoughtful reviews and insights about the manuscript: Caitlyn Antrim (Rule of Law Committee for the Oceans), Dr. Marcus King (Elliot School of International Affairs), CDR Dr. James Kraska (U.S. Naval War College), CDR Blake McBride (U.S. Navy Task Force Climate Change), and Dr. Barry Zellen (Arctic Security Project, Naval Postgraduate School).

EXECUTIVE SUMMARY

In its most recent assessment of global climate change, the U.S. National Academy of Sciences concluded, "A strong body of scientific evidence shows that climate change is occurring, is caused largely by human activities, and poses significant risks for a broad range of human and natural systems." Impacts and rates of change are greatest in the Arctic, where temperatures have been increasing at about twice the global rate over the past four decades. The rapid decline in summer sea ice cover in the past decade has outpaced scientific projections and is drawing international attention to emerging commercial development and transport opportunities previously blocked by the frozen sea. The Arctic is therefore a bellwether for how climate change may reshape geopolitics in the post–Cold War era.

The trend toward seasonally open waters is driving increased interest and investment in oil and gas exploration, shipping, and fishing in the Arctic. The recent economic recession has not affected these developments significantly, as they were always intended to be middle- to long-term developments following the progression of sea ice retreat. Indeed, high oil prices and advances in technology continue to support the drive toward offshore drilling in Arctic waters. The global economy, which has begun to show signs of recovery, is likely to rebound long before oil and gas exploration and shipping could be scaled up in the Arctic. China, India and the rest of the developing world's growing middle classes will need oil and gas and other resources, and the world's shipping routes are already so congested that the development of northern shipping routes is not a question of if, but when.

In response to these changes, many of the Arctic states have begun to re-examine their military capabilities to operate in the Arctic region. Some have started to rebuild their military forces, while most of the other states are drawing up plans to begin the rebuilding process. Multilateral organizations and non-Arctic states are also looking for new roles in the Arctic. All of these actors are attempting to come to terms with the meaning of Arctic security, a concept that was relatively simple during the icy decades of the Cold War. Recent national policy developments arising from the effects of climate change on the Arctic commons demonstrate that climate change is indeed a national and international security interest in the traditional strategic sense.

As the emerging Arctic security environment is in a very early stage of development, whether it will ultimately be predominantly cooperative or predominantly competitive remains an open question. Although the Arctic states invariably emphasize their desire to maintain a cooperative environment, several have stated that they will defend their national interests in the region if necessary. To gauge the geopolitical winds in the Arctic, this study catalogs and analyzes dozens of major policy statements and actions by the Arctic states, other states with Arctic interests, and multilateral organizations between 2008 and 2012.

As a framework for interpreting the totality of these statements and actions, we compare geopolitical developments to date with three future security scenarios posited by the Arctic Council in its Arctic Marine Shipping Assessment 2009 Report. We adopt these scenarios as testable hypotheses for the purposes of this study:

- **Hypothesis 1:** There is no emerging security environment and the circumpolar states have no new interests that would increase competition or conflict in the region. If this hypothesis is correct, a close examination of the actions of the circumpolar world should reveal no significant new foreign and defense policies and defense procurement decisions in relation to the Arctic.

- **Hypothesis 2:** While showing renewed interest in the Arctic, the interested states are committed to developing and strengthening multilateral instruments of cooperation. New military capabilities are directed towards building local constabulary capacity and largely eschew escalation of war-fighting capability.
- **Hypothesis 3:** Increasing accessibility to Arctic resources because of climate change, along with a growing and increasingly modern military presence of strategic rivals in the region, becomes a recipe for competition and potential conflict. Under this hypothesis, the circumpolar states should be actively examining their core interests in the region, expressing concern over what other states are planning or doing in the region, and developing more assertive northern defense postures, including rebuilding their northern war-fighting capabilities. It is also expected that the various actors would be commencing the process of developing new defensive relationships and either strengthening old alliances or building new ones.

We assess which of these hypotheses most closely resembles the behavior of the key actors as revealed in their statements and actions. On the basis of the prevailing scenario(s), we consider the potential for instability and conflict in the Arctic and offer recommendations on how the states should proceed to ensure the region develops in a cooperative and peaceful manner.

MAIN FINDINGS

Finding 1: Unprecedented national attention to Arctic policy.

A confluence of major policy announcements between 2008–2012 have followed Russia planting its flag at the North Pole in August 2007, the same week that Canada announced significant new Arctic military investments. Since then, major Arctic policy announcements have been made by Canada, Denmark, Norway, Russia, the United States, the European Union, the Nordic countries (Nordic Supportive Defence Structures, NORDSUP) and the North Atlantic Treaty Organization (NATO). It is unprecedented to have numerous, major policy announcements—not just for the Arctic but for international affairs in general—from so many major players in such a short timeframe.

Finding 2: Emphasis on environmental security.

By 2005 all Arctic governments and many others had come to officially accept that climate change was melting the Arctic ice cover, which meant that the Arctic was becoming more accessible to both the Arctic states and to the international community. This new accessibility raised two main concerns for the Arctic states. First was the need to maintain environmental security. In this context, environmental security can be understood as avoiding or mitigating acts leading to environmental damage or deterioration that could violate the interests of states and their populations, in particular their northern and northern indigenous peoples. The need to maintain the region's environmental integrity in the face of increased economic activity was a prevalent theme in much of the Canadian, American, and Russian documentation. The second concern was the need for a constabulary capacity to monitor who arrives in each state's waters and what they are doing there. Most of the Arctic states said they had inadequate means to police the area. Much of the proposed Arctic security policy has been justified as improving the states' abilities to meet these new environmental and constabulary needs.

Finding 3: Desire for cooperation but resolve to protect national interests.

In most of their statements, the states have reiterated their commitment to collegiality and the principles of international law to ensure that an accessible Arctic is developed in a peaceful and cooperative manner. On the other hand, many of the Arctic states' actions and statements make it clear that they intend to develop the military capacity to protect their national interests in the region. This approach implies that while diplomacy and cooperation are preferred, the Arctic nations will reserve the right to use unilateral force to defend their interests if necessary.

Finding 4: Remilitarization of the Arctic.

While the two previous findings suggest that the Arctic states are focused on building a cooperative security environment in the region, there is a third, apparently contradictory trend toward modernizing their military forces in the Arctic. Some have already begun rebuilding their Arctic military capabilities, and most of the others are drawing up plans to do so. Consequently, if political cooperation in the region should sour, most of the Arctic nations will have forces that are prepared to compete in a hostile environment.

Finding 5: Non-Arctic states and organizations seek roles in the Arctic.

The EU and NATO have been examining the issues of governance and security in the Arctic. NATO's initial focus appears to be on improving coordination of security-related issues, such as search and rescue. Given the importance of the region to NATO members such as Canada, Norway and the United States, it seems likely that NATO will remain engaged in the region. The EU's interest is framed in the context of ensuring that new governance mechanisms are designed to include the interests of all European states. The EU has also issued policy statements that place a strong emphasis on protecting the environment. Separate from the EU, France has announced that it plans to provide its military with some Arctic capabilities. Although it has not expressed geopolitical interest in the Arctic, China plans to increase its scientific research activities in the region and has added a strategic studies department to its Polar Research Institute.

Finding 6: Underlying causes of policy developments.

The principal cause of renewed national interest in the Arctic is the increasing accessibility of Arctic waters resulting from global warming and new maritime technologies. Accessibility leads to the potential for new sea routes or the expansion of old ones, an important issue for both Russia and Canada. Western nations have focused on augmenting scientific research, environmental protection, sustainable development, and a constabulary and military presence. The United States stake in the Arctic is comparatively small, and historically it has tended to act with minimal interest in the region compared with the other Arctic states. Russia has invested tens of billions of dollars in Arctic oil projects, and its recent policy statements and actions suggest that it will act assertively to safeguard its oil wealth and position in the Arctic. Although oil and gas are less central to the core interests of the rest of the circumpolar powers, the importance of Arctic oil will grow for all nations as oil prices continue to rise and the desire for energy security grows.

CONCLUSIONS & RECOMMENDATIONS

Taken as a whole, the Arctic policy statements and actions taken since 2008 clearly disprove *Hypothesis 1*. There can be no doubt that there is renewed national and international interest in the Arctic along both economic and strategic lines. However, distinguishing between *Hypothesis 2* and *Hypothesis 3* is more difficult, as many of the statements and actions of the polar states indicate both a sincere desire for peaceful cooperation and serious preparations for strong military capabilities to defend core national interests in the region.

While *Hypothesis 2* is the preferred outcome of all Arctic states, significant national investments in establishing a modern military capability in the north signals that core national interests are the top priority of most of them. Under these circumstances, competition and conflict (i.e. *Hypothesis 3*) could become the Arctic reality if cooperative mechanisms cannot keep pace with developments or otherwise prove inadequate to settle international disputes in the region. Continued monitoring of national and international developments in the Arctic will help clarify whether conditions are tipping more toward cooperation or more toward competition. A living component of this study will continue to track these developments over time and can be accessed via the Web at http://cmss.ucalgary.ca/arcticsecurity.

Maintaining security and peace in the Arctic will require adapting policies and institutions to the emerging environment there. First, the Arctic states need to strengthen existing multilateral institutions and agreements, especially those related to security. The U.S. Department of Defense, for example, wisely advocates the accession of the United States to the United Nations Convention on the Law of the Sea , which provides an important framework by which to resolve disputes over, for example, the delimitation of the continental shelf in the Arctic. States also need to develop practical bilateral and multilateral agreements whereby their new Arctic capabilities can work together. Where practices develop to allow cooperation, that cooperation is easier to maintain should relations become strained due to factors developing outside of the Arctic. An early example of such practices is the development of a search and rescue treaty, the first legally binding agreement to come out of the Arctic Council, which was signed by member states in May 2011. Joining these multilateral regimes, however, is not enough; Arctic states must renew a commitment to comply with existing obligations and implement their commitments as well.

Second, the Arctic states will need to acknowledge and deal with the renewal of military strength in the Arctic. This need runs counter to the tendency of states to publicly downplay the potential for military conflict in the Arctic in order to emphasize their legitimate desire for cooperation. The Arctic Council should reconsider its existing prohibition on discussing military security issues. Failure to do so may encourage the development of alternative forums such as the "Arctic Five" group of states (Canada, Denmark, Norway, Russia and the United States) that met at Ilulissat, Greenland in May 2008 and Quebec, Canada in March 2010. The challenges facing the Arctic are multi-dimensional and require both bilateral solutions, such as the Russian-Norwegian maritime border agreement, as well as a unified international response. A sectoral response to the multitude of issues that are increasingly developing in the region threatens to create a piecemeal, ad hoc governance system that may act to prevent the level of coordination needed to resolve future disputes.

The widely held notion that climate change will occur gradually over the 21st century, allowing ample time for society to adapt, is belied by the unprecedented pace of both climate change and policy developments in the Arctic today. Such rapid changes will challenge governments' abilities to anticipate and diplomatically resolve international disputes within the region. The lesson to the rest of the world might be to anticipate changes and adapt and/or react as soon as possible, using new and existing diplomatic tools, before core national interests take center stage and promote competition and possibly conflict. With global warming, time is of the essence, not only for mitigation, but for adaptation at both the community level and the international level.

I. INTRODUCTION

In its most recent assessment of global climate change, the U.S. National Academy of Sciences concluded, "A strong body of scientific evidence shows that climate change is occurring, is caused largely by human activities, and poses significant risks for a broad range of human and natural systems" (NRC 2011). Observed impacts are greatest in the Arctic, where temperatures are increasing at about twice the global rate (Screen and Simmonds 2010). The rapid decline in summer sea ice cover in the past decade has significantly outpaced projections, and estimates of how much time will pass before the Arctic becomes seasonally free of ice have been revised downward as a result (section II). These changes are ushering in a new era of Arctic geopolitics driven by global warming in combination with contemporaneous economic and political trends. The Arctic is therefore a bellwether for how climate change may reshape geopolitics in the post-Cold War era.

The Arctic Council's Arctic Marine Shipping Assessment 2009 Report states, "Arctic natural resource development (hydrocarbons, hard minerals and fisheries) and regional trade are the key drivers of the future Arctic marine activity" (Arctic Council 2009). The United States Geological Survey (USGS) has estimated that "about 30% of the world's undiscovered gas and 13% of the world's undiscovered oil may be found [in the Arctic], mostly offshore under less than 500 meters of water" (Gautier, et al. 2009). The assessment considered only conventional sources, so more oil and gas could be available from nonconventional sources such as coal bed methane, gas hydrates, oil shales, and oil sands.

In addition to oil and gas, the Arctic is believed to be rich in other mineral resources. For example, the Baffinland Iron Mines Corporation has stated that the Mary River Project located on North Baffin Island "is the highest grade, large undeveloped iron ore project in the world that remains independently owned" (Baffinland Iron Mines Corporation 2008).

As the sea ice retreats in the coming decades, potential trans-Arctic shipping routes offer significant economic and strategic advantages by shortening the distance needed to transport goods between Asia, North America, and Europe by up to 4000 nautical miles, and by reducing shipping time by up to two weeks. Arctic shipping also offers a cost-effective means by which to transport Northern resources, including oil, gas, and minerals, to southern markets. Several ship-building and oil companies are investing in the development of new types of ice-strengthened tankers and vessels to capitalize on such opportunities.

The economic value of an open Arctic remains unknown because the timing is uncertain and exploration of the region has barely begun. Moreover, "there are many other factors and uncertainties of importance including governance, Arctic state cooperation, oil prices, changes in global trade, climate change variability, new resource discoveries, marine insurance industry roles, multiple use conflicts and Arctic marine technologies" (Arctic Council 2009). In addition to the availability of resources, therefore, political and economic forces will shape future activities in the Arctic.

In response to these changes, militaries and security analysts have begun to assess the implications of climate change for international security and foreign policy (European Union 2008, U.N. Secretary-General 2009). In the United States, official military doctrine now holds that "climate change, energy security, and economic stability are inextricably linked" (U.S. DOD 2010). Accordingly, the impacts of climate change are expected to act as a "threat multiplier" in many of the world's most unstable regions, exacerbating droughts and other natural disasters as well as leading to food, water, and other resource shortages that may spur social instability, mass migrations, and possibly intra- and inter-state conflict. In the Arctic, military operations are being transformed by the changing physical environment as well as increased civilian presence and activities, and the U.S. military recognizes the need "to address gaps in Arctic communications, domain awareness, search and rescue, and environmental observation and forecasting capabilities to support both current and future planning and operations" (U.S. DOD 2010). Some

militaries have begun to rebuild their forces for Arctic operations, including the acquisition of submarines (Russia), ice breakers (Russia, Canada), Aegis-capable frigates (Norway), Arctic-capable patrol craft (Canada), unmanned aerial vehicles (Canada), and ground troops (Russia, Norway).

A new Arctic security environment is emerging. Powerful forces—natural and political—are reshaping the fabric of the Arctic. However, while Arctic security is widely discussed, it is little understood. Since 2008, Arctic security has received more attention from the circumpolar states and other interested parties than ever before. The circumpolar nations have begun rebuilding their Arctic military capabilities, with serious long-term ramifications for the peace, stability and security of the region (Huebert 2010). The core questions arise: How are these issues understood? What are the international ramifications of this growing quest for national security?

This report examines the developing Arctic security environment in three sections. The first provides an analysis of the recent security developments that have occurred in the Arctic. Special attention is given to policy statements and the building of new military forces for use in the Arctic. This section also provides a summation of current strategic trends as well as an assessment of the underlying causes of these new policies and actions. The second section (Annex) provides a summation of the northern security, defense and foreign policies, and actions of each of the circumpolar states, as well as other relevant international security organizations and agreements with references to documentation. A third, living element of this report can be found on the Web at http://cmss.ucalgary.ca/arcticsecurity. This Web page catalogs developments in chronological order and provides a direct link to each of the Arctic security, defense, and foreign policy documents and decisions. It will continue to be updated in the future.

Before beginning this evaluation, it is necessary to make two cautionary notes. First, we are still in the early days of this new security environment, and our understanding of the forces at work is still in the formative stages. Any findings at this point are preliminary.

A second problem is assessing the developing Arctic security regime in connection to the greater international environment. Events elsewhere impact how the regime develops. For example, the 2008 conflict in Georgia created tension between Russia and NATO. Since five of the eight Arctic states—Canada, Denmark, Iceland, Norway and the United States—are members of NATO, the chill in relations that followed Russia's action in Georgia could easily have upset Arctic relations. Similarly, the economic crisis that engulfed the world after the fall of 2008 and continues to plague many countries slowed some of the extractive and military projects planned in the region. The Deepwater Horizon spill in the Gulf of Mexico in 2010 provoked concerns about drilling in the challenging waters of the Arctic, although Shell Oil's plans to begin offshore exploration in the Arctic continue to progress (Bertrand 2012).

In the medium to long term, however, trends are clear; as China, India and other rapidly developing economies grow more prosperous, there will be a demand for the Arctic's newly accessible natural resources and shipping lanes. The ice that has long maintained the Arctic as a uniquely placid international space is receding rapidly. The Arctic Ocean is now opening up to the greater global society in ways completely unanticipated a decade ago. This new environment will create great opportunities and great challenges as new interests are developed and pursued by both the Arctic states and the larger international community.

II. THE CHANGING ARCTIC ENVIRONMENT

The intense economic and geopolitical attention paid to the Arctic today is driven largely by environmental changes in the region resulting from global warming. The circumpolar nations and other countries with large and growing economies are interested in new transport and tourism opportunities, as well as the mineral, fossil fuel, and fisheries resources that are becoming accessible within the region. The emergence of those new opportunities is determined by the rate of decline of the seasonal sea ice cover; the summer sea ice has already retreated sufficiently for deepwater oil exploration to begin in 2012 (Murphy 2012).

Changes in the Arctic climate have serious implications for much of the world, not just the circumpolar nations. Changes in wind patterns may already have begun to alter seasonal climate extremes in Europe and the conterminous United States, leading to severe winter storms by allowing cold air to spill out of the Arctic into more southern latitudes (Liu, et al. 2012). The same phenomenon forces warm southern air into the Arctic, reinforcing the warming and loss of ice there (Overland and Wang 2010). Freshening and warming of the surface ocean in the Arctic has the potential to alter large-scale ocean circulation in the future, which would cause long-term, unpredictable changes in the climate throughout the northern hemisphere (Mabey, et al. 2011).

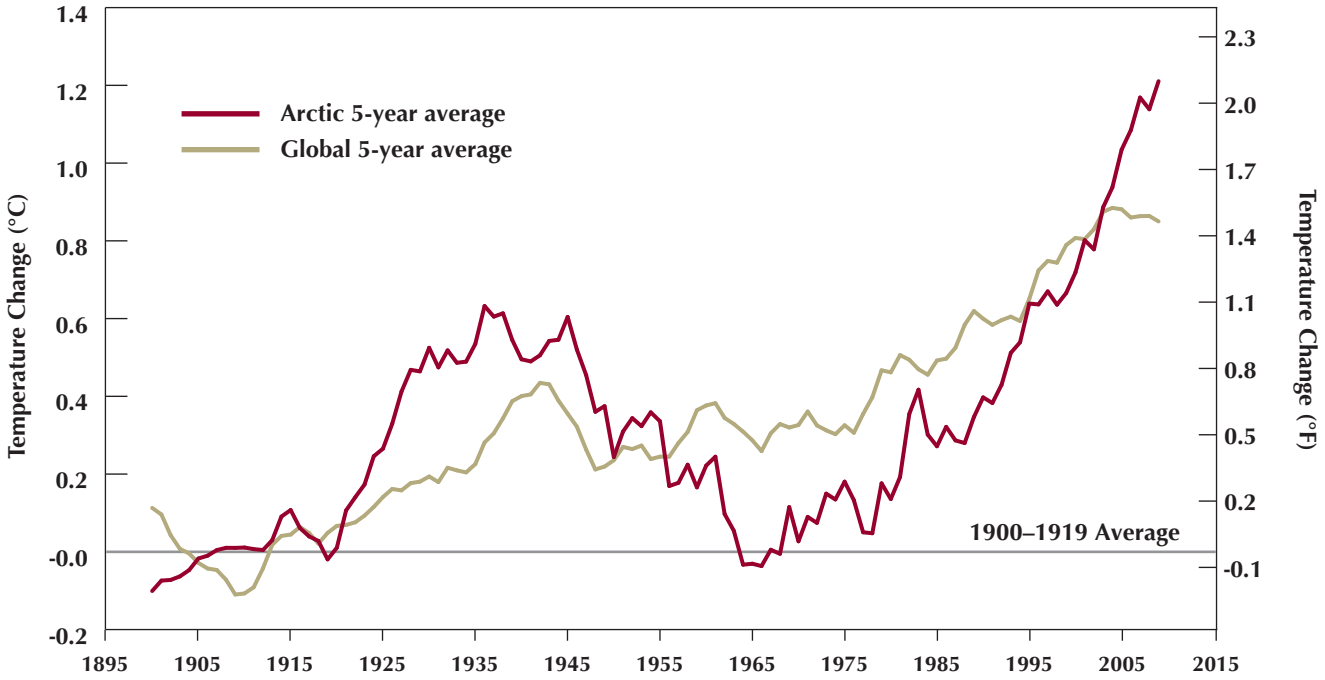
OPENING OF THE ARCTIC

Since this paper focuses on geopolitics within the Arctic region, the most salient scientific context is the timing of the sea ice retreat. Sea ice undergoes a seasonal cycle in which it covers nearly the entire Arctic Ocean during the winter and shrinks back to a minimum extent during the summer. Each year the maximum extent occurs in March and the minimum extent in September. Both the March maximum and September minimum extents have been declining over the last three decades, with minimum extent declining more rapidly. Nine of the ten smallest extents on record occurred in the last ten years, and the five lowest occurred during the past five summers (2007–2011). As a result, the Northwest Passage through the Canadian Archipelago has opened up every summer since 2007, and the Northern Passage along Russia's coastline has opened up every summer since 2008 (Perovich, et al. 2011).

The loss of Arctic sea ice is driven by a range of mechanisms, including increasing air and ocean temperatures, changing wind patterns, decreased cloudiness exposing the ice to more direct sunlight, and the ice-albedo feedback, which amplifies local warming and accelerates ice loss as more ocean water is exposed to sunlight. Much of the surface warming and the resultant ice-albedo feedback are attributable to human-induced warming of the climate system through emissions of greenhouse gases (GHGs) and black soot particles, which accelerate the melting of snow and ice (Shindell and Faluvegi 2009). However, natural climate variability is especially strong in the Arctic, and the precise contributions of human and natural drivers cannot yet be disentangled on decadal time scales. This uncertainty does not cast doubt on whether human-induced warming is pushing the Arctic toward an ice-free state, but it complicates predictions of when a seasonally ice-free state is likely to occur and to what extent reducing human-induced drivers—greenhouse gas and soot emissions—could delay or reverse the trend toward an ice-free state.

Since 1975 the Arctic has warmed at about twice the rate of the globe as a whole (Fig. 1). This phenomenon, called Arctic amplification, is an expected consequence of global warming and is caused primarily by the loss of light-reflecting sea ice during the summer, in addition to a variety of secondary mechanisms (Screen and Simmonds 2010, Richter-Menge, Jeffries and Overland 2011). Current temperatures in the Arctic exceed the mid-20th century maximum by more than 0.5°C/1°F (Fig. 1).

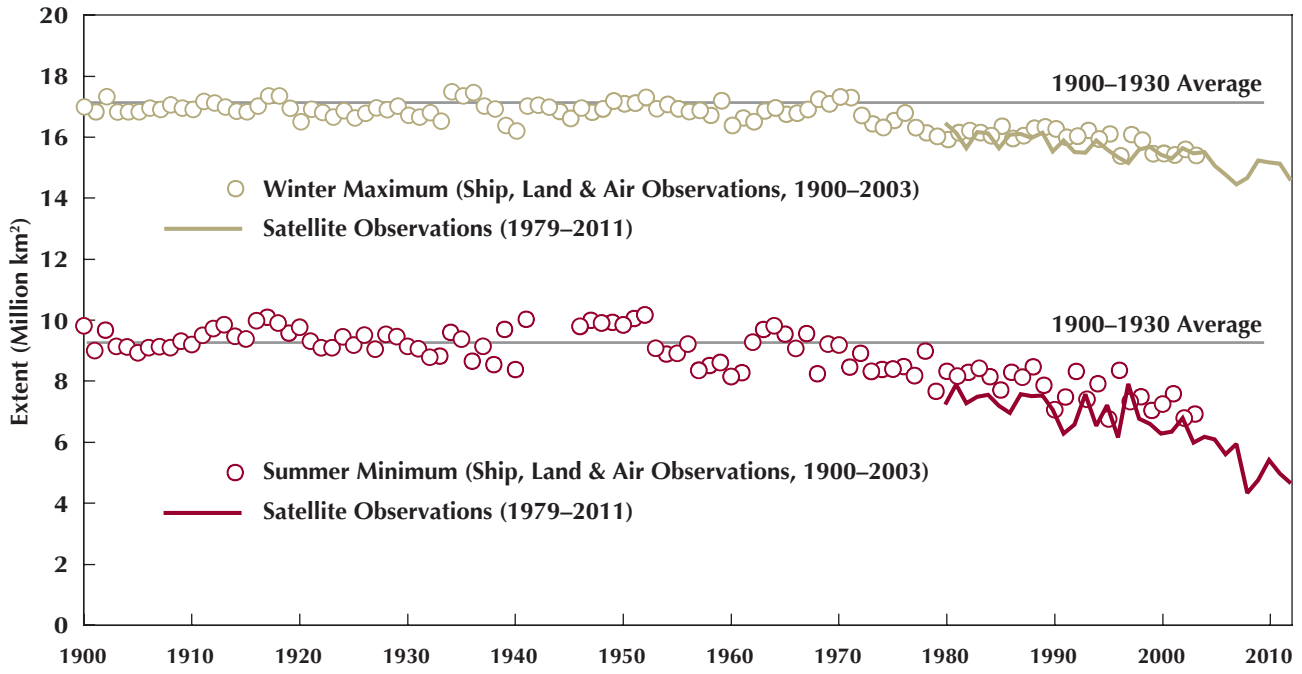
FIGURE 1: Changes in global average surface temperature and average surface temperature in the Arctic



Five-year running averages of annual surface temperatures for the whole globe (tan line) and for the Arctic region above 70° N (red line) from 1900 through 2011. The plots show deviations from the 1900–1919 average for each data set. 70° N roughly parallels the Arctic Ocean coastline. Data sources: Lawrimore, et al. (2011) and Smith and Reynolds (2005).

Historical observations compiled from ships, land, and air indicate that there was no trend in the extent of Arctic sea ice during the first half of the 20th century (Fig. 2, open circles). The modern decline began after 1960 in an era when observations are considered to be reliable (Walsh and Chapman 2001, Kinnard, et al. 2008). Continuous observations from polar-orbiting satellites are available beginning in 1979 (Fig. 2, solid lines; Figure 3, top). Comparing recent satellite measurements to early 20th century estimates suggests that the total extent of Arctic sea ice has declined by about 12% at the winter maximum and by almost 50% at the summer minimum (Fig. 2).

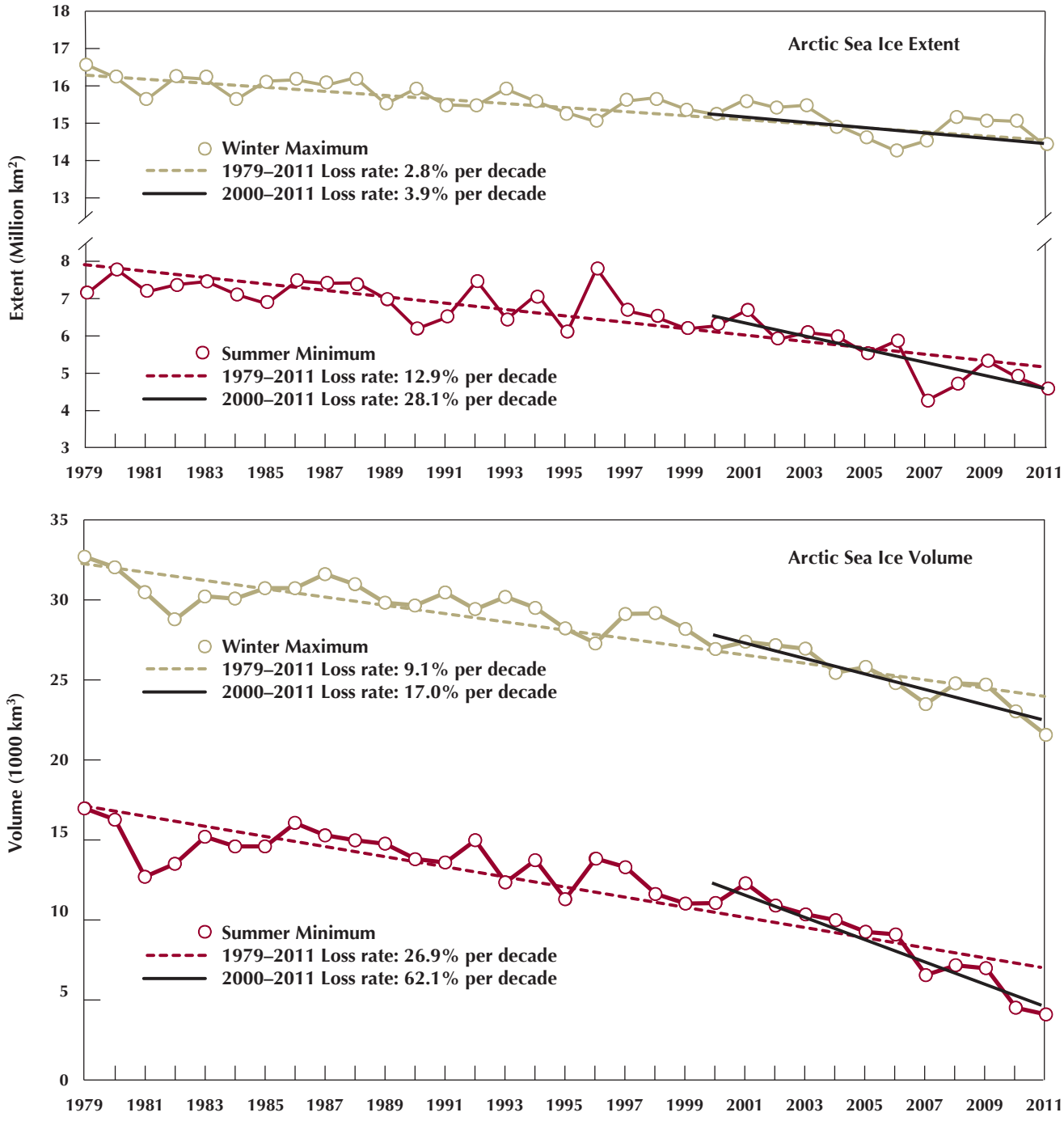
FIGURE 2: Century-scale changes in annual maximum and minimum Arctic sea ice extent



Maximum and minimum annual Arctic sea ice extent from 1900 through 2011. Historical data (open circles) were compiled from various ship, land, and air observations from many sources. Continuous satellite observations (solid red and tan lines) began in 1979. Each plot shows deviations from the 1900–1930 average for the historical data. Data sources: Kinnard et al. (2008) and Fetterer, et al. (2002).

A closer look at the modern satellite data shows that the rate of decline in sea ice extent has accelerated over the past decade, especially at the summer minimum (Fig. 3, top). From 2000 through 2011, the average rate of decline in the sea ice extent was more than twice the rate for the entire satellite-observing period (1979–2011). Regardless of whether this acceleration is driven by human-induced climate change or by natural variability, lost ice is less likely to recover in a warming world. In this sense, human-induced warming is responsible for persistent loss of ice even if natural variability played a role in the initial melting (Perovich and Richter-Menge 2009).

FIGURE 3: Recent changes in annual Arctic sea ice extent and volume



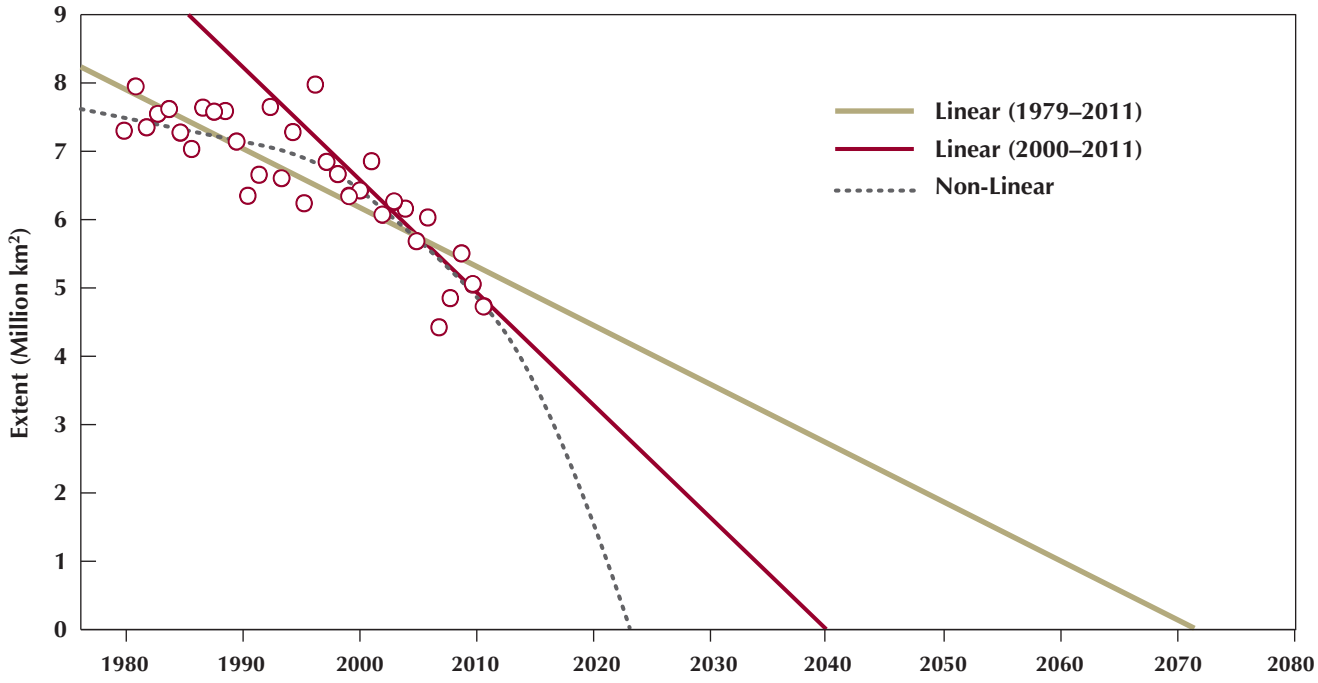
Maximum and minimum annual Arctic sea ice extent (top) and volume (bottom) from 1979 through 2011. Extent is directly observed by polar-orbiting satellites. Volume is estimated from an ice-ocean-atmosphere model that assimilates extent and temperature data from observations. The model is validated using observations of sea ice thickness. Data sources: Fetterer, et al. (2002) and Schweiger, et al. (2011).

Sea ice extent gives an incomplete picture of ice loss because it ignores changes in ice thickness. Historically, a large fraction of the sea ice has survived over multiple years, and each winter an additional layer of snow is deposited on top of this ice; the older the base layer, the thicker the ice. The area of the Arctic covered by sea ice four or more years old shrank to a record low in 2011, at just 19 percent of the average area covered from 1982 to 2005 (Perovich, et al. 2011). The rapid warming of the past decade has melted much of the multiyear ice, leaving a younger, thinner ice cover that is more susceptible to future warming (Maslanik, et al. 2011, Comiso 2012).

The change in total sea ice volume is a sensitive indicator of ice loss since it accounts for both extent and thickness. Estimates from the PIOMAS Arctic ice model indicate that about three-quarters of the summer minimum ice volume has been lost since 1979, and the rate of loss for 2000-2011 is more than twice the rate for 1979–2011 (Fig. 3, bottom). Winter maximum volume is also declining, albeit at a slower rate. A smaller maximum volume makes the sea ice more vulnerable to future warming, promoting further acceleration of summer ice loss. As for the cause of declining sea ice volume, the investigators conclude, "it is very unlikely that a trend in ice volume as obtained by PIOMAS, even accounting for large potential errors, would have occurred without anthropogenic forcings" (Schweiger, et al. 2011).

Projections of future Arctic sea ice loss vary widely. The simplest approach is to extrapolate forward in time, assuming that ice loss will proceed in a similar manner to observed losses. This crude approach is laden with assumptions: What past observations are most relevant to future rates of loss? Is a linear or nonlinear fit to the data more appropriate? If the latter, what sort of curve shape should be applied to the data? Applying a range of assumptions offers at best upper and lower bounds on the potential timing of a seasonally ice-free Arctic. A linear extrapolation of the decline of summer minimum sea ice extent from 1979 through 2011 puts the emergence of a seasonally ice-free Arctic around 2070 (Fig. 4). A linear extrapolation of the loss rate between 2000

FIGURE 4: Statistical projections of future Arctic sea ice extent



Statistical projections of future Arctic sea ice extent based on different assumptions of future loss rates. The nonlinear projection uses a fourth-order polynomial function. Data source: Fetterer, et al. (2002).

and 2011 puts the opening of the Arctic around 2040. If ice loss continues to accelerate as it has done over the past three decades, then the Arctic could be seasonally ice-free by 2025.

Although further acceleration of ice loss is likely, physics-based climate models indicate that the rate of ice loss is likely to slow before the Arctic progresses to an ice-free state. Consequently, the statistical linear and nonlinear projections in Figure 4 could overestimate the rate of future ice loss. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC-AR4) examined the evolution of sea ice extent through the end of the 21st century in more than a dozen climate models forced by increasing atmospheric greenhouse gas (GHG) emissions. Few of these models projected an ice-free Arctic before the end of the 21st century, and then only under the highest GHG emissions scenario (Meehl, et al. 2007). However, these models underestimate sea ice loss compared with observed changes over the past three decades, suggesting they are likely to underestimate future changes (Stroeve, et al. 2007).

A more recent analysis revealed that a subset of the IPCC-AR4 model runs from seven climate models accurately simulated the observed relationship between 1°C of Arctic warming and the decrease in sea ice area (Zhang 2010). When constrained by this relationship and forced by a mid-range GHG emissions scenario, this subset of models projected the emergence of an ice-free Arctic between 2037 and 2065, with the definition of "ice free" being 80% loss of the historical summer sea ice area. A definition of 90% loss delayed the opening until 2050-2072. A similar study that constrained the IPCC-AR4 models based on their ability to simulate observed seasonal sea ice dynamics found a median projection for the emergence of a virtually ice-free Arctic in 2037; the first quartile of the range of projections occurs in the late 2020s (Wang and Overland 2009). In spite of their simplicity, therefore, the statistical projections in Figure 4 are strikingly similar to physics-based model projections that have been constrained to reflect key elements of observed sea ice response to climate change.

This analysis is consistent with the conclusions of the U.S. Navy's *Arctic Roadmap*, released in October 2009:

> While significant uncertainty exists in projections for Arctic ice extent, the current scientific consensus indicates the Arctic may experience nearly ice free summers sometime in the 2030's. … [T]his opening of the Arctic may lead to increased resource development, research, tourism, and could reshape the global transportation system. These developments offer opportunities for growth, but also are potential sources of competition and conflict for access and natural resources (U.S. Navy 2009).

IMPLICATIONS BEYOND THE ARCTIC*

The discussion about the opening of the Arctic has focused largely on the emergence of new economic benefits. However, the risks have received less attention, in part because much of the science remains uncertain. Nonetheless, enough is known to identify a variety of potentially risky outcomes with global implications (Schiermeier 2006, Sommerkorn and Hassol 2009, Kraska 2010).

- An ice-free Arctic Ocean will absorb more sunlight and convert it to heat, thus amplifying warming.
- The Arctic currently removes CO_2 from the atmosphere, but sea ice loss would likely cause it to switch to releasing CO_2 and methane (a very potent greenhouse gas) to the atmosphere, further amplifying global warming.
- Mid-latitude atmospheric circulation, and therefore precipitation and storm patterns may have already been altered by sea ice loss.
- A warmer, ice-free Arctic Ocean with more freshwater from snow and ice melt may slow key heat-transporting currents in the North Atlantic Ocean, thus cooling Europe and further warming other parts of the world. These changes would alter marine ecosystems (i.e. fisheries) and precipitation and storm patterns, on a broad scale.
- Amplified warming will accelerate melting of land-based ice, thus accelerating sea level rise. The Greenland Ice Sheet could become destabilized, leading to abrupt and massive sea level rise beyond the 21st century.

Because the potential economic benefits of the opening of the Arctic are large, there is a substantial need for more concerted effort to resolve the risks so that they can be weighed against the benefits. At this stage,

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however, it is not safe to assume that the opening of the Arctic will necessarily yield net benefits for all interested states or to humanity as a whole.

It is precisely this uncertainty combined with the realization that the Arctic is on the verge of a dramatic and drastic transformation that has led the states of the circumpolar north to pay much greater attention to their northern regions. On one hand there is substantial effort to develop a cooperative governance regime based on goodwill and shared interests. On the other hand, the same Arctic states have begun to strengthen and expand their military and security capabilities in the Arctic. Further complicating this environment are the increasing number of non-Arctic states and actors that are increasing both their interests and capabilities to operate in the region.

III. UNDERSTANDING THE ARCTIC SECURITY ENVIRONMENT

To understand the current Arctic security environment it is necessary to briefly set the historical context. Most of the Arctic states were belligerents in the Cold War, with the Union of Soviet Socialist Republics (USSR) and a compliant Finland on one side and the NATO states, including Canada, Denmark, Iceland, Norway and the United States, on the other side (with a neutral Sweden in the middle). Due to both the geography of the region and the technology of the existing weapon systems, the Arctic region became a focal point of the conflict. Deterrence policy required each side to be able to monitor the actions of the other over the vast expanse of the north. Should deterrence fail, the north would become the main transit point for the ensuing missile attacks between North America and the USSR.

When the Cold War ended, most Arctic military capabilities were either dismantled or reduced. With little or no prospect for commercial development in the Arctic, the 1990s were a period of benign neglect for the region as the attention of the former belligerents focused elsewhere. Limited effort was made to develop new multilateral instruments to facilitate a cooperative governance of the region. The most successful of these efforts—the Arctic Council—became a leading body for understanding and developing responses to growing environmental issues, and international cooperation in the region has focused consequently on environmental security. In this context, environmental security can be understood as avoiding or mitigating acts leading to environmental damage or deterioration that could violate the interests of Arctic states and their populations, in particular their northern and northern indigenous peoples. While initially focused on pollution prevention, this emphasis has gradually merged with more traditional security concerns.

After the dissolution of the USSR, the new Russian government found itself burdened with a large number of nuclear-powered submarines that were literally rusting in northern Russian harbors. At the same time, scientists discovered that certain classes of pesticides and fertilizers—deemed 'persistent organic pollutants' (POPs)—produced and used in locations as far south as India, were transported long distances to the polar region through a complicated system of ocean currents and large-scale wind patterns. Both the Soviet submarines and the POPs were seen as serious threats to pristine Arctic ecosystems and to Arctic peoples. International agreements were successfully developed to resolve both of these problems. The Soviet submarines were addressed first by the Arctic Military Environmental Cooperation Program (AMEC)—an agreement between Norway, Russia, the United Kingdom and the United States—and subsequently by the G8. The international community responded to the threat of the POPs through the Stockholm Convention on Persistent Organic Pollutants.

Partly due to the perceived insignificance of the region, little else was done to strengthen international cooperation. The harsh, icy climate was deemed too formidable for domestic and international activities to occur, but the warming climate began to challenge that perception by the turn of the century. It became apparent through observations by both the northern aboriginal peoples and scientists working in the Arctic that some fundamental changes were occurring in the environment. Subsequent scientific assessment coordinated by the Arctic Council found that climate change was transforming the Arctic on a scale and scope unprecedented in modern times (ACIA 2005).

The most significant (but by far not the only) effect of climate change has been melting of the Arctic ice cover as established in the previous section. As a result of the dramatic seasonal ice loss, the circumpolar states and other major economies now see the region as accessible and brimming with untapped economic potential. This awareness is accompanied by concerns that competition and disputes will arise in the region. Consequently, a new Arctic security environment is emerging. The issue to be addressed is what this new environment will look like and what its ramifications are for international relations and foreign policy.

The Arctic Council has begun to consider these ramifications through the Arctic Marine Shipping

Assessment (Arctic Council 2009). The Assessment highlighted several fictional scenarios, three of which explore plausible paths that the Arctic security environment could take in the future. As a framework for interpreting the emerging Arctic security environment, we adopt these scenarios as testable hypotheses and compare them to recent geopolitical developments in the region:

Hypothesis 1: There is no emerging security environment; the circumpolar states have no new interests that could cause an increase in competition and conflict. Predictions of military build-up have been vastly overstated and no activity has occurred that warrants concern. In effect, the talk of a "race for resources" in the region or a new "Arctic Cold War" is nothing more than media hype and alarmism. If this hypothesis is correct, a close examination of the actions of the circumpolar world should reveal that little has changed in the region since the 1990s.

Hypothesis 2: While new policy activity and some new Arctic military construction have occurred, the Arctic nations remain committed to developing the circumpolar region in a peaceful and cooperative fashion. New Arctic capabilities and policies have occurred in the context of improving local abilities to facilitate and monitor new activities in the region. These efforts are directed towards improving environmental protection, law enforcement, and search and rescue capabilities. Forces are not being developed primarily because of international security concerns, but rather to address emerging domestic issues. Support for this hypothesis would come from limited defense building with a focus on constabulary forces rather than war-fighting capability. Individual states would be modernizing their security and foreign policies with an emphasis on diplomacy and cooperation in the North; there would be renewed focus on developing and strengthening multilateral mechanisms.

Hypothesis 3: Developments in the Arctic are transforming the region into a strategically important area with increasing competition and potential for conflict. Increased accessibility to the region, its substantial resource potential, a focus on of core national interests, and growing unilateral and bilateral military capabilities among the Arctic states, greatly increase the potential for conflict. If this hypothesis best explains the evolving security environment, the circumpolar states should be developing more assertive northern foreign and defense policies that would support unilateral actions. They should be dedicating more attention to their national interests in the region and expressing concern about what other states plans and actions there. States should be rebuilding an Arctic war-fighting capability that obviously exceeds a primarily constabulary capacity. The various actors should be exploring bilateral and multilateral defensive alignments based on shared threats.

The next section analyzes recent policy developments and actions in the Arctic in light of these hypotheses. If the last hypothesis is correct, steps must be taken now to minimize points of contention between states. Initiatives should be taken now to mitigate and contain potentially antagonistic elements of the new security environment.

IV. ANALYSIS OF RECENT POLICY DEVELOPMENTS

This section summarizes six key findings based on the survey of recent policy developments detailed in the Annex to this paper. The relevant documentary sources are provided in the Annex.

FINDING 1: UNPRECEDENTED NATIONAL ATTENTION TO ARCTIC POLICY

There can be no doubt that the Arctic has emerged as a major focus for both the circumpolar states and an increasing number of non-Arctic states and non-state actors. Foreign and defense ministries began to focus intently on the changing Arctic in the mid-2000s. While both Canada and the EU issued northern dimensions of their foreign policies in 2000, and Norway issued its Soria Moria Declaration in November 2005, it was the Russian flag-planting at the North Pole in August 2007 and the Ilulissat meeting of the five coastal Arctic states in May 2008 that led to a virtual blizzard of new policy statements and initiatives from Arctic stakeholders, including Canada, Iceland, Norway, Russia, the United States, Finland, Denmark and Sweden, the EU, NATO, and the Nordic countries jointly (NORDSUP).

To have so many major policy announcements from so many major players in so short a time frame appears is unusual in international affairs, and there is no precedent for such intense interest in the Arctic. While each declaration was different, some common themes emerged, including an emphasis on environmental security, a desire for international cooperation, and resolve to protect national interests. These new priorities have led to the remilitarization of the Arctic.

FINDING 2: EMPHASIS ON ENVIRONMENTAL SECURITY

Arctic policy documents and statements almost invariably began with an acknowledgement of the rapid rate of environmental change in the region. By 2005 all governments had come to officially accept that climate change was melting the Arctic ice cover and understood that to mean the Arctic was becoming more accessible for both their own interests as well as for the international community.

Two main concerns followed from this realization. First, while climate change was acknowledged as fundamentally changing the entire Arctic ecosystem, the region was still regarded as being particularly environmentally sensitive, and most of the policy statements emphasized the need to maintain environmental security and sustainable development. Since most of the Arctic had not previously been exposed to widespread economic activity, there was a clear desire to get it right from the beginning. Both Canada and the United States made it clear that the sustainable development of the region within their national control was a priority. Canada stated that one of the driving forces for controlling both the land and water of its Arctic territory was to protect its environment. This theme was also prevalent in much of the Russian documentation; Russia claimed the need to protect its Arctic environment to justify extending its control over both the lands and the waters of its Arctic region.

The second concern that follows from increased international activity in the Arctic is the need for increased policing and security presence. The inherent assumption is that as activity increases in the region, it will be necessary to improve each state's ability to monitor who is arriving in its Arctic and what they are doing there. It then becomes necessary to police the new activities. Most of the Arctic states developing the new policies have made it clear that they do not believe that they currently have adequate means to police the area. Consequently, much of the actual and proposed building plans are justified as improving the states' ability to meet these demands.

FINDING 3: DESIRE FOR COOPERATION BUT RESOLVE TO PROTECT NATIONAL INTERESTS

There is a clear desire by the circumpolar states to ensure that the Arctic remains a region of cooperation. Almost all statements have reiterated the issuing state's commitment to the principles of international law to ensure that the Arctic is developed in a peaceful and cooperative manner.

This was the stated intent of the five coastal Arctic states developing claims for extended continental shelves (Canada, Denmark, Norway, Russia and the United States). In May 2008, they jointly issued the Ilulissat Declaration, stating that any differences the states may have over the determination of the new boundaries would be resolved peacefully and in accordance with the United Nations Convention on the Law of the Sea (UNCLOS). While it is still too soon to know if this declaration will be honored, the effort is a positive sign of the states' current intent.

Two additional developments underscore the Arctic states' efforts to promote cooperation. The first involves the resolution of a four-decade-long dispute between Norway and Russia, wherein the boundary between the two countries' in the Barents Sea was delimited in September 2010. The second was the signing of a search and rescue treaty by all eight Arctic Council members in May 2011. Since most of its articles exist in various international laws and practices already, it is not an impressive treaty in and of itself. However, it is significant as the first legally binding treaty to be negotiated through the Arctic Council. Also, because the treaty establishes a Permanent Secretariat, its marks progress towards a more institutionalized forum for Arctic governance. Both developments indicate a political impetus to enhance regional cooperation and stability amidst the current geopolitical changes.

Even though all of the Arctic states assert in their policy statements that there is no military threat in the Arctic, as there was during the Cold War, most of the policies nonetheless state clearly that the individual states will take the steps they deem necessary to protect their core interests in the region. For example, the United States' 2009 policy statement discusses at length its interest in fostering cooperative behavior in the Arctic. The document even suggests the possibility of broadening the Arctic Council's jurisdiction beyond environmental security, which the United States has been reluctant to support in the past. However, the document also clarifies that the United States will act unilaterally if necessary to defend its core interests in the Arctic. The Canadian, Norwegian and Russian documents take similar positions.

The core interests for the United States may be characterized as freedom of the seas and security; for Canada, sovereignty; for Norway, regional stability, especially with Russia; and for Russia, the economic potential in its Arctic hydrocarbon reserves.

FINDING 4: REMILITARIZATION OF THE ARCTIC

In spite of the emphasis on cooperation revealed in the previous two findings of this report, the backdrop of international competition and resolve to defend core interests sets the stage for remilitarization and potential conflict in the Arctic. Looking beyond the statements of cooperation that have accumulated since 2008, there is a quiet but developing trend toward the Arctic states modernizing their military forces. Some have already begun rebuilding their Arctic military capabilities and most of the others are drawing up plans to do so.

The Russians have been the most public about their military intentions. The 2007–2015 Russian State Armament Programme emphasizes the rebuilding of their northern naval capabilities. Under this program the Russians will build new nuclear-powered submarines, including both fast attack (SSNs) and nuclear missile-carrying submarines (SSBNs). The Russian geographic reality means that these vessels will be based in northern waters. The head of the Russian Navy has stated that the Russians also plan to build five or six carrier battle-groups, which would be primarily based at their northern bases. Available information suggests they have completed construction of one new SSBN, are building two others, and are about to begin construction of a fourth. Planning appears to be underway for the construction of their SSNs as well. The Russians have recently reached an agreement with the French government to purchase at least four Mistral-class amphibious assault vessels. The Mistrals would substantially increase the offensive capability of the Russian navy, particularly for projecting landward force. Not surprisingly, the announcement of the sale has been greeted with concern by many of Russia's northern neighbors.

The Russians have also resumed a significant military presence in the Arctic. In August 2007 they restarted long-range bomber patrols. In the same year they also resumed northern patrols of naval surface units. They have been careful to remain within international airspace, but in some instances have approached the borders of Canada, Norway, and the United States. In the case of Norway, Russia's naval ships have sailed into some of the maritime regions that the two states disagreed about at the time, although that border dispute has since been resolved. In 2009, they also sailed a group of submarines (both SSNs and SSBNs) to the waters near the North Pole and test launched a number of ballistic missiles. In the same year they conducted a major northern military exercise.

Russia is not alone in resuming Arctic military activity. Canada had ceased almost all of its activities in its north at the end of the Cold War. In August 2002 it conducted a small training exercise in its western Arctic. The exercises have continued annually and involve all elements of the Canadian Forces. At the same time, Stephen Harper's government has made a series of announcements about increasing Canadian military capabilities in the Arctic, including building an army training base in Resolute, Nunavut, and the developing a refueling facility in Nanisivik, Nunavut. The Rangers militia unit, which relies heavily on the northern skills of the Indigenous peoples, is being expanded, and a regular reserve company was placed in Yellowknife. While progress has been slow on implementing these decisions, the Harper government remains committed to them.

The Canadian government had also committed to building three Joint Supply Ships for the Navy, which were intended to have some limited Arctic capability. However, when the first proposal was submitted to the Canadian government they were found to be too expensive and the fate of the program is now in question. When campaigning for the 2006 federal election, Stephen Harper promised to build three armed icebreakers for the Canadian Navy. This promise morphed into the development of six to eight Arctic Offshore Patrol Ships (AOPS) for the Navy and a single icebreaker for the Canadian Coast Guard. Both sets of vessels are expected to begin construction soon. The new icebreaker—the *Diefenbaker*—will be built by Seaspan/ Vancouver Shipyards Co. Ltd., to be delivered in 2017. The AOPS are slated to be built by Irving Shipbuilding of Halifax's shipyard over the next nine years.

The United States never entirely ceased its Arctic military activities, continuously deploying nuclear-powered submarines to the region, although at a reduced level relative to the Cold War era. Since 1986, it has conducted joint operations in the Arctic with British submarines. The Americans have also placed one of their two antiballistic interceptor missile sites in Alaska, and maintain three wings (22 aircraft each) of fighters for air defense there. The older F-15s that equipped these wings are gradually being replaced with new F-22 raptors. Ultimately, the Americans plan to deploy up to 1/5 of their fleet of new F-22s in Alaska. In 2009 the United States deployed at least three submarines to the Arctic, including for the first time one of its newest Virginia class SSN submarines—the USS *Texas*.

The United States released its national Arctic policy in January 2009. The policy placed Arctic security as the number one priority. Similarly, in 2008 the Commander of Northern Command stated that he expects to see increased competition in the Arctic and as such was developing new plans for the region. In October 2009 the United States Navy issued a report called *The Navy Arctic Roadmap* on its strategy to prepare for an increasingly open and busy Arctic. The strategy calls on the United States to strengthen its military capabilities in the region, but is not specific about what new assets that would entail.

A related debate that the Americans have been engaged in for some time without resolution is the building of new icebreakers. The American icebreakers are manned by their Coast Guard, which is part of their armed forces. They are currently reduced to three vessels. Of these, two are ending their operational life and one in particular is unlikely to see future use. The only operational icebreaker, *USCGC Healy*, was designed primarily to support scientific research and serves as a research vessel for the National Science Foundation and engages in search and rescue missions as needed. The Americans' long engagement in Iraq and Afghanistan has prevented the Coast Guard from making its case for new ice-breakers. However recent statements from the Commandant of the Coast Guard suggest that making this case is now one of their top priorities. There are signs that the Obama Administration will in fact agree to fund the construction of at least one new icebreaker.

Norwegian military developments have not received much attention but have been substantial. Through the 1990s and 2000s Norway has been busy re-equipping a small but capable military designed to fight a powerful enemy in cooperation with its American ally. They have built a class of five frigates, the Fridtjof Nansen-class, outfitted with the Americans' Aegis Combat System, which deploys radar-guided weapons to track and destroy enemy targets. This is the smallest vessel on which the system has been successfully outfitted. One of the core missions of these ships is to defend against future air threats. There is also growing suspicion that this system could be used to support the American antiballistic missile system, which President Obama has moved from planned installations in Central Europe to warships staging in the Baltic and Mediterranean Seas. Arctic geopolitics aside, the issue of missile defense is already a key source of tension between Russia and the United

States. The Norwegians have also built a class of very fast and powerful missile patrol vessels. The Skjold-class vessels are capable of travelling at speeds over 100 knots and are designed for anti-ship and anti-aircraft roles in local waters. Norway has also built an armed Coast Guard vessel that can operate in ice up to a meter thick. In November 2008 the Norwegian Air Force announced plans to acquire 48 F-35 Joint Strike Fighters. Most recently, Norway announced that it will re-equip one of its existing land force units to serve as an Arctic battalion.

To complement its top-flight northern military capabilities, Norway has developed a sophisticated foreign and defense policy. On the one hand they have repeatedly emphasized their intention to develop the Arctic in a cooperative manner. Specifically, they have clearly stated that they do not view the Russians as a threat and that they are working closely with them on many issues. At the same time, they are building up the necessary military forces to defend their core interests should cooperative efforts ultimately prove unsuccessful.

Both Sweden and Finland have issued policies that outline their relationship with the circumpolar world as well as with non-Arctic states that are expressing interest in the region. Both states have emphasized their desire to see the region developed in a cooperative and environmentally sensitive manner. However, both have begun to address important defense issues as well. In June 2009 both states participated in the NATO exercise Loyal Arrow in Swedish Lapland. It involved over 2000 troops, 50 aircraft, and naval units, including a British aircraft carrier. Sweden and Finland are not members of NATO but are engaged in its Partnership for Peace Program. While there has never been an official statement regarding either state's desire to join NATO, there is increasing discussion in non-official circles of that possibility. In Russia the Putin and Medvedev administrations have made it clear in the context of Ukraine and Georgia that they view the extension of NATO to their borders as unacceptable. It is unlikely that they would view a move to accept Finland into the alliance any differently. Thus the relationship between Finland and NATO is an issue that must be followed closely with regard to geopolitical developments in the Arctic region.

Both Finland and Sweden have also begun to take limited steps to modernize their forces. Like Norway, Sweden has built a new class of fast missile patrol vessels. The Visby-class stealth corvette is a high speed (35 knots) vessel designed for anti-ship and anti-missile roles. Finland is currently looking to purchase new fighter aircraft. There has been some discussion that they may follow Norway's example and buy the F-35, although uncertainty regarding the aircraft's final price tag makes this move unlikely for the foreseeable future. Nonetheless, Finland's interest in bolstering national air defenses reveals a concern for their national security as the Arctic opens up.

In July 2009 Denmark released details of its plan to create both an Arctic military command and an Arctic Response Force. Denmark has been modernizing its navy since the 1980s when it began to replace most of its surface combatants. Between 1985 and 1996 the Danish Navy built 11 Flyvefisken-class patrol vessels with a modular design that allows them to be configured for anti-ship, anti-aircraft, or general patrol missions by switching out the respective weapon system for each role. In the early 1990s Denmark built four Thesis class frigates that can travel through one meter thick, first-year ice and have been used in northern patrols around Greenland. In 2002, one of these frigates landed on Hans Island, where troops planted the Danish flag. In one of the few land disputes in the Arctic, Hans Island is claimed by both Canada and Denmark. The Danish Navy has also built two larger Command and Control vessels of the Absalon class, designed for a wide range of tasks, including anti-ship and anti-air missions. These ships carry a helicopter and have a "roll on and roll off deck" for transporting heavy land vehicles, including battle tanks. Three slightly smaller Ivar Huitfeldt-class frigates are under construction and may be outfitted with harpoon and tomahawk missiles, giving them a substantial fighting capability. In 2008 and 2009, Denmark commissioned two additional ice-capable Knud Rasmussen-class patrol vessels. In total, the Danes have now developed a very flexible and modern navy that can take on a wide range of roles, including a strong combat capability.

The remaining Arctic state, Iceland, has never maintained a military because its economy is too small to support one. Since it joined NATO during the early days of the Cold War, its allies have maintained their forces on the island. The United States stationed helicopters and four F-15 fighters on the island for many years but removed them in 2006, citing nonspecific changes in strategic priorities. Consequently, Iceland is the only Arctic state that has seen a reduction its armaments in recent years, but not of its own doing. Given the current economic downturn of the Icelandic economy, there is

little likelihood of Iceland building any new forces of its own, although its Coast Guard has taken on local constabulary duties since the departure of the American forces. Discussions are ongoing with Canada, Norway, and the United Kingdom regarding possible replacements for the withdrawn American aircraft.

Upon examination of the overall building programs of the Arctic states, several trends emerge. First, most are either in the process of rebuilding, or planning to rebuild, a portion of their military forces, especially their navies. Consistent with prudent military planning, many of these states are opting to build combat capable forces: Hope for the best and prepare for the worst. But the scale and combat nature of many of the new capabilities seem to run counter to the statements of all of the Arctic states that there is no military threat in the region and only constabulary capabilities are required to meet the new demands of an open Arctic. Further complicating interpretation of the emerging security trends, countries such as Denmark, Russia and the United States, are designing new forces to be flexible for use both in the Arctic and worldwide. But if political cooperation in the region should sour in the future, it is clear that most of the Arctic nations will have forces that are prepared for a hostile northern environment.

FINDING 5: NON-ARCTIC STATES AND ORGANIZATIONS SEEK ROLES IN THE ARCTIC

Multilateral organizations and non-Arctic states are looking for new roles in the Arctic and are attempting to come to terms with the meaning of Arctic security.

Recently, several multilateral bodies, including the EU and NATO, have become increasingly interested in the Arctic region. Both organizations have been examining the issue of governance and security in the region. This is not a new topic for NATO as five of the eight Arctic states (Canada, Denmark, Iceland, Norway and the United States) are long-standing members of the organization. Throughout the Cold War, the alliance's central focus was defending against a Soviet attack in the north. The EU has a more limited connection. It is comprised of only three Arctic states—Denmark, Finland and Sweden. Furthermore, Denmark has an arrangement whereby it is a NATO member, but Greenland is not. Nevertheless, the EU has begun to develop its own foreign policy for the region.

NATO's examination of the new developments in Arctic security has been limited to conferences and meetings. At this point, the alliance's official position is that no military threat is developing in the region, as stated publicly by NATO's Secretary General during a January 2008 meeting of the allies in Iceland. The statement was intended to assure Russia that NATO's renewed interest in the region was not directed against it. However, following the NATO meeting, the Russian media was especially critical of the alliance. At the same time, some of the Arctic NATO members have been careful to draw a distinction between their unilateral military actions in the region and the alliance. Canada has made it clear that its invitations the United States and Denmark to participate in northern military exercises are strictly bilateral. On the other hand, Norway has explicitly connected its major northern military exercise with NATO. Hence, NATO's military involvement in the Arctic remains somewhat ambiguous, even among its members.

It is too early to determine NATO's definitive role in the Arctic, but it appears to be focused on providing better coordination for security-related issues, such as search and rescue. Given the importance of the region to member states such as Canada, Norway and the United States, it seems likely that NATO will remain engaged in the Arctic for the long term.

The EU has approached the issue of Arctic security from a governance and environmental security perspective. Their interest is framed in the context of ensuring that the region is open to non-Arctic states and that new governance mechanisms are designed to include the interests of all European states. They have also issued policy statements that place a strong emphasis on protecting the environment.

Apart from the EU, several European member states have begun to develop unilateral Arctic security policies. France in particular has publicly stated its intentions to provide its military with some Arctic capabilities.

The growing interest of the Asian states in the region is attracting the attention of the circumpolar states. China in particular has begun to significantly increase its scientific capability to study within the Arctic. India has also recently begun to express interest in the region. So far, no Asian nation has officially noted a geopolitical interest in the Arctic, but the fact that China's Polar Research Institute has recently added a department of strategic studies suggests that strategic interest in the region is growing among non-Arctic states.

FINDING 6: UNDERLYING CAUSES OF POLICY DEVELOPMENTS

Trends in climate change, oil and gas, and shipping have drawn the attention of the world's large economies to the Arctic over the past decade. However, the unprecedented spate of major Arctic policy statements issued between 2008 and 2011 was initiated by two virtually simultaneous strategic maneuvers—Russia planting its flag at the North Pole in August 2007 and Canada's Arctic military investment announcements the same week. These events appeared in magazine covers and newspaper headlines worldwide and garnered major foreign policy attention.

The circumpolar states' renewed focus on the Arctic has had a number of underlying causes and has influenced each polar state differently, depending on its position and government. Principal among these causes is the increasing accessibility of Arctic waters resulting from global warming and new maritime technologies. Accessibility leads to the potential of new sea routes or the expansion of old ones, an important issue for both Russia and Canada. Sea access involves not only the potential gains of commercial shipping, easier resource extraction, and increased adventure tourism, but also the dangers of pollution, criminal activity, terrorist incursions and increased risk of inter-state conflict.

Western nations have focused on increasing their presence in the region and augmenting their scientific research activities, environmental protections, sustainable development plans, and their military presence. The Scandinavian countries and Canada have long histories of preferring to work within the boundaries of international law and of settling disputes through negotiation. With their membership in NATO, Canada, Denmark, Iceland, and Norway demonstrate that they are willing to use both the threat of force and actual force if needed. Canada and Norway have been most aggressive in rebuilding Arctic military capabilities. However, these efforts are focused on building constabulary capacity and on local combat capabilities. Currently, their main focus is to develop a means to respond to the expected new interests in the region. By virtue of its great power status, the United States has acted in a more unilateral basis on many issues, yet its stake in the Arctic is comparatively small and it has tended historically to act with limited interest in the region.

Russia is a different case and its Arctic policy should be viewed as part of its larger movement to regain its former great power status. Under Vladimir Putin, Russia has grown more hostile to Western interests and more willing to use force to settle disputes near its borders; Chechnya and Georgia are obvious examples. The planned expansion of the military—particularly the strategic rocket forces—demonstrates the strategic priority that Russia places on its new oil and gas wealth. Russia's prosperity rises and falls with oil and the Arctic is Russia's greatest source of hard currency. As such, Moscow has invested tens of billions of dollars in developments on the Yamal Peninsula, Sakhalin, and the Barents Sea projects. Although Russia has stated its intention to comply with UNCLOS, its recent policy statements and actions suggest that it will act assertively to safeguard its oil wealth and strategic position in the Arctic.

Although oil and gas are less central to the core interests of the rest of the circumpolar powers, resource extraction is still a driving force behind the renewed Arctic interest within these states. With global demand growing rapidly and oil becoming increasingly difficult to find and extract around the world, prices are likely to continue to increase over the next decades. The importance of Arctic resources will grow accordingly, especially if oil production should decline precipitously in any of the world's politically unstable oil-producing states.

The current global recession should not greatly affect the development of Arctic resources. They were always going to be middle- to long-term developments, following the progression of sea ice loss. The global economy should rebound by the time the oil and gas exploration and shipping could be scaled up in the Arctic. China, India and the rest of the developing world's growing middle classes will need oil and gas and other resources. Thus, global market pressure to bring Arctic oil and gas supplies online is likely to rise over the next decades.

V. CONCLUSIONS & RECOMMENDATIONS

Taken as a whole, the Arctic policy statements and actions taken by the circumpolar states in recent years clearly disprove *Hypothesis 1*. The Arctic is in transition and processes—both natural and political—are changing the nature of international security in the region. An unprecedented amount of effort and attention is being expended on the issue of Arctic security. There is a genuine concern on the part of the circumpolar states that an increasingly accessible Arctic will require new means of protection.

The Arctic states' pronouncements and activities provide some support for both *Hypothesis 2* and *Hypothesis 3*. Every foreign and defense policy or statement that has been released has indicated the Arctic states' intent to develop the Arctic in a cooperative and peaceful manner. No state currently perceives an immediate military threat in the region, nor expects one in the foreseeable future, as all territorial expansions are being sought under the terms allowed for under UNCLOS. At the same time, however, most of the Arctic states have stated clearly that they intend to defend their national interests in the region. Russia, Canada and the United States have been particularly assertive in this regard. Nevertheless, the policies and statements taken as a whole, in conjunction with multilateral agreements such as the Ilulissat Declaration, suggest that the Arctic states are earnestly trying to ensure that the model of Arctic security that emerges emphasizes international cooperation and respect for international law, backed by strengthened state capabilities.

Although the pursuit of cooperation is the stated priority, most of the Arctic states have begun to rebuild and modernize their military capabilities in the region. The new military programs have been geared towards combat capabilities that exceed mere constabulary capacity. States, such as Norway and Russia, are building new naval units designed to engage in high-intensity conflicts. While this capability may be understood as prudent, the ability of rivals to intimidate or subdue with sophisticated weapons systems could, if collegiality falters, undermine diplomacy and stability in the region.

Ultimately, the most confounding element of the emerging Arctic security environment is uncertainty. The forces that are transforming the Arctic can act in a number of unpredictable permutations. The uncertain fate of the sea ice will ultimately determine the timing and degree of accessibility to the Arctic. The Arctic ice cover could vanish more rapidly than anticipated or the ice could rebound, although current scientific understanding is that the latter is unlikely. Likewise, the price of oil could continue to rise to levels that predate the current economic crisis or could collapse as it did in the late 1980s. Again, the latter is unlikely unless there is a major technological/industrial breakthrough in energy extraction or a major economic collapse in one or more major consumer economies. The price of commodities will determine at what point it becomes economically feasible to develop the northern resources. The delimitation of the maritime borders in the Arctic Ocean—both the existing disputes in the Exclusive Economic Zone (EEZ) and the upcoming disputes over the extended continental shelf—could proceed diplomatically, as planned, or states could become more assertive and ultimately aggressive in defending their claims.

There are many plausible scenarios as to how these factors will develop and interact. Therefore, it is difficult to determine if the Arctic states' current preference for cooperation can be maintained, or if the security capabilities now being built will be increasingly used as frustration builds over diplomatic delays or failures. It is even more difficult to predict the relationships of the Arctic states beyond the Arctic. Will Russia and the United States be able to resolve the developing tensions regarding NATO expansion or Iran, or will these disputes escalate and spill over into their Arctic relationship? Perhaps they will be able to manage and resolve these difficult issues, thereby reinforcing the political will to handle all issues—including those in the Arctic—in a cooperative fashion. Likewise, Canada and the United States could experience a chill in Arctic relations due to deteriorating economic conditions, or improving economic conditions could mean that the governments

have the political room to make the compromises necessary to ensure that the Arctic is managed in a cooperative fashion. These issues go beyond the Arctic, but are central to the type of security environment that will develop there.

So what can be done? First, given the political goodwill that currently prevails, the Arctic states need to strengthen existing multilateral institutions and agreements, particularly those concerning security. If emerging issues can be dealt with before the interests of others become entrenched, it is more likely that existing goodwill can be maintained. States should also consider developing practical bilateral and multilateral agreements where their new Arctic capabilities can work together, such as the Arctic Search and Rescue Agreement and the forthcoming Polar Code, expected in 2014. Broader involvement of outside institutions with relevant multilateral capabilities would be helpful, such as the International Maritime Organization or the Organization for Security and Cooperation in Europe. However, any such effort will need to be sensitive to national concerns regarding exclusion.

The reality is that new military forces are being built. If the practice of using these new forces in a cooperative fashion develops early, then cooperation may become entrenched and maintained even if relations become strained outside the Arctic. To move in this direction, the Arctic states need to acknowledge the renewal of military strength in the Arctic and be willing to deal openly with it. This need runs counter to the tendency of the states to publicly downplay the potential for military conflict in the Arctic in order to emphasize their legitimate desire for cooperation. Each of the Arctic nations has provided logical reasons for building new military forces and has also strongly stated its desire to cooperate. It would be beneficial to have a forum where these states can discuss and plan how these new capabilities could be used cooperatively. A good starting point would be for the Arctic Council to eliminate its existing prohibition on discussing military security issues.

Created in 1996, the Arctic Council includes all of the Arctic nations as well as six northern aboriginal groups recognized as permanent Participants. Observers constitute a third level of membership and include both non-Arctic states and non-state actors. A further division exists between Permanent Observers and ad hoc members who are admitted on a year-by-year basis. When it was established, the Arctic Council's mandate explicitly excluded military security issues. Recently there has been some movement to reconsider this ban. The Council has concluded a Search and Rescue treaty involving military forces of some member states, demonstrating the Council's ability to address security issues productively. Even so, some of the Arctic states continue to resist extending the Council's mandate to military concerns. On April 12–13 2012, however, senior military leaders of all eight Arctic states met in Gander, Newfoundland, Canada. The exact nature of the talks is unknown but the fact that this meeting includes all eight Arctic Council members suggests possible developments on the security front.

If the Arctic Council remains resistant to taking on military security issues formally, cooperation still could be enhanced on a bilateral and multilateral basis. Canada, Denmark and the United States commenced joint military operations in 2010 and Norway and Russia have been conducting similar operations since 2008. However, care should be taken that alignments are perceived as cooperative rather than defensive. Exercises such as Norway's Cold Response exercise with other NATO members continue to antagonize Russia. Depending on who is cooperating and who is not, ad hoc multilateral measures could be counterproductive. NATO remains uncertain about its role in the Arctic and Russia will continue to look on the alliance with suspicion. If Finland or Sweden were to pursue formal membership in NATO, it would hurt relations with Russia. Thus, the best option to reinforce cooperative behavior in the Arctic is to work within or in partnership with the Arctic Council. It includes all of the Arctic states and has a track record that all of its members respect.

The Arctic Council also offers formal mechanisms for aboriginal groups, such as the Inuit Circumpolar Council (ICC), to be heard and considered. Since indigenous groups have often partnered with NGOs to oppose economic activities and development in their home territories, they must be at the table in any regime where peaceful cooperation and equitable development are to prevail. A related development is the increasing independence of the sub-national governments of Greenland and Nunavut, who seek greater involvement in regional security matters. The Arctic Council represents the best vehicle for these groups and sub-national governments to engage with the sovereign Arctic states.

Finally, there are broader global implications of the emerging Arctic security environment. Here is an example of rich, stable countries being increasingly

challenged by the consequences of global warming and the prospect of developing largely untapped sources of hydrocarbons. If climate change has the potential to shake the collegiality of long-time friends and rivals who survived the Cold War without a direct military conflict, imagine what it might do in regions such as the Middle East and Africa that are already highly vulnerable to climate impacts and already struggle with widespread instability. The lesson to the rest of the world might be: Look out for changes and adapt and/or react as soon as possible, using new and existing diplomatic tools, before core national or sub-national interests take center stage and promote competition and possibly intra- or inter-state conflict.

With global warming, time is of the essence, not only for mitigation of greenhouse gas emissions, but even more so for adaptation at both the international and community levels. Adapting in part by using new and existing diplomatic mechanisms is one of the best ways to ensure international cooperation in limiting the negative impacts of global climate change, as well as exploiting whatever opportunities the changing climate may offer.

ANNEX: SURVEY OF RECENT ARCTIC SECURITY DEVELOPMENTS

This section catalogues recent policy and commerce developments that are shaping the emerging Arctic Security environment. The information is organized as separate security briefs for circumpolar states, Asia, multi-lateral organizations/agreements, and industry.

CIRCUMPOLAR STATES

Canada

Over the past decade, and particularly since 2005, the Arctic has come to play an increasingly prominent role in Canadian policy, as the Prime Minister's Office, the Departments of Defence and Foreign Affairs, and a host of other federal departments have moved the region to the top of their agendas. In large measure, this has been a reaction to the improved accessibility of the North, the enhanced potential of hydrocarbon extraction, and the reemergence of traditional questions of sovereignty.

Canada has traditionally relied upon a cooperative rules-based approach to Arctic policy and continues to emphasize the importance of the Arctic Council, the United Nations, and bi-national partnerships with other circumpolar powers. Over the past decade, *The Northern Dimension of Canadian Foreign Policy*, the *International Policy Statement, Canada's Northern Strategy, Statement on Canada's Arctic Foreign Policy*, and other official Canadian speeches and pronouncements have emphasized the need to work cooperatively on issues of common concern such as environmental monitoring, local self-government, transportation, and scientific research (Canada 2000, 2005, 2009, 2010).

In the past five years, however, Canadian policy increasingly emphasizes unilateral action and force projection into the Arctic. Canada's principal Northern security concern is the status of the waters of the Northwest Passage. The Canadian government considers the passage to be internal waters by virtue of the state's historic title and by baselines drawn around the entire Arctic Archipelago in 1985 (Dufresne 2007). Yet, this claim is expressly challenged in the 2008 American Arctic policy statement, which characterizes the waters as straits used for international navigation (President of the United States 2009).

Canada and the United States have been able to avoid a serious dispute over this issue through a 1988 bilateral Arctic cooperation agreement, which suspends the question of sovereignty while allowing American icebreakers to transit the Northwest Passage (Canada-United States 1989). However, this agreement does not cover other vessel types and the consequences of a conventional vessel passing through these waters without Canadian permission remains a serious concern. Canada also has a maritime dispute with the United States in the Beaufort Sea, an area potentially rich in oil and gas, as well as boundary disputes with Denmark in the Lincoln Sea and over tiny Hans Island in the Nares Strait.

Ottawa's concern over its position in the Arctic has been demonstrated by a series of new projects, begun or announced since 2005, which aim to enhance the capability of Canadian military and civilian authorities to operate in the region. The Royal Canadian Navy is expected to receive its first armed Arctic patrol craft in 2016 and the aging Coast Guard icebreaker *Louis St. Laurent* is scheduled to be replaced by the $720 million *John G. Diefenbaker*, which is being designed by a Canadian shipbuilder and is expected to be operational by 2017 (Prime Minister of Canada 2008). To supply these vessels, a new military and civilian deep-water resupply facility is also being constructed at Nanisivik on Baffin Island, with a projected operational date of 2016 (Prime Minister of Canada 2007).

Prime Minister Stephen Harper has also announced an Arctic Training Centre in Resolute Bay for the Army, intended to support regional military and civilian emergency operations, to increase capabilities, and to quicken response times (Prime Minister of Canada 2007). The Canadian Ranger force is also being augmented with better equipment and increased recruitment. Meanwhile, regular CF forces continue annual joint-exercise in the region.

In addition, the Canadian military is actively seeking to increase its surveillance capability over the region

with manned and unmanned aircraft. It is also in the process of establishing its 'Northern Watch' system, which uses both land-based and underwater sensors to detect vessels passing through choke points in the Northwest Passage (MacLeod, McCallum and Waller 2009). The Polar Epsilon satellite system has also provided Canada with a new space-based surveillance system designed in part to monitor the ocean approaches of the Arctic (National Defence Canada 2009). At present this system is slated for expansion with a constellation of three RADARSAT satellites planned for near-continuous coverage of the North.

In a further attempt to increase Canadian control over Arctic waters, the government announced in August 2008 that the Coast Guard's Northern reporting system (NORDREG) has been made mandatory for all vessels in the Canadian Arctic (Prime Minister of Canada 2008b). At the same time, Ottawa announced the extension of its jurisdictional limit from 100 to 200 nautical miles under the *Arctic Waters Pollution Prevention Act* (Department of Justice Canada 2010).

Canada is also interested in developing its Northern oil and gas reserves. Beginning in 2007, oil companies began investing heavily in exploration leases and the Canadian government is on record supporting the construction of the $16 billion Mackenzie Valley pipeline. In an effort to expand its Northern resource base, Ottawa is actively engaged in hydrographic mapping of the Arctic shelf, a project which must be completed by 2013 to meet its U.N. deadline. It is working cooperatively with both Denmark and the United States on this effort (Natural Resources Canada 2009).

Canadian policy remains based upon the assumption that Arctic territorial and legal disputes can be solved by diplomatic means and with respect for international law. However it has taken serious measures to ensure that, in the future, it will have the physical capabilities to project and sustain a government presence in the region, enforce Canadian law, and ensure respect for its national sovereignty.

Denmark

Denmark's link to the Arctic is through its relationship with Greenland. Although Greenland, a former Danish colony, achieved Home Rule in 1979 and Self Rule in 2009, Copenhagen retains certain administrative responsibilities over Greenland, notably in foreign and defense issues.

Denmark announced its Arctic policy, the *Kingdom of Denmark Strategy for the Arctic 2011–2020*, in August 2011, and established a new Ambassadorship for the Arctic in January 2012 (Governments of Denmark, Faroes and Greenland 2011). Security is one priority, but not *the* priority, of the Danish policy, which focuses on environmental protection, international cooperation, and sustainable development. Where it does mention sovereignty and defense, it is in reference to the *Danish Defence Agreement 2010–2014*, a policy document which is much more explicit about Arctic security (Government of Denmark 2009). In relation to the Arctic, the *Danish Defence Agreement* specifies that 1) the Armed Forces North Atlantic command structure will be streamlined by the amalgamation of the Greenland Command and the Faroe Command into a joint service Arctic Command; 2) an Arctic Response Force will be established; 3) a risk analysis of the maritime environment in and around Greenland will be conducted in light of the anticipated expansion of activities in the area; and 4) towards 2014 a comprehensive analysis of the armed forces' future tasks in the Arctic is to be carried out, including opportunities and potential for closer cooperation with partner countries in the Arctic concerning surveillance and the future role of the Thule Air Base (Government of Denmark 2009). In its various Arctic security policy statements and speeches, Denmark has focused on search and rescue, surveillance and maintenance of territorial sovereignty, fishery protection, and oil spill reaction. Furthermore, the Danish armed forces are going through a modernization of their capabilities. Their navy took delivery of three ice-strengthened, Thetis-class frigates in the early 1990s. In the middle 2000s the navy took command of two new Absalon-class Combat/Flexible Support Ships of relatively large size (6,300 tonnes).

Global warming and the resultant economic opportunities in oil drilling, shipping and mineral exploitation have paved the way for greater autonomy and, potentially, independence for Greenland. These opportunities give Greenlanders hope of replacing the current subsidy from Denmark with oil revenues in the future. The decision of the Greenlandic government to exploit its offshore oil resources has caused some division among Inuit, but it has continued to encourage exploration but awarding several licenses to explore off its west coast. Cairns Energy began exploratory drilling in 2010, but has not announced a commercial discovery.

Denmark and Greenland's strong interest in the peaceful and timely settling of UNCLOS claims in the

region led to the convening of the five Arctic Ocean coastal states in Ilulissat in 2008 at the invitation of both the Danish Minister for Foreign Affairs and the Premier of Greenland. Although Denmark's influence in the Arctic has been marginal, this was probably the single-most consequential event for the governance of the region since the inauguration of the Arctic Council.

Finland

Finland was an early proponent of Arctic cooperation. It initiated the 1991 Arctic Environmental Protection Strategy, which became the precursor to the Arctic Council. Finland also proposed the Northern Dimension for the EU, which was adopted soon after the 1999 Finnish EU presidency, and spearheaded the formulation of a new Northern Dimension policy during its 2006 EU presidency.

Finland's long border, and history, with Russia explains its preoccupation with international Arctic affairs. Perhaps more than any other country, Finland is vulnerable to the social and environmental problems faced by Russia in its northwest region, which the EU Northern Dimension policies are meant to mitigate. Finland is also strongly interested in promoting links and cooperation between Russia and the West so as not to repeat the tensions of the Cold War era, felt so acutely in Helsinki. This made it all the more surprising that Finland came so late in the line-up of national Arctic strategies, announcing its own policy for the region on June 4, 2010. However, it reflects the relatively recent shift of circumpolar relations in the 2000s from a focus on environmental cooperation and engagement with Russia to economic and strategic concerns related to the opening of the Arctic Ocean. Although Finland is not a coastal state of the Arctic Ocean, it does have interests related to the development of a trans-Arctic shipping regime and future hydrocarbon exploitation based on its expertise in the fields of Arctic construction, Arctic environmental technology, and ship-building for transportation and navigation in ice-covered waters.

Finland's Strategy for the Arctic Region concentrates on seven priority sectors: security, environment, economy, infrastructure, indigenous peoples, institutions, and the European Union (Finland Prime Minister's Office 2010). Its discussion on security is very general, and couched in terms of promoting regional cooperation and multilateral security arrangements with NATO and the Nordic countries. Its 2009 defense policy is almost as vague, with no description of upcoming military acquisitions or exercises. However, it does refer to the Arctic several times and iterates that the "promotion of security and stability in Northern Europe is a key goal of Finland's security and defense policy" (Finland Prime Minister's Office 2009). It further states that "Nordic defence cooperation may identify security-enhancing means of collaboration and projects which, in the long term, create savings and synergies. However, Nordic cooperation is no surrogate for closer EU or NATO cooperation" and "strong grounds exist for considering Finland's membership of NATO," an indication that Finnish membership in NATO is being discussed more seriously than before. Through the Partnership for Peace Program, Finland has begun to conduct military operations with NATO in the region (Sullivan 2009).

Iceland

Iceland has been influential in the Arctic relative to its size and population, and conducted perhaps the most productive and successful Chairmanship of the Arctic Council in 2002–04, during which time the Arctic Climate Impact Assessment and Arctic Human Development Report were released. It has also sponsored the Northern Research Forum and meetings such as the 2007 Breaking the Ice conference for the Arctic Council's Arctic Marine Shipping Assessment and the NATO Summit on the Arctic held in January 2009.

The importance of the High North in Iceland was first formally outlined in a report delivered to the Icelandic Parliament in November 2007, whereby the Foreign Minister declared that the High North was a new core feature of Icelandic foreign policy (Iceland Minister of Foreign Affairs 2007b). Iceland followed up with an official Arctic strategy in April 2009, and a parliamentary resolution on the Arctic in March 2011 (Government of Iceland 2009, Althingi 2011). Security is a priority, but is communicated primarily in terms of international cooperation and stability. No specific military or constabulary investments or activities are outlined. The Parliamentary resolution section on security discusses safeguarding broadly defined security interests through civilian means and working against any kind of militarization of the Arctic. It mentions the environmental protection, observation capabilities, search and rescue, and pollution prevention as avenues for circumpolar security cooperation (Althingi 2011).

That said, there can be no doubt that Arctic security is an important concern to Iceland. Being a small and

isolated country, Iceland is reliant on its neighbors and friends to ensure its security. From this perspective, the emergence of a new geopolitical regime in the Arctic poses both a threat and an opportunity.

From 1951 to 2006, the United States provided for the defense of Iceland through the Iceland Defense Force (IDF), headquartered in Keflavík through the deployment of American air assets, including helicopters and fighter aircraft. The 1951 US-Icelandic Defense Agreement was established at the urging of NATO during the early years of the Cold War, when Iceland, which has no military force of its own, was situated in a particularly strategic location in the North Atlantic. Given the new security realities of the 21st Century, the United States unexpectedly announced its decision to withdraw the IDF in March 2006, a task that was completed by September of that year (Garamone 2006). American officials were vague about the reasons for withdrawing military assets from Iceland, citing general changes in the global strategic environment (White 2006). Within months after the United States announced its withdrawal, the Icelandic Coast Guard assumed responsibility for security, search and rescue, and law enforcement activities at sea (Iceland Ministry of the Interior 2006).

While the bilateral Defense Agreement with the USA remains in effect, Iceland has sought other partnerships in order to ensure that its defense and security needs are met. The cornerstone of its new security policy is its membership in NATO, which has offered Iceland a limited air policing arrangement since 2008. Iceland has further signed bilateral defense Memoranda of Understanding in the North Atlantic with Denmark, the United Kingdom, and Norway, and participates in the Nordic Defence Cooperation (Iceland Minister of Foreign Affairs 2007, NORDEFCO 2009). Commitments from Norway and the United Kingdom have been particularly important.

Furthermore, Iceland applied for membership to the EU in May 2009, and full negotiations are now underway. Although the EU is not a military alliance, the Lisbon Treaty introduced mutual assistance and solidarity clauses.

The cross Atlantic relationship with the United States is not dead. The two countries have continued to participate in the Northern Viking exercises—most recently in 2008 and 2011—intended to train the NATO allies to defend Iceland. More than 400 foreign troops participated in Northern Viking 2008. The Icelandic Coast Guard contributed two SAR helicopters and the allies combined provided 15 fighter planes, three refueling planes, and two E3 AWACS planes; four of the fighters and the three refueling planes were from the U.S. Air Force. For the maritime defense exercise, Iceland contributed one Aegis class patrol vessel and one helicopter, the Royal Danish Navy provided one Thesis class frigate, and the U.S. Navy provided two P-3 Orion ASW aircraft (Benediktsson 2011).

Iceland is expected to submit a new national security policy in June 2012, which will likely be heavily influenced by the current security environment of the Arctic region.

Norway

Of all the Arctic states, Norway has the most developed Arctic policy. Its involvement in circumpolar affairs has been high since the Norwegian governing coalition issued the Soria Moria Declaration in 2005 established the "Northern Areas" as Norway's most important strategic target area, and adopted the 2006–2009 chairmanship of the Arctic Council (Government of Norway 2005).

The *Norwegian Government's High North Strategy* was issued on December 1, 2006 (Norwegian Ministry of Foreign Affairs 2006). The first priority states that Norway "will exercise [its] authority in the High North in a credible, consistent and predictable way" and focuses on the exercising of sovereignty and the presence of armed forces. The other priorities include environmental stewardship, resource development, international cooperation, cooperation with Russia, and cultural safeguarding.

The 2008 Norwegian defense document reinforces that commitment, stating that the northern regions are Norway's prime area for strategic investment (Norwegian Ministry of Defence 2008). Their importance is linked to Norway's position as a significant energy exporter and as a country responsible for the administration of important natural resources extending over large sea areas. To that end, Norway has been modernizing its Coast Guard and is establishing radar stations and open-water monitoring facilities in the Barents and Norwegian seas as a response to Russia's heightened military activities in the region. Norway is also one of very few countries that have been boosting defense spending in the wake of the global recession, with the government continuing to strengthen Norway's naval, land, and air defense capabilities in the High North and in areas bordering

Russia (O'Dwyer 2008). In particular, the Norwegian government has focused on improving its maritime and air force capabilities. This includes the construction of five new frigates built in Spanish shipyards that have been given an Aegis combat system, and the decision to buy 48 F-35 strike fighters, announced in November 2008 (Lunde 2006, Wall and Warwick 2008). Norway also developed a class of six very fast (over 100 knots) Skjold-class missile boats designed for anti-ship and anti-aircraft combat missions in coastal waters; four have been built and delivered (Naval-technology.com 2012, 2012b).

On March 12, 2009, Norway announced an update to its High North Strategy—*New Building Blocks in the North* (Norwegian Ministry of Foreign Affairs 2009). The updated policy was announced at a high-level press conference that included the Prime Minister and the Ministers of Finance, Foreign Affairs, Fisheries, and Transport. Among other things, the announcement promised increased investments in communications, shipping routes, and harbors in the north, and the establishment of an international centre of research on climate change and the environment in the High North in Tromsø.

Finally, Norway released a *White Paper on the High North* in November 2011, outlining its long term vision for the region (Norwegian Ministry of Foreign Affairs 2011). Beginning by assessing the lessons learned and progress made between 1990–2010, as regional cooperation began in earnest, it then looks at the issues that will dominate the next 20 years of circumpolar relations, including oil and gas development, industrialization of the North, integrated marine management, the growing activity in the Arctic Ocean, and a deepening of international cooperation in and geopolitical importance of the Arctic.

Norway has been consistent in advocating for stability and cooperation in the Arctic, and has chastised rather than engaged in the heated rhetoric, primarily between Russia and Canada, of the past five years. The resolution of the decades-long boundary dispute with Russia in the Barents Sea in 2010, and joint naval exercises with the Russians—POMOR 2010 and 2011—demonstrate its pursuit of broad regional cooperation. However it continues to take seriously its preparations for the defense of the High North, hosting five Operation Cold Response exercises in its Nordlands regions since 2006. Though technically led by Norway, the exercises are open only to NATO members. The 2009 version was a thinly veiled practice run for a Russian incursion, with populous and powerful 'Northland' attacking poor 'Midland' over oil. The exercise in 2012 continued to draw criticism from the Russian governments as being overtly provocative (Pettersen 2012). In April 2012, the Norwegians have also announced that they will be re-equipping one of their existing military land units as an Arctic battalion (Pettersen 2012b).

Russia

Russia is the world's largest Arctic state and, with roughly two million Arctic inhabitants, possesses by far the largest Northern population. The Arctic region has been an important contributor to the Russian economy since the discovery of Siberian oil in the 1960s. In large measure, the recovery of the Russian economy over the past decade, as well as its continued health, has been and remains directly related to the export of oil and gas. By law, Russian oil and gas is considered a strategic resource and development is heavily controlled by the central government. All told, the industry accounts for roughly 20% of the country's GDP, with fully 22% of the nation's export earnings being produced in the Arctic. The tax revenue from the state-owned gas company Gazprom makes up roughly 25% of Russia's federal tax revenue.

Despite this control, Russian energy resources have been opening up to foreign investment. The need for foreign capital and expertise in Arctic operations led to a major 2011 partnership between Rosneft and ExxonMobil to develop blocks in the Kara Sea. Exxon will however only be a minority shareholder, with a 33% stake in the venture. This deal is part of the principal thrust of Russian Arctic policy, which has been the expansion of its Northern resource base. Russian President Dmitry Medvedev, a former head of Gazprom, has publicly described the use of Arctic resources as central to the country's energy security, stating: "Our first and main task is to turn the Arctic into Russia's resource base of the 21st century" (Seattle Times news services 2008). Both the state's September 2008 Arctic policy and May 2009 state security policy emphasize the growing energy potential of the North and the importance of its development (Russian Security Council 2008, Arctic Focus 2009).

The majority of the Arctic's undeveloped hydrocarbons, which Russian and international companies are investing billions of dollars to develop, are located in the offshore areas on the continental shelf (Gautier, et al. 2009). The Russian shelf is estimated to possess vast

amounts of oil and gas and Moscow is sparing no effort to map the region and claim as much undersea territory as possible. During one mapping expedition in 2007, Russia created an international sensation by planting its flag on the seafloor at the North Pole. Russia is attempting to stake its claim to an extended continental shelf under the guidelines of UNCLOS and the government will make a revised claim sometime in 2012, after initial submissions were rejected for a lack of information.

Russia's Transport Minister Igor Levitin has also stated Moscow's desire to substantially increase maritime traffic along the Northern Sea Route, also known as the Northeast Passage (Pettersen 2009). The potential for increased shipping generated by the Arctic's thinning ice is reflected in ship orders. A large number of liquid natural gas and oil tankers with ice-breaking capability have been ordered by oil and gas companies, and the Russian government has announced plans to order four to six nuclear powered icebreakers by the year 2020.

Russia has been working within the boundaries of international law in its attempts to expand its continental shelf. Russia's submissions and supplementary information for an extended continental shelf in the Arctic have been provided to the Commission on the Limits of the Continental Shelf. Furthermore, through its support of the Ilulissat declaration and various public pronouncements, Russia has repeatedly exhibited a preference for resolving Arctic disputes through diplomatic channels. In 2011 Russia and Norway reached such an agreement to settle their disputed maritime border in the Barents Sea and clarify oil and gas rights in that area. However, policy documents and pronouncements by both political and military leaders make it plain that Russia considers military force an acceptable means of defending what it considers its Arctic interests.

To this end, Russia has greatly increased its military presence in the North over the past five years. It has resumed strategic bomber flights over the Arctic Ocean and the Norwegian Sea in recent years. In 2008 the Russian Navy announced that its fleet had "resumed a warship presence in the Arctic" (javno100 2008). Moscow has also declared an increase in the operational radius of its northern submarine fleet to include much of the Arctic Ocean. This is in keeping with the high priority placed upon the Arctic by the maritime doctrine adopted under former President Vladamir Putin (Russian Federation 2001). This increase in military activity has certainly not gone unnoticed; In 2010 the Norwegian Foreign Minister Jonas Gahr Store, commented that "Norway has been observing an expansion of Russian activities in its northern territories that involve warships, planes and its submarine fleet operations for some time" (NATO 2010).

The Russian ability to project power into the Arctic has strengthened over the past five years and will likely increase in the near future. Russian defense budgets have been increasing rapidly in the 21st century and a large portion of this new money has been earmarked for the Navy. The Navy is currently building its next-generation *Borey* and *Yasen* class nuclear submarines; ten of each are expected to be built as part of the state armaments program through 2015 (RIA Novosti 2008). In addition to what was announced in that plan, the Russian government has begun work on the first of four French Mistral class amphibious assault ships. Capable of carrying 16 attack helicopters and two hovercrafts to deliver troops to shore, the Mistral has caused concern among Russia's Baltic and Scandinavian neighbors. On the ground the Russian military has begun to assemble two Army brigades and Special Forces units that will specialize in Arctic warfare and guard oil and gas infrastructure and Russian interests in the region.

In part to support its hard-line position in the region, Moscow has become increasingly antagonistic in its relations with the West. The state's national security policy has labeled the United States a "main rival," while Russian state-owned newspapers have increasingly criticized the United States and NATO, accusing the West of coveting Russian resources and attempting to militarize the North (APA 2008).

Securing and developing the Arctic's resources, particularly the oil and gas reserves, are the principal aims of Russian Arctic policy. While Russian action in the Arctic has remained within the boundaries of international law, the state is prepared to act unilaterally if it perceives its Arctic interests to be threatened.

Sweden

Sweden announced its *Strategy for the Arctic Region* in May 2011, shortly after it assumed the chairmanship of the Arctic Council (Swedish Ministry of Foreign Affairs 2011). Of all the Arctic states, Sweden has been the least engaged in matters of circumpolar relations or Arctic security. The reasons for this are linked to geography, as Sweden shares neither a border with Russia nor a coastline with the Arctic Ocean, and therefore has fewer

security and economic interests in its North. Its main goals, as reflected in its policy and its Arctic Council chairmanship agenda, revolve around environmental and climate concerns. However, Sweden's security policy position based on "security in cooperation" means that the security policies of the EU Member States and Nordic countries strongly influence Swedish security policy.

While its participation in the Arctic Council has been comparatively limited, Sweden has been active in other regional organizations, including the Nordic Council, the Barents Euro-Arctic Council, and the EU, and it has established an Arctic Ambassadorship. Its defense and security policy emphasizes cooperation with the Nordic countries and the EU and there is broad political support in Sweden for further development of bilateral and multilateral Nordic military cooperation. There are also signs that Sweden is moving towards greater cooperation with NATO, causing some observers to speculate that it may be moving towards joining the alliance (Simpson 2009). In June 2009, for example, Sweden hosted a large NATO military exercise—Loyal Arrow—under the terms of the Partnership for Peace Programme in its northern region of Lapland (Sullivan 2009). It involved over 50 aircraft and 2000 troops from Finland, Germany, the United Kingdom, and the United States.

Following the announcement of the French sale of the Mistral to Russia, Swedish Defence Minister Sten Tolgfors stated that the sale will necessitate that Sweden develop a strong air force with sea targeting capabilities as well as strengthening Swedish submarine forces (Nilsen 2011). The Swedish government is also investing in the development of a very technologically advanced warship: The Visby class corvette is one of the world's first stealth warships, made of advanced composite materials and capable of speeds of over 35 knots. It is a small vessel that has been given a very powerful anti-submarine, anti-air and anti-ship capability (Naval-technology.com 2012c). Five such vessels are planned.

Sweden has recently eliminated its draft and is now moving to a smaller and more professional armed forces. The Swedish Chief of Defence Staff said the move was intended to give the Swedish forces greater international mobility, including a greater ability to operate in the High North (O'Dwyer 2010).

The United States of America

In January 2009 the United States released a comprehensive Arctic policy, elucidating the state's interest in protecting the region's environment, developing its natural resources, and maintaining national security (President of the United States 2009). This policy statement demonstrates the growing importance of the Arctic in American policy, driven principally by the increasing accessibility of the Arctic waters and the improving prospects for gas and oil extraction.

Resource extraction plays a large role in the American interest in the region, as the past seven years have seen the major oil companies purchasing large oil exploration permits in the Beaufort and Chukchi Seas and commencing significant seismic exploration in these areas. The recent U.S. policy statement also restates the American position regarding its boundary dispute with Canada in the Beaufort Sea, and emphasized the importance of ratifying UNCLOS to secure U.S. control over the resources of the continental shelf north of Alaska. The U.S. Coast Guard has been carrying out hydrographic surveys of that region in preparation for just such a claim.

These developments have been made possible by the increased accessibility of the region through the melting of the Arctic ice. The U.S. Navy and Coast Guard, as well as U.S. Northern Command, have expressed concern over the consequences of increased traffic in the Arctic waters. The Coast Guard has called for a larger presence in the form of icebreakers, a northern base, improved oil spill and disaster response capacity, more search and rescue equipment, and an improved surveillance capability. At present, the U.S. Coast Guard has only three icebreakers; the USCG *Healy* is a modern vessel devoted mainly to Arctic research, while the other two, the *Polar Star* and *Polar Sea*, are out of service. The lack of American icebreakers has forced the United States to rely increasingly on Russian icebreakers and ice-strengthened oil tankers for use in both Alaskan waters and to provide for their resupply in Antarctica (Robson 2012, Associated Press 2012).

This sentiment is echoed by the military, which plans to increase surveillance with both manned and unmanned aircraft. Since the 1950s the U.S. Navy has maintained the capability of operating in the Arctic waters and the thinning of the ice has made an expansion of its operations there increasingly likely. The Navy has been considering the implications of an ice-free Arctic for more than a decade (Office of Naval Research 2001). In 2009 the Navy released its *Arctic Roadmap* which reiterated the country's tradition objectives of seeking

cooperation in the Arctic while maintaining its capacity to act independently to protect the freedom of the seas and American interests (U.S. Navy 2009). As maritime traffic and resource extraction increase, the Navy will likely increase the tempo of its submarine patrols—which have continued and been given increasing publicity—and perhaps even deploy surface assets to the Northern waters.

The US has begun to increase the visibility of its submarine forces' Arctic voyages. Initially, its newest attack submarines (SSN), the Virginia class, were not have capabilities to operate in ice-covered waters (Federation of American Scientists 2010). However, photographs have been released to the public showing two Virginia Class submarines—the USS *Texas* and the USS *New Hampshire*—surfaced through thick Arctic ice (COMSUBPAC 2009, COMSUBFOR 2011, IBT 2011). Hence, either the U.S. Navy is operating these vessels at high risk, a very unlikely scenario, or the initial decision to forego ice capabilities was reversed at some point. The stated reasons for their Arctic voyages are to assist in the conduct of scientific research and to provide military training opportunities for operating in the region.

Increased U.S. operations in the region run the risk of political conflict with both Canada and Russia, which consider large sections of the Arctic to be their internal waters. The United States has never recognized these claims and continues to regard the Canadian Northwest Passage, as well as the Russian Dmitrii, Vilkiskiy, Laptev and Sannikov straits, as international. Moreover, the United States has challenged these claims in the past. In the case of the Northwest Passage, it refused to request permission for transit of the SS *Manhattan* in 1969 and the *Polar Sea* in 1985. In the case of Russia (then the USSR), this challenge came from the deployment of the icebreakers *Edesto* and *Eastwind* in 1967 to transit the Vilkiskiy Straits without permission. The United States does, however, have an Arctic cooperation agreement with Canada which states: "The Government of the United States pledges that all navigation by U.S. icebreakers within waters claimed by Canada to be internal will be undertaken with the consent of the Government of Canada." This agreement does not provide for the passage of conventional surface ships, however.

American insistence that Arctic straits constitute "straits used for international navigation," is explicitly stated in their official policy. The policy also states, "freedom of the seas is a top national priority." Consequently, the United States sees Arctic "waterways" simultaneously as territorial seas of Russia and Canada *and* as straits used for international navigation. Under this position, the United States believes that rules for transit of the straits by foreign-flagged vessels should be adopted at the International Maritime Organization, but this position is rejected by Canada and Russia.

Diplomatic tension has also resulted by Russian objection to American deployment of AEGIS warships equipped with antiballistic missile defense systems to northern waters. If positioned in the Barents Sea, such American warships could in theory shoot down Russian ballistic missiles, limiting the Russian nuclear deterrence. Recently, the Russian Government has become more vocal in its concerns about American intentions in this regard (Staalesen 2012).

Despite the capability and stated willingness to act unilaterally in defense of American interests, U.S. policy continues to consider multilateral cooperation as the preferred means of dealing with most Arctic issues. The United States is a signatory of the Ilulisaat Declaration, pledged to resolve boundary difficulties within the legal framework of UNCLOS, and government policy statements have emphasized this cooperative approach (Ilulissat Declaration 2008). American policy also recognizes the utility of international cooperation in Arctic research and environmental protection, and through the Arctic Council. However, U.S. policy emphasizes that the council should stay "within its limited mandate of environmental protection and sustainable development" and not become involved in matters of defense or state policy.

American Arctic policy is largely governed by the state's desire to see an orderly and environmentally sound development of the region's hydrocarbon reserves, the establishment of transit rights through the Arctic straits, and the assurance of national security from terrorist, criminal, or state based threats in the region.

ASIA

Asian interest in the Arctic has been on the rise, particularly from China, Japan, India and South Korea. All have established research stations in Ny-Ålesund, on the island of Spitsbergen, Norway, and China (2007), South Korea (2008), and Japan (2009), have made formal applications to become permanent observers in the Arctic Council—a status already accorded the United Kingdom, France, Germany, Netherlands, Poland, and Spain. The issue has confounded the consensus-based

Arctic Council, and a decision on these applications has been tabled at both the 2009 and 2011 Ministerial meetings. It is speculated that Canada and Russia are most opposed to opening up the Council to a larger and more powerful audience of observers. Also, a cooling in Chinese-Norwegian relations following the awarding of the 2010 Nobel Peace Prize to Chinese dissident Liu Xiaobo has led to the loss of Norway as an advocate for broadening observership in the Arctic Council.

There are three main reasons for Asian interest in the North. The first is access to new and untapped mineral and hydrocarbon resources, as Asian countries seek to secure energy and resource supplies for their growing and increasingly wealthy populations (much as China has done in Africa). Second is shipping. For China, this driver is primarily strategic, as it seeks to diversify its supply and trade routes, particularly by reducing its reliance on shipping through the Straits of Malacca and the Lombok Strait. The shorter distance between China and the West offered by a trans-Arctic shipping route is also attractive.

For South Korea and Japan, the driver is primarily economic. Both are interested in trans-Arctic shipping for their export-based economies. South Korea hosts the world's largest shipyards and stands to gain from a new market for ice-capable vessels. Japan has a strong interest in diversifying its supply of rare earths, on which China has a near monopoly; Greenland, in particular, looks to be rich in mineral resources essential to the production of electronics and other high-value goods.

The third interest is scientific. The Asian states are legitimately interested in climate change and are pursuing Arctic research to improve understanding of its causes and consequences. Icebreakers that Japan (*Shirase*) and South Korea (*Araon*) acquired in 2009, and that China will launch in 2014, are all research vessels.

MULTI-LATERAL ORGANIZATIONS/AGREEMENTS

Arctic Council

The Arctic Council is a high-level intergovernmental forum that provides the eight circumpolar countries (Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States), six Arctic Indigenous organizations (as Permanent Participants—Aleut International Association, Arctic Athabaskan Council, Gwich'in Council International, Inuit Circumpolar Conference, Russian Association of Indigenous People of the North, and Saami Council) and other observers with the means to deal with common Arctic issues. The primary focus of the Arctic Council is sustainable development and environmental protection. The Declaration on the Establishment of the Arctic Council, signed in September 1996 in Ottawa, explicitly states as an asterisk that "the Arctic Council should not deal with matters related to military security" (Arctic Council 1996). At that time the circumpolar states agreed that such matters were better handled in forums such as NATO or the Helsinki Process, although the Indigenous groups differed with that position. As a result, as far as military security issues are concerned, the multilateral Arctic practice is to remain silent.

This position has become somewhat of an obstacle in the light of current political realities, in particular the escalation of Arctic regional military activities and investments. In the interests of communication and transparency, it may be in the interests of the members of the Arctic Council to now amend this stipulation to allow for discussions on the remilitarization of the Arctic. There is now a useful precedent for moving in this direction: The prohibition on discussing military affairs did not prevent members of the Arctic Council from successfully concluding the *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic*, at the Ministerial meeting in Nuuk, Greenland in May 2011. Search and rescue often involves military organizations, and among the lead agencies on the SAR Agreement are the U.S. Department of Defense and the Canadian Forces. The Canadian Forces hosted the first table top exercise with SAR specialists from the Arctic Council states on October 5–6, 2011, to discuss joint strategic and operational aspects of aeronautical and maritime search and rescue in the Arctic (Canada Command 2011). While the *Agreement* is not particularly groundbreaking in and of itself, it does provide a platform for strategic cooperation among the Arctic states and an avenue for confidence building. It is expected that the next major deliverable of the Arctic Council will be a mandatory Polar Code in 2014 for regulating shipping activity in the polar regions. Although the Polar Code under the mandate of the International Maritime Organization, it has received high-level political support from the members of the Arctic Council.

The Arctic Council also recognizes a number of indigenous peoples' organizations, providing opportunities for the Arctic states to engage with them. The Inuit Circumpolar Council (ICC) is one of six such groups

that are Permanent Participants in the Arctic Council. In 2005 the ICC filed a petition with the Inter American Council on Human Rights "seeking relief from violations of the human rights of Inuit resulting from global warming caused by greenhouse gas emissions from the United States of America" (ICC 2005). In Alaska, Indigenous groups have opposed ship activity based on the idea that noise will upset subsistence hunting, and some indigenous groups have acted in concert with NGOs to oppose drilling in their home territories. A related development is the increasing independence of the sub-national governments of Greenland and Nunavut, who seek greater involvement with regional security matters, such as basing of troops and citing weapons systems (Loukacheva 2007).

A current issue faced by the Arctic Council is the question of whom to accept as formal 'observers' and what role they should play. The category was established to provide a means to include non-Arctic states who have contributions to be make in Arctic science and other interests in the region. They are non-voting and generally silent in policy decisions, although the current practice is to allow one of them to speak on behalf of the group at Ministerial meetings. During the first ten years of the Arctic Council's existence, the unofficial policy was inclusivity; consequently, the United Kingdom, Germany, France, the Netherlands, Poland, and Spain were admitted as observers. Since 2007, the European Commission, Italy, China, South Korea, and Japan have all applied to be observers, but a decision on whether to accept them was delayed at the 2009 Ministerial and again at the 2011 Ministerial. Guidelines were introduced at the May 2011 Ministerial for how to assess applications, indicating the possibility that some observers will be introduced at the 2013 Ministerial. Given the growing international importance of the Arctic and the desire of some Arctic states to maintain control over the region's policy, the question of whom to include and how has become more acute.

European Union

The European Union's formal interest in the Arctic goes back to its adoption in 2000 of a Northern Dimension policy, which came on the heels of the 1995 expansion, which brought the membership of Sweden and Finland and thus a border with Russia; the policy was revised and reissued in 2006 (Council of the European Union 2000, European Commission 2006). The Northern Dimension aims to enhance collaboration within the region in the areas of economic development, environmental protection, nuclear safety, social wellbeing, and security and justice—especially with regard to the transit of people and goods. A main focus of the Northern Dimension has been the challenges and opportunities presented by the proximity to Northwest Russia. Besides the EU, partners include Iceland, Norway, and Russia, with Canada and the United States participating as observers.

European Union interest in the Arctic has increased as technological advances and climatic changes open up opportunities in energy, fisheries and transport. It has similarly expressed concern about the dramatic climate impacts and the need for effective multilateral governance of the region. To that end, the European Commission adopted a communication on the European Union and the Arctic Region on November 20, 2008 (European Commission 2008). The communication is described as a first step towards a comprehensive EU Arctic Policy. The three main policy objectives identified in the communication include protecting and preserving the Arctic in unison with its population, promoting sustainable use of resources, and contributing to enhanced Arctic multilateral governance. The Council of the European Union affirmed the Communication in December 2009 (Council of the European Union 2009).

The European Union has been one of the most outspoken advocates for implementing a formal governance structure to regulate the Arctic. On October 9, 2008, the European Parliament went so far as to adopt a resolution on Arctic governance, specifically calling for an Antarctic-style international treaty for the protection of the Arctic (European Parliament 2008). The resolution was a response to the Ilulissat Declaration of May 2008, which was seen as an attempt by the five Arctic Ocean coastal states to exclude others from the region. However the Resolution has not found any external support, even from the European Commission.

The European Commission hopes to contribute to the work of the Arctic Council by becoming a permanent observer in that forum, an issue that was addressed at both the 2009 and 2011 Ministerial meetings. A final decision on their application has been postponed and it has been reported that a number of the Arctic Council member states, especially Canada and Russia, have been cool to EU participation. Members of the Permanent Participants have also viewed EU membership negatively because of the EU's opposition to the northern seal fur trade.

Ilulissat Declaration

The five coastal states of the Arctic Ocean—Canada, Denmark, Norway, Russia and the United States—met in May 2008 in Ilulissat, Greenland, to affirm their commitment to the legal framework provided for in "the law of the sea" [small caps used in the text of the agreement] and to the orderly settlement of any overlapping claims (Ilulissat Declaration 2008). They further declared that they see no need to develop any new comprehensive legal regime for the Arctic. The head of the international law department in the Danish Foreign Ministry, Thomas Winkler, stated that "the main point is that the five coastal states have sent a very clear political signal to everybody that we will manage the Arctic responsibly, that we have the international rules necessary and we will all abide by those rules" (Borger 2008). The Declaration has come to represent the states' commitment to international law and cooperation in the region.

Some questions arose as to the need for these five states to meet separately from the Arctic Council, thereby excluding Iceland, Finland, Sweden and the six indigenous permanent participants of the Council, as well as the many official observers. These concerns came to a head in March 2010, when Canada hosted the second meeting of the Arctic Council Foreign Ministers in Chelsea, Quebec. The U.S. Secretary of State blindsided Canada by announcing just ahead of the meeting her concerns with excluding indigenous groups from Arctic forums, and then declining to take part in the traditional 'family picture' held at high level diplomatic events. While some observers have subsequently declared the end of the "Arctic Five," the need for the five coastal Arctic states to discuss legal maritime matters and joint interests in controlling the Arctic Ocean may compel additional exclusive gatherings.

North Atlantic Treaty Organization (NATO)

The Arctic is a region of increasing concern for NATO. Growing levels of maritime traffic and resource exploration, as well as the potential for dramatically increased activity in the near future, has led alliance spokesman James Appathurai to label it "a region of enduring strategic interest to NATO and allied security" (Appathurai 2009).

This increased interest comes shortly after the issuance of Russian and American policy directives emphasizing the importance of the Arctic to their national security. The increased focus on the Arctic in both Russia's new marine doctrine and state security policy will necessitate increased allied attention, and the American's leading role in NATO will ensure that that nation's interest in the region will be reflected in NATO policy.

NATO already has a certain presence in the Arctic through its Iceland based Integrated Air Defence System and exercises in the region, such as 'Cold Response' in March, 2009, which involved 7,000 soldiers from France, Germany and Spain. Along with Norway, Iceland has been particularly active in encouraging a stronger NATO presence in the Arctic. In January 2009, the alliance held a high level conference on security prospects in the High North in Reykjavík. The main topic of discussion was the role of the alliance in the region. NATO plans to assume a greater role in a number of matters, with ecological relief and search and rescue operations specifically identified. By 2010 the Sub-Committee on Transatlantic Defence and Security Cooperation had issued a report calling for "proactive engagement" and cited increasing desire from within the alliance's Arctic members (particularly Norway, Denmark and Iceland) for increased attention to the region (NATO 2010).

Although not officially stated, both Finland and Sweden appear to have a growing interest in joining NATO. The rearmament of the Russian military, coupled with that nation's increasingly aggressive foreign policy and its 2008 intervention in Georgia, appear to be making NATO membership increasingly attractive to the two traditionally neutral countries in the region. Finland and Sweden contributed 250 soldiers to 'Cold Response' in preparation for a scenario where a fictional country moved against offshore oilfields and other mineral assets of a regional state. An assessment of the Swedish military by the NATO Planning and Review Process led to questions about whether the Swedish conservative government is trying to sneak the country into NATO. In Finland, the country's Minister for Defence recently stated that Finland should consider joining NATO for financial reasons. Officially, however, both governments deny any plans to join the alliance.

Not all NATO nations see the alliance as the principal, or even a desirable, means of operating in the Arctic. Because it possessed the majority of the alliance's Arctic capable military hardware, the United States has normally chosen to operate independently in the North, while Canadian actions indicated that that country would also prefer unilateral action—though in Canada's case the issue would be concern about sovereignty.

The question of energy security is also an important one for the alliance, a point agreed to in 2008 during the NATO summit at Bucharest. With increasing Arctic oil and gas production north of Norway and Russia, and continued exploration above Canada and the United States, the Arctic is an obvious location to exercise that mandate.

Yet, NATO does not foresee its Arctic role as being primarily military. While there will have to be a military component to its presence it does not predict any conventional conflict. The Secretary General stated simply: "I would be the last one to expect military conflict—but there will be a military presence." Instead, NATO hopes to promote cooperation between the alliance and Russia through the NATO-Russia Council, and within the alliance itself. With three of its members pressing competing claims to offshore jurisdiction, a role for NATO in Arctic cooperation could make sense. Using NATO as a forum for discussion, while providing the military assets necessary to assist in maritime security, is part of the comprehensive approach the alliance hopes to take in concert with other multinational stakeholders, such as the Arctic Council and the European Union.

North American Aerospace Defense Command (NORAD)

NORAD has a long history in the North American Arctic. Formed to protect the continent from Soviet bomber attack in 1958, the bi-national command is tasked with ensuring aerospace surveillance over North America. NORAD's Arctic mission began in the 1950s as Canada and the United States established Northern radar posts to detect and, if necessary, intercept Soviet bomber incursions. Fifty years later, many of the Russian Cold War-era bombers the system was designed to track are once again flying strategic patrols around the Arctic Circle.

Today NORAD is tasked with tracking not only military aircraft but the hundreds of annual commercial transpolar flights moving in and out of North American airspace. After the terrorist attacks on the United States on September 11, 2001, concern over airplane hijacking and infiltration has increased and the surveillance of Arctic airspace has taken on an even greater urgency. Along these lines, cooperation with Russia has increase in recent years. In 2010 joint Russia-NORAD exercises began to test response capabilities in the event of a terrorist hijacking of one of the 1,000 daily flights in the region. Reports indicate that NORAD-Russian communication is improving as a result.

In May 2006 Canada and the United States renewed the NORAD agreement and added a maritime surveillance clause (Canada-United States 2006). With the increasing accessibility of the Arctic waters and the expanding traffic that has resulted, NORAD must now also monitor the Northern Waters for potential maritime intruders. As early as August 2008 NORAD Commander Gene Renuart emphasized the potential security threats in the Arctic posed by the thinning ice and the increased potential for resource extraction (Renuart 2010).

NORAD does not have the mandate to intercept maritime threats; that responsibility falls to either Canada Command or U.S. Northern Command, depending on jurisdiction. Nor does NORAD anticipate a renewed military threat in the region. However the anticipated increase in both maritime and aerospace traffic in the Arctic has definitely reinforced the need for surveillance and refocused NORAD's role in the region.

Nordic Defence Cooperation (NORDEFCO)

The new *Nordic Defence Cooperation*, or NORDEFCO, builds on existing collective security arrangements in the Nordic area, but with a view to broadening and deepening existing cooperation with a defense pact. It began as an initiative among the Norwegian, Swedish and Finnish Chiefs of Defence, with a report submitted in June 2008 outlining potential areas for cooperation and harmonization. Iceland and Denmark joined the arrangement in November 2008, when the Defence Ministers of the five Nordic countries signed a Memorandum of Understanding (MoU) regarding the enhanced Nordic cooperation in Nordic Supportive Defense Structures (NORDSUP 2008). That initiative encompassed cooperation in defense related areas such as the procurement of defense materiel, education of armed forces, and defense research, and aimed to make better use of existing defense resources.

A report that the group had originally commissioned in June 2008 on proposals to enhance foreign and security cooperation between the Nordic countries was released in February 2009 (Stoltenberg 2009). Named the Stoltenberg Report after its chief author, former Norwegian foreign and defense minister Thorvald Stoltenberg, it outlined the main issues facing the group. These included the resurgence of Russia and its economic and military focus in the Arctic, as well as the need to join efforts in order to sustain the quality of

their armed forces amidst the increasing financial strain of maintaining modern, well equipped forces.

The report included a number of specific proposals. It called for the establishment of a joint maritime rapid action group based on the countries' coast guards and rescue services, pan-Nordic monitoring of Icelandic airspace, joint Nordic icebreaker capacities, and the development of a joint amphibious unit adjusted to Arctic conditions. It also proposed the development of a joint two-pillar surveillance system covering the Barents and Baltic Seas, the development of a joint Nordic satellite monitoring system, a joint catastrophe unit, enhanced coordination of defense training and education, and the establishment of joint military medical and transport capacities.

Although the report was not free of controversy, it catalyzed the signing of an even more comprehensive Nordic defense cooperation MoU, signed by the Nordic defense ministers on November 4, 2009, establishing the Nordic Defence Cooperation (NORDEFCO 2009). Consequently NORDSUP, NORDAC and NORDCAPS—the original security cooperation initiatives—were terminated and reorganized under the new comprehensive structure—NORDEFCO. Foreign Ministers from the five countries met in Copenhagen in March 2010 to discuss further implementation of the Stoltenberg proposals.

The main aim and purpose of the Nordic Defence Cooperation is "to strengthen the participating nations' national defense, explore common synergies and facilitate efficient common solutions" (Nordefco.org 2012). Although areas of cooperation are quite broadly defined, there is little doubt that the timing and impetus around the cooperation pact revolve around new concerns, as well as regional opportunities, in the Arctic. Denmark, which holds the presidency of NORDEFCO in 2012, has identified Arctic cooperation as one its priority areas.

United Nations

The United Nations Convention on the Law of the Sea (UNCLOS) was adopted in 1982 and entered into force in 1994. The Convention establishes a 200-mile Exclusive Economic Zone (EEZ) within which coastal states have sovereign rights to the exploration and exploitation of living and non-living natural resources. It further stipulates, in Article 76, that states can further claim sovereign rights to any continental shelf that extends from their territorial waters, up to a maximum of 350 miles from their coastline (United Nations 1982). Both of these new maritime zones have important implications for international affairs in the Arctic. Much of the "scramble for the Arctic" revolves around Article 76. The five coastal states, understandably, have been eager to maximize their claims in order to capitalize on any future exploitation of the significant oil and gas reserves of the Arctic basin.

Parties to UNCLOS have ten years after ratifying the convention to submit their claim. Mapping the continental shelf in and around the Arctic has proven complicated and expensive and has elicited cooperation between some of the states, in particular Canada and the United States in the Beaufort Sea, and Canada and Denmark in the Lincoln Sea. Of the five coastal states, only Norway has submitted its final claim, which was reviewed and recommended for acceptance under the treaty (UNCLOS Commission on the Limits of the Continental Shelf 2009). In 2001, Russia became the first country to submit its claim, but the Commission recommended it revise the submission to include more scientific clarity, which as of writing it has not been done. Canada and Denmark's deadlines are 2013 and 2014, respectively. The United States has yet to accede to UNCLOS, despite support from both the Bush and Obama administrations and the Senate Foreign Relations Committee, a fact that may complicate their efforts to dispute or claim their share of the continental shelf under the accepted framework of international law.

There remains a very good chance that competing claims will emerge in the Arctic, particularly between Canada, Denmark, and Russia. This depends on whether or not the undersea Lomonosov Ridge is a continuation of Russian, Danish, or Canadian territory. Elsewhere, competing claims may emerge between Norway and Russia, and Canada and the United States.

A debate has emerged in Arctic circles over whether UNCLOS alone provides an adequate legal framework for governance of the region, or whether some additional agreement is needed; the circumpolar states tend to lean towards the former, as enunciated in the Ilulissat Declaration. UNCLOS Article 197 actually encourages states to develop regional agreements where appropriate.

INDUSTRY

Oil and gas

One of the most important developments in the circumpolar Arctic over the past decade has been the

development of the region's hydrocarbon resources. The U.S. Geological Survey estimates the undiscovered potential of the Arctic to be 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids, of which approximately 84% is expected to occur in offshore areas (Bird, et al. 2008).

Over the past few years, all of the multinational oil and gas companies have moved back into Arctic exploration. Declining reserves in some of the world's oldest oil producing regions, increasing accessibility in the North, and a dearth of new finds elsewhere has led many to reassess the energy potential of the region. Many of the major companies involved are state owned—particularly those in Russia—making national and corporate policy nearly indistinguishable. Yet, even the private corporations have strong connections to government and their success in developing national resources is widely considered to be of great national interest.

NORTH AMERICA

In the summer of 2007 Imperial Oil and Exxon shocked observers with a nearly $600 million bid that won them a 205,321 hectare exploration lease on the Canadian side of the Beaufort Sea. In February 2008, Shell and ConocoPhillips bid nearly $2.7 billion in a blockbuster competition for drilling rights in the Chukchi Sea—a record for any Alaskan oil or gas lease. The last Chukchi sale in 1991, for instance, generated $7.1 million. British Petroleum, which as recently as 2002 announced that it had no interest in further Arctic exploration, spent nearly $1.2 billion in a June 2008 auction for oil and gas exploration leases covering roughly 611,000 hectares of the Beaufort seabed north of Tuktoyaktuk. In the same auction, two other leases were won by a trio of companies led by MGM Energy and including ConocoPhillips Canada Resources and Phillips Petroleum Canada. These companies spent $4.3 million for rights to 237,820 hectares of offshore exploration rights.

After the 2011 Gulf of Mexico oil spill, exploration was put on hold in both Canada and the United States, as government panels were commissioned to examined the dangers of offshore drilling in an Arctic environment. In the Unites States the National Commission on the BP Deepwater Horizon Oil Spill issued its final report in January 2011 and recommended increased safety precautions and international standards, but stopped short of recommending a moratorium on Arctic drilling (National Oil Spill Commission 2011). In Canada the National Energy Board released its final report in December 2011, and it too has cleared the way for future operations, in particular by allowing companies to bypass an onerous obligation to be able to drill a same-season relief well if they can demonstrate an ability to meet the same objectives through other means (National Energy Board 2011).

Shell has the most advanced plans for operations in North America and plans to begin exploratory drilling in the Chukchi Sea in the summer of 2012. The remaining oil majors are also spending billions on Arctic exploration. Imperial Oil, ENI, Chevron and Statoil—among others—are conducting preliminary seismic exploration in preparation for exploratory drilling. ConocoPhillips has set 2013–2014 as a possible start date for its drilling, while Repsol has committed to spend $768 million on its Arctic exploration program, to start in 2012 (Kollmeyer 2011). By Necessity, these plans are long-term investments. Shell, for instance, does not expect to begin commercial production of Beaufort Sea oil until 2019 and of gas until 2029 (Burden, et al. 2009). In the Chukchi, which is farther from established infrastructure, the expected production start date for oil is 2022 and for gas it is 2036.

Farther east, off the western coast of Greenland, Cairn Energy is currently involved in a multiyear drilling program looking for oil in the Davis Strait and Baffin Bay. Results have been mixed, with early success marred by a series of dry wells in the 2011 drilling season. Further activity is planned for the summer of 2012.

In recent years new shale gas techniques have opened up enormous new gas reserves in the continental United States, depressing the price of natural gas and altering the economics of Arctic gas production. With gas prices stagnating, exploration is focused more on oil than gas, which is one reason for the greater activity in the oil-rich Chukchi over the gas-rich Beaufort. Some of the more expensive gas-focused projects are likely to be cancelled or shelved for the foreseeable future. This is likely to include the $17-billion Mackenzie Gas Project, a joint venture among the Canadian branches of ConocoPhillips, Exxon, Imperial Oil, and a Canadian aboriginal group. The first major defection from the project came in July 2011 as Shell announced that it was seeking to sell its 11% stake in the project to focus on newly acquired shale reserves.

In Russia there have been similar reassessments, represented by the February 2010 decision to postpone

the development of the Shtokman natural gas field in the Barents Sea. Previously, plans had envisaged the field becoming operational in 2013–2014, however with half of the field's gas having been earmarked to supply the now saturated U.S. market, the project has lost some of its impetus (Eie 2010).

EURASIA

Russia has a long history of Arctic oil and gas production and hydrocarbon development in the Eurasian Arctic is more advanced than in North America. At present a number of major production and export facilities are now online with huge new projects in the construction and planning stages.

North of Hammerfest, in the Barents Sea, Statoil is already operating the large Snøhvit liquefied natural gas (LNG) plant and planning more exploration and test wells in the area. The project is producing 5.6 billion m^3 of LNG and involved a total investment of over $5 billion for field development, pipeline and land plant with an additional $500 million spent on tankers (hydrocarbons-technology.com 2012).

In Russia, development has been proceeding rapidly in the Timan-Pechora basin, the Barents Sea, and in the Far East. Working with international partners, Russian state-owned company Gazprom is investing heavily in the development of the gas and oil resources on and around the Yamal Peninsula and Sakhalin Island. Gazprom's Shtokman gas and Prirazlomnoye oil fields in the Barents Sea are some of the world's most northerly areas under development, and the company expects their hydrocarbon reserves on Russia's Arctic shelf to increase by 41.1 billion barrels oil equivalent by 2020 (Gazprom 2009, 2012).

The independent Russian oil giant Lukoil is also heavily committed to development in the Timan-Pechora Basin and the Barents Sea. Its $620 million Varandey transshipment terminal in the Barents is designed to ship 12 million tons of oil via ice-breaking tankers to Murmansk each year for transshipment to international customers. It is thus little wonder that Moscow and both state-owned and private companies have declared the region to be of vital long-term importance for the development of the Russian oil and gas industry.

The most significant recent development has been the announcement of a joint venture between state-owned Rosneft and ExxonMobil, with Exxon committed to spend over $2 billion working in the Kara Sea. Exxon, which will be a minority partner in the venture, will bring badly needed foreign capital and expertise to the region. Its presence represents a shift in Russian state policy towards increased cooperation with foreign multinationals, something which only a few years ago seemed unlikely.

All public statements and publications indicate that these companies will continue aggressive exploration and development in the region, representing the majority of economic activity in the circumpolar Arctic for years to come. This development will also carry with it the security risks inherent to the protection and development of valuable natural resources.

Shipping

Global warming and the consequent melting of Arctic sea ice will make it increasingly feasible for vessels to use Arctic waters as a shipping route. While scientists cannot be sure when the Arctic will be largely ice-free during the summer months, it seems to be happening faster than expected (section II). Most recent assessments put the range between 2020 and 2050. The summer of 2007 had the lowest level of sea ice ever recorded, with the Northwest Passage navigable for the first time in recorded history. However, dark and cold winter months in the Arctic means that it will not be navigable year round.

Potential trans-Arctic shipping routes offer significant economic and strategic advantages, shortening the distance needed to transport goods between Asia, North America, and Europe by up to 4000 nautical miles, and reducing shipping time by up to two weeks. It also offers a cost-effective means by which to transport Arctic resources, including oil, gas, and minerals, to southern markets. Several ship-building and oil companies are investing in the development of new types of ice-strengthened tankers and vessels to capitalize on such opportunities.

Despite the rare international passage, such as the MV *Beluga Fraternity*'s trip through the Northern Sea Route in 2009, the prospects for trans–Arctic shipping remain poor for the foreseeable future because of continuing difficult environmental conditions and accordingly high insurance rates. However, more local resource shipping is already being planned for the near term, including increased activity in the Russian Arctic, linked to petroleum exploration and development in the Barents and Kara Seas, and in the North American Beaufort and Chukchi Seas. Significant shipping activity is planned

to accompany the development of the Mary River iron ore mine on Baffin Island. Once in operation, which is anticipated in 2015, Mary River is expected to use a dedicated fleet of cape-sized ore carriers and, potentially, some very large bulk carriers to ship 18 million tonnes of ore per year for 21 years, from a port near Igloolik into the Foxe Basin. In Nunavut, new bulk exports are also expected to include magnetite from Roche Bay, and lead, zinc, and copper concentrate from Izok Lake, shipped out from Gray's Bay or Bathurst Inlet.

An increase in Arctic shipping poses serious risks to the environment, as the ecosystem there is particularly vulnerable to pollution and disturbance. Current technologies used to clean up oil spills on ice are inadequate, yet accidents are more likely to occur in the Arctic given the challenging weather conditions and ice infestation. The Arctic's harsh conditions also pose challenges to increasing cruise ship and adventure tourism in the area, with the sinking of the MV *Explorer* in November 2007 and the rescue of the *Ushuaia* in December 2008 in Antarctica offering glimpses of what to expect in the Arctic. Current cruise ship levels have reached up to 250 per year in the area around Greenland and Nunavut, and an accident of some sort is probably only a matter of time.

The region is also largely devoid of shipping infrastructure and navigational aids. At present only, roughly 10% of the total Arctic maritime area is surveyed to modern standards (The Canadian Press 2010). The result has been relatively frequent groundings. The 2010 groundings of the *Nanny*, a tanker carrying nine million liters of fuel in the Simpson Strait, and the *Clipper Adventure*, a cruise ship in Coronation Gulf, are only the most recent examples.

The current regime governing shipping in the Arctic, the IMO's *Guidelines for Ships Operating in Ice-Covered Waters*, is voluntary, although work is underway on a mandatory Polar Code, which expected to enter force in 2014, barring further delays (IMO 2002, 2012). The primary concerns of the code are vessel construction standards, polar safety equipment, and the requirement for a qualified ice navigator. However, at present development and implementation of such a code is being held up by differences of opinion within the IMO about the desirability of including regulations on operational source.

Many of the major Arctic powers are concerned with the development of Arctic shipping, and occasionally their ideas clash. While the Russian government is actively seeking to expand the use of its Northern Sea Route, its insistence that the key straits in the region are Russian internal waters clashes with the American position laid out in that country's recent policy document. Likewise the Canadian claim of internal water in the Northwest Passage has been the source of past and likely future political disputes with the United States.

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This report explores the implications of climate change in the Arctic for international security and foreign policy. The Center for Climate and Energy Solutions (C2ES) is an independent non-profit, non-partisan organization promoting a strong policy and action to address the twin challenges of energy and climate change. Launched in 2011, C2ES is the successor to the Pew Center on Global Climate Change.

2101 Wilson Blvd., Suite 550
Arlington, VA 22201
P: 703-516-4146
F: 703-516-9551

WWW.C2ES.ORG