

Arctic Meltdown

The Economic and Security Implications of Global Warming

By Scott G. Borgerson

From *Foreign Affairs*, March/April 2008

Summary: Thanks to global warming, the Arctic icecap is rapidly melting, opening up access to massive natural resources and creating shipping shortcuts that could save billions of dollars a year. But there are currently no clear rules governing this economically and strategically vital region. Unless Washington leads the way toward a multilateral diplomatic solution, the Arctic could descend into armed conflict.

SCOTT G. BORGERSON is International Affairs Fellow at the Council on Foreign Relations and a former Lieutenant Commander in the U.S. Coast Guard.

The Arctic Ocean is melting, and it is melting fast. This past summer, the area covered by sea ice shrank by more than one million square miles, reducing the Arctic icecap to only half the size it was 50 years ago. For the first time, the Northwest Passage -- a fabled sea route to Asia that European explorers sought in vain for centuries -- opened for shipping. Even if the international community manages to slow the pace of climate change immediately and dramatically, a certain amount of warming is irreversible. It is no longer a matter of if, but when, the Arctic Ocean will open to regular marine transportation and exploration of its lucrative natural-resource deposits.

Global warming has given birth to a new scramble for territory and resources among the five Arctic powers. Russia was the first to stake its claim in this great Arctic gold rush, in 2001. Moscow submitted a claim to the United Nations for 460,000 square miles of resource-rich Arctic waters, an area roughly the size of the states of California, Indiana, and Texas combined. The UN rejected this ambitious annexation, but last August the Kremlin nevertheless dispatched a nuclear-powered icebreaker and two submarines to plant its flag on the North Pole's sea floor. Days later, the Russians provocatively ordered strategic bomber flights over the Arctic Ocean for the first time since the Cold War. Not to be outdone, Canadian Prime Minister Stephen Harper announced funding for new Arctic naval patrol vessels, a new deep-water port, and a cold-weather training center along the Northwest Passage. Denmark and Norway, which control Greenland and the Svalbard Islands, respectively, are also anxious to establish their claims.

While the other Arctic powers are racing to carve up the region, the United States has remained largely on the sidelines. The U.S. Senate has not ratified the UN Convention on the Law of the Sea (UNCLOS), the leading international treaty on maritime rights, even though President George W. Bush, environmental nongovernmental organizations, the U.S. Navy and U.S. Coast Guard service chiefs, and leading voices in the private sector support the convention. As a result, the United States cannot formally assert any rights to the untold resources off Alaska's northern coast beyond its exclusive economic zone -- such zones extend for only 200 nautical miles from each Arctic state's shore -- nor can it join the UN commission that adjudicates such claims. Worse, Washington has forfeited its ability to assert sovereignty in the Arctic by allowing its icebreaker fleet to atrophy. The United States today funds a navy as large as the next 17 in the world combined, yet it has just one seaworthy oceangoing icebreaker -- a vessel that was built more than a decade ago and that is not optimally configured for Arctic missions. Russia, by comparison, has a fleet of 18 icebreakers. And even China operates one icebreaker, despite its lack of Arctic waters. Through its own neglect, the world's sole superpower -- a country that borders the Bering Strait and possesses over 1,000 miles of Arctic coastline -- has been left out in the cold.

Washington cannot afford to stand idly by. The Arctic region is not currently governed by any comprehensive multilateral norms and regulations because it was never expected to become a navigable waterway or a site for large-scale commercial development. Decisions made by Arctic powers in the coming years will therefore

profoundly shape the future of the region for decades. Without U.S. leadership to help develop diplomatic solutions to competing claims and potential conflicts, the region could erupt in an armed mad dash for its resources.

GO NORTH, YOUNG MAN

The Arctic has always experienced cooling and warming, but the current melt defies any historical comparison. It is dramatic, abrupt, and directly correlated with industrial emissions of greenhouse gases. In Alaska and western Canada, average winter temperatures have increased by as much as seven degrees Fahrenheit in the past 60 years. The results of global warming in the Arctic are far more dramatic than elsewhere due to the sharper angle at which the sun's rays strike the polar region during summer and because the retreating sea ice is turning into open water, which absorbs far more solar radiation. This dynamic is creating a vicious melting cycle known as the ice-albedo feedback loop.

Each new summer breaks the previous year's record. Between 2004 and 2005, the Arctic lost 14 percent of its perennial ice -- the dense, thick ice that is the main obstacle to shipping. In the last 23 years, 41 percent of this hard, multiyear ice has vanished. The decomposition of this ice means that the Arctic will become like the Baltic Sea, covered by only a thin layer of seasonal ice in the winter and therefore fully navigable year-round. A few years ago, leading supercomputer climate models predicted that there would be an ice-free Arctic during the summer by the end of the century. But given the current pace of retreat, trans-Arctic voyages could conceivably be possible within the next five to ten years. The most advanced models presented at the 2007 meeting of the American Geophysical Union anticipated an ice-free Arctic in the summer as early as 2013.

The environmental impact of the melting Arctic has been dramatic. Polar bears are becoming an endangered species, fish never before found in the Arctic are migrating to its warming waters, and thawing tundra is being replaced with temperate forests. Greenland is experiencing a farming boom, as once-barren soil now yields broccoli, hay, and potatoes. Less ice also means increased access to Arctic fish, timber, and minerals, such as lead, magnesium, nickel, and zinc -- not to mention immense freshwater reserves, which could become increasingly valuable in a warming world. If the Arctic is the barometer by which to measure the earth's health, these symptoms point to a very sick planet indeed.

Ironically, the great melt is likely to yield more of the very commodities that precipitated it: fossil fuels. As oil prices exceed \$100 a barrel, geologists are scrambling to determine exactly how much oil and gas lies beneath the melting icecap. More is known about the surface of Mars than about the Arctic Ocean's deep, but early returns indicate that the Arctic could hold the last remaining undiscovered hydrocarbon resources on earth. The U.S. Geological Survey and the Norwegian company StatoilHydro estimate that the Arctic holds as much as one-quarter of the world's remaining undiscovered oil and gas deposits. Some Arctic wildcatters believe this estimate could increase substantially as more is learned about the region's geology. The Arctic Ocean's long, outstretched continental shelf is another indication of the potential for commercially accessible offshore oil and gas resources. And, much to their chagrin, climate-change scientists have recently found material in ice-core samples suggesting that the Arctic once hosted all kinds of organic material that, after cooking under intense seabed pressure for millennia, would likely produce vast storehouses of fossil fuels.

The largest deposits are found in the Arctic off the coast of Russia. The Russian state-controlled oil company Gazprom has approximately 113 trillion cubic feet of gas already under development in the fields it owns in the Barents Sea. The Russian Ministry of Natural Resources calculates that the territory claimed by Moscow could contain as much as 586 billion barrels of oil -- although these deposits are unproven. By comparison, all of Saudi Arabia's current proven oil reserves -- which admittedly exclude unexplored and speculative resources -- amount to only 260 billion barrels. The U.S. Geological Survey is just now launching the first comprehensive study of the Arctic's resources. The first areas to be studied are the 193,000-square-mile East Greenland Rift Basins. According to initial seismic readings, they could contain 9 billion barrels of oil and 86 trillion cubic feet of gas. Altogether, the Alaskan Arctic coast appears to hold at least 27 billion barrels of oil.

Although onshore resources, such as the oil in Alaska's Arctic National Wildlife Refuge, have dominated debates about Arctic development in Washington, the real action will take place offshore, as the polar ice continues to retreat. An early indication of the financial stakes and political controversies involved is a lawsuit that was filed against Royal Dutch/Shell in the U.S. Ninth Circuit Court. Filed jointly by an unusual alliance of environmental groups and indigenous whalers, the case has held up the development of Shell's \$80 million leases in the newly accessible Beaufort Sea, off Alaska's northern coast. By 2015, such offshore oil production will account for roughly 40 percent of the world's total. The Alaskan coast might one day look like the shores of Louisiana, in the Gulf of Mexico, lit up at night by the millions of sparkling lights from offshore oil platforms.

POLAR EXPRESS

An even greater prize will be the new sea-lanes created by the great melt. In the nineteenth century, an Arctic seaway represented the Holy Grail of Victorian exploration, and the seafaring British Empire spared no expense in pursuing a shortcut to rich Asian markets. Once it became clear that the Northwest Passage was ice clogged and impassable, the Arctic faded from power brokers' consciousness. Strategic interest in the Arctic was revived during World War II and the Cold War, when nuclear submarines and intercontinental missiles turned the Arctic into the world's most militarized maritime space, but it is only now that the Arctic sea routes so coveted by nineteenth-century explorers are becoming a reality.

The shipping shortcuts of the Northern Sea Route (over Eurasia) and the Northwest Passage (over North America) would cut existing oceanic transit times by days, saving shipping companies -- not to mention navies and smugglers -- thousands of miles in travel. The Northern Sea Route would reduce the sailing distance between Rotterdam and Yokohama from 11,200 nautical miles -- via the current route, through the Suez Canal -- to only 6,500 nautical miles, a savings of more than 40 percent. Likewise, the Northwest Passage would trim a voyage from Seattle to Rotterdam by 2,000 nautical miles, making it nearly 25 percent shorter than the current route, via the Panama Canal. Taking into account canal fees, fuel costs, and other variables that determine freight rates, these shortcuts could cut the cost of a single voyage by a large container ship by as much as 20 percent -- from approximately \$17.5 million to \$14 million -- saving the shipping industry billions of dollars a year. The savings would be even greater for the megaships that are unable to fit through the Panama and Suez Canals and so currently sail around the Cape of Good Hope and Cape Horn. Moreover, these Arctic routes would also allow commercial and military vessels to avoid sailing through politically unstable Middle Eastern waters and the pirate-infested South China Sea. An Iranian provocation in the Strait of Hormuz, such as the one that occurred in January, would be considered far less of a threat in an age of trans-Arctic shipping.

Arctic shipping could also dramatically affect global trade patterns. In 1969, oil companies sent the S.S. *Manhattan* through the Northwest Passage to test whether it was a viable route for moving Arctic oil to the Eastern Seaboard. The *Manhattan* completed the voyage with the help of accompanying icebreakers, but oil companies soon deemed the route impractical and prohibitively expensive and opted instead for an Alaskan pipeline. But today such voyages are fast becoming economically feasible. As soon as marine insurers recalculate the risks involved in these voyages, trans-Arctic shipping will become commercially viable and begin on a large scale. In an age of just-in-time delivery, and with increasing fuel costs eating into the profits of shipping companies, reducing long-haul sailing distances by as much as 40 percent could usher in a new phase of globalization. Arctic routes would force further competition between the Panama and Suez Canals, thereby reducing current canal tolls; shipping chokepoints such as the Strait of Malacca would no longer dictate global shipping patterns; and Arctic seaways would allow for greater international economic integration. When the ice recedes enough, likely within this decade, a marine highway directly over the North Pole will materialize. Such a route, which would most likely run between Iceland and Alaska's Dutch Harbor, would connect shipping megaports in the North Atlantic with those in the North Pacific and radiate outward to other ports in a hub-and-spoke system. A fast lane is now under development between the Arctic port of Murmansk, in Russia, and the Hudson Bay port of Churchill, in Canada, which is connected to the North American rail network.

In order to navigate these opening sea-lanes and transport the Arctic's oil and natural gas, the world's shipyards

are already building ice-capable ships. The private sector is investing billions of dollars in a fleet of Arctic tankers. In 2005, there were 262 ice-class ships in service worldwide and 234 more on order. The oil and gas markets are driving the development of cutting-edge technology and the construction of new types of ships, such as double-acting tankers, which can steam bow first through open water and then turn around and proceed stern first to smash through ice. These new ships can sail unhindered to the Arctic's burgeoning oil and gas fields without the aid of icebreakers. Such breakthroughs are revolutionizing Arctic shipping and turning what were once commercially unviable projects into booming businesses.

THE COMING ANARCHY

Despite the melting icecap's potential to transform global shipping and energy markets, Arctic issues are largely ignored at senior levels in the U.S. State Department and the U.S. National Security Council. The most recent executive statement on the Arctic dates to 1994 and does not mention the retreating ice. But the Arctic's strategic location and immense resource wealth make it an important national interest. Although the melting Arctic holds great promise, it also poses grave dangers. The combination of new shipping routes, trillions of dollars in possible oil and gas resources, and a poorly defined picture of state ownership makes for a toxic brew.

The situation is especially dangerous because there are currently no overarching political or legal structures that can provide for the orderly development of the region or mediate political disagreements over Arctic resources or sea-lanes. The Arctic has always been frozen; as ice turns to water, it is not clear which rules should apply. The rapid melt is also rekindling numerous interstate rivalries and attracting energy-hungry newcomers, such as China, to the region. The Arctic powers are fast approaching diplomatic gridlock, and that could eventually lead to the sort of armed brinkmanship that plagues other territories, such as the desolate but resource-rich Spratly Islands, where multiple states claim sovereignty but no clear picture of ownership exists.

There are few legal frameworks that offer guidance. The Arctic Council does exist to address environmental issues, but it has remained silent on the most pressing challenges facing the region because the United States purposefully emasculated it at birth, in 1996, by prohibiting it from addressing security concerns. Many observers argue that UNCLOS is the correct tool to manage the thawing Arctic. The convention provides mechanisms for states to settle boundary disputes and submit claims for additional resources beyond their exclusive economic zones. Furthermore, UNCLOS sets aside the resources in the high seas as the common heritage of humankind, it allows states bordering ice-covered waters to enforce more stringent environmental regulations, and it defines which seaways are the sovereign possessions of states and which international passages are open to unfettered navigation.

However, UNCLOS cannot be seamlessly applied to the Arctic. The region's unique geographic circumstances do not allow for a neat application of this legal framework. The Arctic is home to a number of vexing problems that, taken in their entirety, make it a special case. These unresolved challenges include carving up the world's longest uncharted and most geologically complex continental shelf among five states with competing claims, resolving differences between Canada and the rest of the world over how to legally define the Northwest Passage, demarcating maritime borders between the United States and Canada in the Beaufort Sea and between Norway and Russia in the Barents Sea, and regulating vessels shielded behind flags of convenience (which obscure the true origin and ownership of the vessels) as they travel across numerous national jurisdictions. Finally, increased oil and gas exploration and the trans-Arctic shipping that comes with it will pose serious environmental risks. Oil tankers present a particularly grave environmental threat, as illustrated by three recent oil spills in the much safer waters of the San Francisco Bay, the Black Sea, and the Yellow Sea.

There are also a handful of unresolved issues at play in the Arctic that are not covered under UNCLOS. Between 1958 and 1992, Russia dumped 18 nuclear reactors into the Arctic Ocean, several of them still fully loaded with nuclear fuel. This hazard still needs to be cleaned up. Furthermore, the Arctic region is home to one million indigenous people, who deserve to have a say in the region's future, especially as regards their professed right to continue hunting bowhead whales, their safety alongside what will become bustling shipping lanes, and their

rightful share of the economic benefits that Arctic development will bring. With the prospect of newfound energy wealth, there is also growing talk of Greenland petitioning Denmark for political independence. Finally, there has been an explosion in polar tourism, often involving ships unsuited for navigation in the region. Last year, 140 cruise ships carried 4,000 intrepid travelers for holidays off Greenland's icy coast, a dangerous journey in largely uncharted waters.

Although it is tempting to look to the past for solutions to the Arctic conundrum, no perfect analogy exists. The 1959 Antarctic Treaty, which froze all territorial claims and set aside the continent for scientific research, provides some lessons, but it concerns a continent rather than an ocean. Moreover, Antarctica is far removed from major trade routes, and negotiations unfolded in the entirely different context of the Cold War. As a body of water that links several large economies, the Mediterranean Sea is somewhat similar to the Arctic Ocean, but its littoral states have always had clearer historical claims, and it has never been covered with ice, at least not in human history. There is simply no comparable historical example of a saltwater space with such ambiguous ownership, such a dramatically mutating seascape, and such extraordinary economic promise.

The region's remarkable untapped resource wealth and unrealized potential to become a fast lane between the Atlantic and Pacific Oceans makes it a key emerging pressure point in international affairs. At this critical juncture, decisions about how to manage this rapidly changing region will likely be made within a diplomatic and legal vacuum unless the United States steps forward to lead the international community toward a multilateral solution.

NORTHERN EXPOSURE

Until such a solution is found, the Arctic countries are likely to unilaterally grab as much territory as possible and exert sovereign control over opening sea-lanes wherever they can. In this legal no man's land, Arctic states are pursuing their narrowly defined national interests by laying down sonar nets and arming icebreakers to guard their claims. Russia has led the charge with its flag-planting antics this past summer. Moscow has been arguing that a submarine elevation called the Lomonosov Ridge is a natural extension of the Eurasian landmass and that therefore approximately half of the Arctic Ocean is its rightful inheritance. The UN commission that is reviewing the claim sent Russia back to gather additional geological proof, leading Artur Chilingarov, a celebrated Soviet-era explorer and now a close confidant of Russian President Vladimir Putin, to declare, "The Arctic is ours and we should manifest our presence" while leading a mission to the North Pole last summer.

Naturally, other Arctic states are responding. Norway submitted its claim for additional Arctic resources to the commission in 2006; Canada and Denmark are now doing their homework in order to present their own claims. Ottawa and Copenhagen are currently at odds over the possession of Hans Island, an outcropping of desolate rocks surrounded by resource-rich waters in the Nares Strait, between Canada's Ellesmere Island and Greenland. Even the United States, despite its refusal to ratify UNCLOS, has for the past few summers dispatched its sole icebreaker to the Arctic to collect evidence for a possible territorial claim in the event the Senate eventually ratifies the treaty.

There are also battles over sea-lanes. Canada has just launched a satellite surveillance system designed to search for ships trespassing in its waters. Even though the Northern Sea Route will likely open before the Northwest Passage, the desire to stop ships from passing through the Canadian archipelago -- especially those from the U.S. Coast Guard and the U.S. Navy -- is the cause of much saber rattling north of the border. "Use it or lose it," Canadian Prime Minister Harper frequently declares in reference to Canada's Arctic sovereignty -- an argument that plays well with Canadians, who are increasingly critical of their southern neighbor. So far, the delicate 1988 "agreement to disagree" between the United States and Canada over the final disposition of these waters has remained intact, but the United States should not underestimate Canadian passions on this issue.

The ideal way to manage the Arctic would be to develop an overarching treaty that guarantees an orderly and collective approach to extracting the region's wealth. As part of the ongoing International Polar Year (a large

scientific program focused on the Arctic and the Antarctic that is set to run until March 2009), the United States should convene a conference to draft a new accord based on the framework of the Arctic Council. The agreement should incorporate relevant provisions of UNCLOS and take into account all of the key emerging Arctic issues. With a strong push from Washington, the Arctic states could settle their differences around a negotiating table, agree on how to carve up the region's vast resource pie, and possibly even submit a joint proposal to the UN for its blessing.

But even as it pushes for a multilateral diplomatic solution, the United States should undertake a unilateral effort to shore up U.S. interests in the Arctic. The few in the United States who still stubbornly oppose U.S. accession to UNCLOS claim that by ratifying the treaty Washington would cede too much U.S. sovereignty and that customary international law and a powerful navy already allow the United States to protect its Arctic interests. But these are not enough. The United States is the only major country that has failed to ratify UNCLOS, and Washington is therefore left on the outside looking in as a nonmember to various legal and technical bodies. In addition to becoming a party to the convention, the United States must publish an updated Arctic policy, invest in ice-mapping programs, and breathe new life into its inefficient, uncompetitive shipyards, thus enabling it to update the country's geriatric icebreaker fleet, as soon as possible.

The United States should also strike a deal with Canada, leading to a joint management effort along the same lines as the 1817 Rush-Bagot Agreement, which demilitarized the Great Lakes and led to the creation (albeit more than a century later) of the nonprofit St. Lawrence Seaway Development Corporation to manage this critical, and sometimes ice-covered, binational waterway. In the same spirit, the United States and Canada could combine their resources to help police thousands of miles of Arctic coastline. Washington and Ottawa now work collaboratively on other sea and land borders and together built the impressive North American Aerospace Defense Command, or NORAD, system. They are perfectly capable of doing the same on the Arctic frontier, and it is in both countries' national interests to do so.

There is no reason that economic development and environmental stewardship cannot go hand in hand. To this end, Canada could take the lead in establishing an analogous public-private Arctic seaway management corporation with a mandate to provide for the safe and secure transit of vessels in North American Arctic waters while protecting the area's sensitive environment. Shipping tolls levied by this bilateral management regime could pay for desperately needed charts (much of the existing survey information about the Northwest Passage dates to nineteenth-century British exploration), as well as for search-and-rescue capabilities, traffic-management operations, vessel tracking, and similar services that would guard life and property. Such a jointly managed Arctic seaway system could establish facilities for the disposal of solid and liquid waste, identify harbors of refuge for ships in danger, and enforce a more rigorous code for ship design in order to ensure that vessels traveling through the Northwest Passage have thicker hulls, more powerful engines, and special navigation equipment. The captains and crews of these vessels could also be required to have additional training and, if the conditions warrant, to take aboard an agency-approved "ice pilot" to help them navigate safely.

This bilateral arrangement could eventually be expanded to include other Arctic countries, especially Russia. The United States and Russia, as an extension of the proposed Arctic seaway management corporation, could develop traffic-separation schemes through the Bering Strait and further invest in the responsible development of safe shipping along the Northern Sea Route. Eventually, a pan-Arctic corporation could coordinate the safe, secure, and efficient movement of vessels across the Arctic. Japan, which is vitally dependent on the Strait of Malacca for the overwhelming majority of its energy supplies, would be a natural investor in such a project since it has an interest in limiting the risk of a disruption in its oil supply.

IT'S EASY BEING GREEN

In 1847, a British expedition seeking the fabled Northwest Passage ended in death and ignominy because Sir John Franklin and his crew, seeing themselves as products of the pinnacle of Victorian civilization, were too proud to ask the Inuit for help. At the height of its empire, the United States sometimes sees itself as invincible,

too. But the time has come for Washington to get over its isolationist instincts and ratify UNCLOS, cooperate with Canada on managing the Northwest Passage, and propose an imaginative new multilateral Arctic treaty.

Washington must awaken to the broader economic and security implications of climate change. The melting Arctic is the proverbial canary in the coal mine of planetary health and a harbinger of how the warming planet will profoundly affect U.S. national security. Being green is no longer a slogan just for Greenpeace supporters and campus activists; foreign policy hawks must also view the environment as part of the national security calculus. Self-preservation in the face of massive climatic change requires an enlightened, humble, and strategic response. Both liberals and conservatives in the United States must move beyond the tired debate over causation and get on with the important work of mitigation and adaptation by managing the consequences of the great melt.

Copyright 2002--2008 by the Council on Foreign Relations. All rights reserved.