

# Future of the Arctic

*Can the region's resources be safely tapped?*

**G**lobal interest in the Arctic is rising as climate change causes Arctic sea ice to melt at record rates. The receding ice offers access to the region's abundant oil, gas and mineral deposits and could provide shorter shipping routes between the Atlantic and Pacific oceans. Many nations also want to fish the region's increasingly ice-free waters. However, many observers say uncontrolled Arctic development could damage fragile ecosystems and communities already under serious pressure. Others say the United States is not paying enough attention to the Arctic and has not set detailed priorities for the region. The Obama administration supports energy production in Arctic Alaska, including offshore oil and gas drilling, but Shell Oil suffered widely publicized setbacks last year with its operations in Alaskan waters. Now critics want to bar such projects, but the energy industry and Alaska officials say Arctic oil and gas reserves can be tapped responsibly.



*Rapidly melting Arctic ice is providing new opportunities for shipping, fishing and access to the region's rich mineral resources. But uncoordinated development could have serious impacts on the environment and native communities, many observers warn. Above, an iceberg rises out of the water off Qaqortoq, Greenland.*

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# Future of the Arctic

BY JENNIFER WEEKS

## THE ISSUES

When scientists from the National Oceanic and Atmospheric Administration (NOAA) released last year's annual report card on the environmental state of the Arctic, it showed drastic changes occurring. New records had been set for low snow cover, smaller sea ice coverage, more extensive melting, for a longer duration, of Greenland's ice sheets, and higher temperatures in permafrost (perennially frozen subsoil).<sup>1</sup>

For more than a decade scientific studies have shown that global climate change is altering the Arctic more rapidly than the Earth as a whole.<sup>2</sup> (See sidebar, p. 800.) And those changes have far-reaching effects.

Some studies have found that Arctic warming is changing the polar jet stream, a strong wind current that blows from west to east across the Northern Hemisphere. The jet stream is becoming "wavier," studies show, bending into steep curves that trap weather fronts in place and cause extreme hot, cold

and wet weather episodes in the United States and Europe. And melting Arctic ice increasingly contributes to rising sea levels, scientists say.

"Both of these trends are very clearly linked to Arctic warming," says James McCarthy, a professor of biological oceanography at Harvard University and member of the U.S. Arctic Research Commission, an expert panel that advises Congress and the president on Arctic research policy and findings.

The region inside the Arctic Circle (a line circling the globe at 66 degrees,



Getty Images/Barcroft Media/Louise Murray

*Tourists photograph walrus near Hall Beach, an Inuit community in Nunavut, in Canada's Arctic. Global warming has significantly reduced the amount of sea ice in the Arctic, raising concerns about the large animals that rely on it to forage, rest and reproduce, including polar bears, walrus and seals. Longer ice-free seasons can push these animals into new habitats, reducing their numbers.*

33 minutes North latitude) covers about 5.5 million square miles, including the Arctic Ocean and parts of Canada, the United States, Russia, Norway, Greenland (controlled by Denmark), Iceland, Sweden and Finland.<sup>3</sup> Sea ice covers much of the Arctic Ocean, but warming has reduced it sharply during the summer months. In 1980, sea ice covered approximately 2.8 million square miles at its yearly minimum point, which occurs in September. By 2012 the September ice cover had decreased by half, to 1.4 million square miles.<sup>4</sup> Scientists

predict that within several decades the Arctic Ocean could be nearly ice-free during the summer months.<sup>5</sup>

Shrinking sea ice has spurred widespread global interest in the Arctic. The changes could open new, shorter global shipping routes.<sup>6</sup> According to the U.S. Geological Survey, the Arctic holds large undiscovered, recoverable oil and gas reserves, much of it offshore.<sup>7</sup> The Arctic also holds mineral riches, such as the world's largest deposit of zinc at the Red Dog Mine in north-west Alaska. Arctic fisheries, which have yet to be surveyed in detail, could provide important, new food sources.

As the Arctic becomes more accessible and as scientists learn more about the impact of Arctic warming, this remote region is attracting new worldwide attention. Nations thousands of miles to the south are seeking access to the Arctic Council, an international forum that promotes cooperation and coordination among the eight countries bordering the Arctic region. And those nations are paying greater attention to developing and protecting the Arctic.<sup>8</sup>

"[T]he consequences of our nations' decisions don't stop at the 66th parallel," said Secretary of State John Kerry. Environmental challenges in the Arctic — including ocean acidification, pollution, melting sea ice, at-risk species and uncontrolled development — also affect Arctic nations' economies, security and international stability, Kerry said.<sup>9</sup>

Despite Kerry's words, many political experts say the U.S. government is not devoting enough resources to Arctic issues. For instance, the United

## Melting Ice Will Create New Shipping Routes

*The Arctic is warming at twice the rate as the rest of the world, increasing the seasonal melting of sea ice covering the Arctic Ocean. By midcentury, new, shorter commercial shipping routes could open across the Arctic Ocean during summer months, greatly reducing shipping costs between Europe and Asia.*

### Potential Ice-free Shipping Lanes Across the Arctic



Sources: Laurence C. Smith and Scott R. Stephenson, "New Trans-Arctic shipping routes navigable by mid-century," *Proceedings of the National Academy of Sciences*, March 26, 2013, vol. 110 no. 13, [www.pnas.org/content/110/13/E1191.full.pdf+html](http://www.pnas.org/content/110/13/E1191.full.pdf+html); and "Towns and Industrial Activities in the Arctic," GRID-Arendal, [www.grida.no/graphicslib/detail/towns-and-industrial-activities-in-the-arctic\\_cfe8](http://www.grida.no/graphicslib/detail/towns-and-industrial-activities-in-the-arctic_cfe8).

States is the only Arctic nation that does not have an ambassador-level senior official managing regional policies. Instead, Arctic issues are directed by several lower-level working groups. Many experts interpret this as a sign that U.S. leaders do not regard developments in the Arctic as critical to the national interest.

However, the Obama administration recently has begun to show more interest in the region. In May the White House released a National Strategy for the Arctic Region that identified three main priorities:

- **National security:** Ensure that U.S. vessels and aircraft can operate throughout the region, develop new

infrastructure and capabilities, and support lawful commerce.

- **Conservation and stewardship:**

Protect the Arctic environment, conserve its resources, and increase understanding of the Arctic through scientific research.

- **International cooperation:**

Use bilateral partnerships and international organizations to protect the Arctic environment, promote shared prosperity, and enhance regional security.

The strategy document said the United States envisions "an Arctic region that is stable and free of conflict, where nations act responsibly . . . and where economic and energy resources are developed in a sustainable manner that also reflects the fragile environment and the interests and cultures of indigenous peoples."<sup>10</sup>

Some experts say the policy lacks detail. "It was a missed opportunity," says Heather Conley, director of the Europe program at the Center for Strategic and International Studies (CSIS), a Washington think tank. "This strategy reaffirms basic U.S. interests, but it doesn't advance policy. How much or how little will the United States develop its own Arctic?"

But Alaska politicians welcomed a statement of U.S. regional priorities. "Finally! It's about time that the administration acknowledged the importance of a strong presence in the Arctic," said a statement issued by U.S. Rep. Don Young, a Republican.<sup>11</sup>

U.S. Arctic policy is heavily affected by relations between Alaska and the federal government, which controls approximately two-thirds of the state's land area and a large share of its resources, set aside under the Alaska National Interest Lands and Conservation Act of 1980.<sup>12</sup> Alaska politicians often argue they know how to develop their state responsibly but are hampered by federal limits, such as a longstanding ban on oil drilling in the Arctic National Wildlife Refuge.

"Back home it feels like we're rowing as hard as we can, and here in

Washington people are throwing out sea anchors,” said Republican Lt. Gov. Mead Treadwell in July, describing Alaskans’ frustration with federal regulations that restrict natural resource development.<sup>13</sup>

Building new infrastructure to harvest Alaska’s Arctic resources will be extremely expensive and probably will involve complex negotiations over funding between federal, state and private entities. Constructing a pipeline to ship Alaskan gas to market, for instance, could cost up to \$65 billion at a time when new gas sources in the lower 48 states have drastically cut the price of natural gas.<sup>14</sup> Roads, ports and new icebreaking ships will also cost hundreds of millions or even billions of dollars.<sup>15</sup>

Others say rules for managing the Arctic should come first. “Melting sea ice is opening up shipping routes, and we don’t have international law in place to handle that increased traffic,” says Kevin Harun, Arctic program director at Pacific Environment, a conservation advocacy group based in San Francisco, Calif.

The International Maritime Organization, a United Nations organization that regulates global shipping, is developing a mandatory Polar Code that would regulate ships operating in the Arctic and Antarctic. It would set standards, such as minimum engine power and required survival gear, to operate in extreme zones. It also would regulate environmental practices, such as waste disposal at sea.

“We need a Polar Code in place with strong environmental provisions to manage growth in shipping,” says Harun. “And we need a vision for the Arctic that protects communities, indigenous people and the environment. I don’t think the United States sees itself as an Arctic nation yet. The general public doesn’t know what is at stake.”

In a high-profile test case last year, the Interior Department allowed Royal

## Melting Arctic Sea Ice

*The Arctic’s sea ice has been shrinking for several decades as a result of climate change. In 2012, the minimum cover of sea ice, which occurs in September, was about half the average recorded over the past 30 years for that month. Some scientists predict that within several decades the Arctic could be ice-free in summer.*

### Minimum Arctic Sea Ice



Sources: Martin Jeffries, et al., “The Arctic Report Card,” [www.star.nesdis.noaa.gov/star/documents/meetings/Ice2013/dayOne/Jeffries.pdf](http://www.star.nesdis.noaa.gov/star/documents/meetings/Ice2013/dayOne/Jeffries.pdf); and “Arctic Sea Ice News and Analysis,” National Snow and Ice Data Center, 2013, <http://nsidc.org/arcticseaicenews/>.

Dutch Shell to conduct exploratory drilling for oil and gas off Alaska’s Arctic coast. Shell had numerous operating problems, including weather delays and a drilling rig that ran aground in southern Alaska as it was being towed to Seattle for maintenance.

An Interior Department review found that Shell’s program lacked key components when it began operations, and the company had not managed contractors effectively. The department directed Shell to develop more detailed plans for drilling operations before it returned to the Arctic, and in February Shell suspended Arctic operations for 2013.<sup>16</sup> Shell leaders have not said whether they plan to return to the Arctic in 2014. Earlier this month the U.S. Environmental Protection Agency fined the company \$1.1 million for air pollution releases during its 2012 operations.<sup>17</sup>

Norwegian energy company Statoil and American company ConocoPhillips also have postponed plans to drill in the Alaskan Arctic until they see what kind of documentation federal regulators require Shell to produce.<sup>18</sup>

In the wake of Shell’s difficulties, environmentalists are calling on the Obama administration to suspend all Arctic Ocean oil and gas activities “for the foreseeable future,” and to “carefully reassess whether and how offshore drilling in the Arctic Ocean is possible or prudent.”<sup>19</sup> Some indigenous Arctic groups want to ban offshore drilling on the Arctic shelf completely.<sup>20</sup> But exploration is moving forward in Russian, Canadian and Norwegian Arctic waters, and the Obama administration supports Arctic offshore energy production. Industry leaders and Alaska politicians say Arctic oil and gas can be developed safely. (See “At Issue,” p. 805.)

As state and federal officials, scientists and advocacy groups debate U.S. priorities in a changing Arctic, here are some issues they are considering:

### ***Should the U.S. Senate ratify the U.N. Convention on the Law of the Sea?***

As Arctic sea ice shrinks, adjoining nations are making plans to develop the region's large, untapped oil and gas resources. More than 400 oil and gas fields already have been developed on land north of the Arctic Circle in Russia, Canada and Alaska that are estimated to contain about 240 billion barrels of oil and natural gas. The U.S. Geological Survey estimates that the Arctic contains an additional 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas and 44 billion barrels of natural gas liquids, but about 84 percent of it lies offshore where development is more risky and expensive than on land.<sup>21</sup>

But before energy companies even confront harsh Arctic Ocean operating conditions, they could face a political obstacle. The United States is the only major industrialized nation that has not ratified the United Nations Convention on the Law of the Sea (UNCLOS). The 1982 treaty governs use of the world's oceans, including activities such as mining and drilling for oil and gas beyond a nation's 200-mile Exclusive Economic Zone. \* Currently 166 nations have ratified the treaty.<sup>22</sup>

As a party to UNCLOS, the United States could claim resources that lie on its extended continental shelf — submerged areas of coast that stretch out beyond its 200-mile EEZ. Most continental shelves that exist today stretch out about 50 miles from shore, then drop sharply to the ocean floor. But in some areas, including the Arctic, the continental shelf extends for hundreds of miles. Most of the world's fisheries are concentrated on continental shelves, and offshore drilling takes place in these zones, where water

depths are typically no more than one to two miles.<sup>23</sup> UNCLOS member nations can submit claims to a commission of experts, which makes binding decisions on the outer limits of nations' extended continental shelves.

"The United States' biggest economic interest in UNCLOS is the legal guarantee to enormous oil, gas and mineral resources in the Arctic on the extended continental shelf. Those resources were not previously accessible but may be now because of melting Arctic ice," says Washington lawyer John B. Bellinger III, who served as legal advisor to the State Department from 2005-2009 under President George W. Bush.

UNCLOS was opened for ratification in 1982, but many industrialized nations objected to provisions that restricted deep seabed mining — drilling for valuable metals such as cobalt and zinc that lie beneath the ocean floor in international waters, beyond any nation's Exclusive Economic Zone. After the treaty was amended in 1994 to address these criticisms, nations including Japan, Germany, Italy, the United Kingdom, China and Russia became members.

But conservative lawmakers in the United States still argued against joining the UNCLOS treaty. Some said the United States could rely on customary international law to protect its economic and navigation rights. Others opposed a requirement to pay royalties on profits from resources developed on the extended continental shelf to the International Seabed Authority. This agency, established under UNCLOS, regulates deep seabed mining and has authority to share royalties with UNCLOS member countries.

The Senate Foreign Relations Committee voted in favor of ratifying UNCLOS in 2004 and in 2007 and the Bush administration urged its adoption, but the measure has never been considered by the full Senate. In 2012 then-Sen. John Kerry, who was committee chairman but is now secretary

of State, held hearings on UNCLOS in which the Defense and State departments, armed forces and business and industry leaders strongly supported ratification.<sup>24</sup>

"As advances in technology push us farther from our shores and into areas of harsher climates, the potential for conflicts with other nations' territorial claims inevitably increases," American Petroleum Institute President Jack Gerard told the committee. "As such, there is a more pressing need for certainty and stability in the delineation of boundaries. Accession to the convention would fulfill this need."<sup>25</sup>

But treaty opponents, such as Steven Groves, a fellow at the conservative Heritage Foundation think tank, argued that UNCLOS was still "a controversial and fatally flawed treaty." Ratification "would result in a dangerous loss of American sovereignty. It would require the U.S. Treasury to transfer billions of dollars to an unaccountable international organization [the International Seabed Authority]," Groves said. After 34 Republican senators said they opposed UNCLOS, Senate leaders did not bring the treaty up before the full Senate, and opponents pronounced the treaty dead.<sup>26</sup>

But UNCLOS advocates have not given up. The treaty has strong bipartisan support in Alaska, where former Republican Gov. Sarah Palin is on the record in support. "[R]atification has been thwarted by a small group of senators who are concerned about the perceived loss of U.S. sovereignty," then-Gov. Palin wrote in 2007. "I believe that quite the contrary is the case. If the U.S. does not ratify the convention, we will be denied access to the forum established by the international community to adjudicate claims to submerged lands in the Arctic."<sup>27</sup> Alaska's current senators, Democrat Mark Begich and Republican Lisa Murkowski, also support ratifying UNCLOS.

"The national security and economic arguments overwhelmingly favor

\* The EEZ is the area extending out 200 miles from a nation's coastline. Under UNCLOS, coastal nations have exclusive control over resources and research activities in their EEZs.

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ratification, and we need to divorce the treaty from politics as best as we can," says Bellinger. "Businesses also got engaged [in the debate] in 2012, and if we can keep that effort up over the next two years, I think it can be done."

### ***Does oil production benefit Alaska Natives?***

Alaska's estimated 120,000 Natives make up 17 percent of the state's population, and their numbers are growing. Most Alaska Natives live in rural villages, either on the coast or along a river.<sup>28</sup> Many rely on subsistence hunting and fishing for at least part of their livelihood.

Before Alaska became a state in 1959 and began producing oil in the 1960s, Alaska Natives' income, employment and education levels were among the lowest in the United States. Although their status has improved, they still lag behind non-native Alaskans and other Americans. In 2007, 22 percent of Alaska Natives lived below the federal poverty line, and their median household income was \$42,703, compared to \$64,333 for all Alaskans. Thirteen percent of Alaska Native households lacked plumbing.<sup>29</sup>

Alaska Natives represent eight broad cultures. Each is composed of many separate languages and histories.<sup>30</sup> They hold diverse views about oil production. Some belong to Native corporations (*see p. 798*) that have invested in the industry or in companies that provide related services.<sup>31</sup> (In fact, every Alaskan, including Natives and non-Natives, receives an annual dividend check based on the state's oil revenues. Over the past decade, the yearly dividend has averaged roughly \$1,200 per person.) Other Natives say oil production threatens valuable resources, such as the animals they hunt.

More than 40 indigenous groups from Arctic nations released a joint statement last May criticizing Arctic oil development. "Our culture and history cannot be bought off and replaced

with pipelines and drill rigs," it declared. "The irresponsible practices of oil companies everywhere have provided us with more than enough evidence that oil spills in the Arctic seas will be inevitable. At the same time there are no effective and tested methods to prevent or clean up oil spills in the freezing Arctic seas."

The statement called for banning offshore drilling in the Arctic, suspending onshore drilling and requiring native peoples' consent for any extractive projects on indigenous lands. Signatories included the Alaska Inter-Tribal Council, which advocates for tribal governments across Alaska, and the Akutan Tribal Council, based in the Aleutian Islands.<sup>32</sup>

But some Alaska Natives profit from the oil industry beyond the yearly dividend. The North Slope Borough, which includes eight Inupiat Eskimo villages, collects millions of dollars annually in property taxes from the area's land-based oil industry. The Arctic Slope Regional Corp., which represents indigenous populations in the area, reported \$2.3 billion in gross revenues in 2010 and paid \$64.26 per share in dividends to shareholders. (For comparison, only three of the 11 other regional Native corporations paid dividends greater than \$20 per share, and five paid less than \$5 per share.<sup>33</sup>) Native corporations were established under the 1971 Alaska Native Claims Settlement Act to manage resources for Alaska's indigenous peoples. (*See Background, p. 798.*)

"Our tax base is based on oil and gas. There's nothing else there," said Edward Itta, a former mayor of the vast North Slope Borough, lobbying in Washington, D.C., in 2012 for offshore Arctic oil and gas development. Thanks to oil and gas revenues, he said, "We have schools, airports, roads, landfills, health facilities, hospitals, decent homes which keep warm now and have light and power, which when I grew up we didn't have."<sup>34</sup>

Energy and power are central issues in rural Alaska, where a village household can spend up to \$2,000 per month on oil in the winter for heat, electricity and transportation.<sup>35</sup>

"Alaska is a huge state, and most of the rivers drain to the western coast," says Gwen Holdmann, director of the Alaska Center for Energy and Power in Fairbanks. "Barging fuel from Valdez [where North Slope oil is shipped via the Trans-Alaska Pipeline for processing] up to western Alaska would be a very long and complex route." Instead, much of the oil used in-state is shipped from Seattle to regional distribution centers in summer, then delivered to smaller and more remote communities.<sup>36</sup>

Many advocates for Alaska's Native peoples say the shipping arrangement is unsustainable. "If left unaddressed, skyrocketing energy costs threaten the very survival of Alaska's small, remote Native communities," the Alaska Federation of Natives warned last year.<sup>37</sup> The organization argues that developing affordable energy is "critical to the survival" of Alaskan villages, and has called on the federal government to boost energy assistance for low-income households, promote renewable energy on rural public lands in Alaska and connect more rural villages to the power grid.<sup>38</sup>

Many rural Alaska communities are investing in renewable energy projects. "Fairbanks has the largest battery system in the United States, and several Alaska communities run entirely on wind energy," says Holdmann. Alaska already generates more than 20 percent of its electricity from renewable sources (almost entirely hydropower).<sup>39</sup> It also has good geothermal, wind, biomass and solar resources.

"Alaska's cheap oil and gas resources have already been developed, and are limited," says Holdmann. "We need to take advantage of the wealth we've earned and develop infrastructure that will make a long-term difference for residents."

## Arctic Holds Large Oil and Natural Gas Reserves

*About a fifth of the world's potential oil and natural gas reserves lies north of the Arctic Circle. The U.S. Geological Survey estimates that 90 billion barrels of oil could be recovered from the region, enough to supply U.S. needs for about 12 years. About 65 percent of the oil is on the North American side of the Arctic. The Eurasian flank contains nearly three times as much natural gas as North America.*

### Estimated Undiscovered Oil and Natural Gas in Arctic, 2008

Region	Crude Oil (billion barrels)	Natural Gas (trillion cubic feet)	Natural Gas Liquids (billion barrels)	Total Resources Oil Equivalent (billion barrels)
Eurasia	30.70	1,219.39	27.55	261.49
North America	58.09	435.40	16.20	146.85
Indeterminate*	1.20	13.87	.31	3.82
<b>Total</b>	<b>89.99</b>	<b>1,668.66</b>	<b>44.06</b>	<b>412.16</b>

\* Resources could not be attributed conclusively to either continent.

Sources: "Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle," U.S. Geological Survey, 2008, <http://pubs.usgs.gov/fs/2008/3049/>; and "Arctic Oil and Natural Gas Potential," U.S. Energy Information Administration, Oct. 19, 2009, [www.eia.gov/oiaf/analysispaper/arctic/](http://www.eia.gov/oiaf/analysispaper/arctic/).

### Should the United States build an Arctic deepwater port?

One of the main obstacles to increasing shipping, energy production or other activities in the Arctic is a lack of infrastructure. Alaska's Arctic coast has no deepwater ports designed to serve large, heavily loaded ships requiring water depths of at least 30 feet.

A deepwater port could support many different activities. For example, the U.S. Coast Guard patrols Alaskan Arctic waters during the summer but does not maintain a forward base there. During the summer of 2012, the Coast Guard supervised a record number of commercial shipping and tourism vessels as well as Shell's drilling operations in the Beaufort and Chukchi seas. Yet its largest ships had to refuel at Dutch Harbor in the Aleutian Islands, more than 1,000 miles from the North Slope.<sup>40</sup>

A deepwater port could also support international rescue operations in the region. The United States has committed

to support search and rescue operations in the Arctic, working with other Arctic nations under a binding legal agreement signed in 2011. These missions may occur on land or sea.<sup>41</sup>

Alaska officials strongly support construction of an Arctic deepwater port. Sens. Begich and Murkowski added an amendment to the Water Resources Development Act of 2013 (passed by the Senate on May 15) that sets aside \$100 million over 10 years to allow the U.S. Army Corps of Engineers to plan, design and construct harbors in Alaska, Hawaii and Puerto Rico.

"Whether we like it or not, the shrinking Arctic sea ice is opening up a new frontier of maritime commerce and development," said Begich. "We need to prepare for this increased activity, and a deepwater port will be vital for safety, commerce and protection of the region."<sup>42</sup>

Last March Begich urged the Alaska legislature to pledge \$2 billion in state funds for development of a deep-

water port, which he said would be matched by \$3 billion in federal loan guarantees. The response was muted. "It's a great program, a great idea, but we don't have \$2 billion sitting around. So that's going to be a stretch," said Republican state Sen. Kevin Meyer, co-chair of the Alaska Senate's Finance Committee.<sup>43</sup>

The Corps of Engineers and Alaska's Department of Transportation are conducting a three-year study, through 2014, of potential locations for a deepwater Arctic port.<sup>44</sup> The two top choices emerging are Nome, on the Seward Peninsula, and Port Clarence, the site of a small Coast Guard station 70 miles northwest of Nome. Phase one of the study suggests that building a deepwater port could be funded through a public-private partnership, but a source for those funds has not been determined.

An Arctic deepwater port is likely to be extremely expensive. "I can't really imagine anything that would not cost hundreds of millions of dollars," says Orson Smith, a professor of civil engineering at the University of Alaska. "Any Arctic port will have ice for some part of the year, and it's very demanding to operate machinery in winter there."

Moreover, says Smith, the continental shelf slopes off very gradually underwater from Alaska's Arctic coast, so extensive engineering would be required to bring deep-draft ships close to land. "You would have to either dredge a long channel across shallow land or build a long trestle out to deep water, or some combination of those two approaches," he says.

In Smith's view, a deepwater port may be needed, but the first phase of the study does not make that case. "You need to define the port's operational details. What kinds of ships will call there and how often? What type of cargo would need to be moved ashore? What do the Coast Guard and Navy need for search and rescue? None of this was outlined in the report," he says.



Harun of Pacific Environment has urged state and federal agencies to examine local needs more closely. "There are a lot of infrastructure needs in the region, from oil spill response to collection facilities that will reduce incentives to dump waste in the ocean," he says. "This study zeroed in on criteria that matter for energy and mining, but we should be working with Arctic communities to determine what they want."

Indigenous communities, many of whom hunt and fish along the coast, are alarmed by increasing ship traffic and concerned about potential impacts, such as fuel spills, ballast water and waste discharges and ship collisions with whales. At a hearing chaired by Sen. Begich last March, several representatives of indigenous groups called for broad strategies, such as training coastal residents to participate in emergency response operations and providing receivers and computers to enable coastal residents to track ship traffic.<sup>45</sup>

"There is no single port location or, for that matter, response plan that is going to fulfill the many needs facing industry, government and residents in the Arctic," said Matt Ganley, vice president of the Bering Straits Native Corporation.<sup>46</sup> ■

## BACKGROUND

### Looking North

Humans have been exploring the Arctic for millennia. The earliest known human settlements above the Arctic Circle, dating back nearly 40,000 years, have been found in what is now Russia.<sup>47</sup>

During the most recent ice age, from about 28,000 B.C. to 18,000 B.C., glaciers covered much of northern Europe and part of Siberia, pushing humans south. After the glaciers retreated, no-

mads moved north again. Some crossed the Bering land bridge from Asia to the North American Arctic between 14,000 and 12,000 B.C.<sup>48</sup> Later, as northern latitudes warmed further, subsistence societies developed in the Arctic regions.

European explorers began venturing north during the Middle Ages, establishing colonies in Iceland, Greenland and northern Russia. By 1500, ships from England, France, Spain, Portugal and the Netherlands were sailing across the Atlantic and mapping new trade routes. Some explored the Arctic coast of North America in search of a Northwest Passage connecting the Atlantic and Pacific oceans. France and England established colonies in Canada, while Russia claimed Siberia and Alaska.

The United States was a latecomer to the Arctic. In 1867 it bought Alaska from Russia for \$7.2 million. The new territory covered 375 million acres, twice as large as the original 13 colonies and about three-quarters the size of the Louisiana Purchase. Alaska at that time had only about 35,000 residents, nearly all of them members of indigenous groups.<sup>49</sup>

Critics argued that Alaska was a frozen wasteland and called the purchase "Seward's Folly," after Secretary of State William H. Seward, who negotiated the deal. Seward and other expansionists who argued that the region contained valuable resources would eventually be vindicated in 1896, when the discovery of gold in Canada's adjacent Yukon Territory triggered the Klondike Gold Rush. In 1899 prospectors found gold in Nome, on Alaska's Seward Peninsula, and a year later they discovered the enormous Kennecott copper mines in southeastern Alaska.

Beginning in the 1860s, explorers from many nations ventured into the Arctic, seeking routes to the North Pole through Greenland and the islands of northern Canada. News accounts portrayed Arctic explorers as rugged heroes, but the truth sometimes was very different.

For example, American explorers Robert Peary and Matthew Henson both fathered children with Inuit women.<sup>50</sup> Peary had the bodies of several Greenland natives who had died in an epidemic removed from their graves and brought to the United States, where he sold them to the American Museum of Natural History as anthropological specimens.<sup>51</sup> He also traded a gun for several large pieces of a meteorite that Inuit in Greenland considered holy. His wife sold the pieces to the Smithsonian for \$40,000.<sup>52</sup>

Nonetheless, explorers also made important contributions, mapping many Arctic zones and reporting back on conditions there. In 1905 Norwegian explorer Roald Amundsen completed the first successful navigation of the Northwest Passage. Between 1905 and 1909 Peary and his former friend and shipmate, American explorer Frederick Cook, competed to be the first explorer to find the North Pole — a difficult mission because the pole was located on drifting sea ice, not on a fixed point of land. In 1909 Peary claimed to have reached the North Pole and through a concerted public relations campaign supplanted Cook's claim, announced a week earlier than Peary's, to have reached it in 1908. (A reassessment of Peary's claim in 1988 cast doubt on his achievements, and Cook's claim remains unproven.)<sup>53</sup>

### Alaska's Resources

By 1900 it was clear that Alaska possessed many valuable resources, including fish, timber, minerals, coal and oil. Because Alaska was a territory, not a state, Congress and the federal government regulated its land use and other activities. But many Alaskans resented being governed from Washington and demanded more local control — a pattern that would become engrained in Alaskan politics.<sup>54</sup>

From 1900 through the 1930s growth in the Alaska territory centered around

logging, mining and fishing. Explorers found oil and drilled wells at Katalla on the state's southern coast starting in 1902.<sup>55</sup> But the industry did not develop on a large scale because the cost of transporting Alaskan oil to the lower 48 states made it too expensive compared to cheaper oil from Texas and Oklahoma. Nonetheless, when the U.S. Geological Survey found oil along Alaska's north coast, President Warren G. Harding set aside 23 million acres to establish Naval Petroleum Reserve No. 4 (the U.S. Navy was converting

them in 1943. To protect Alaska, the War Department built military bases, airfields and naval stations across the territory. The military buildup swelled Alaska's population from about 72,000 in 1940 to more than 128,000 by 1950.<sup>57</sup>

With the Cold War, Alaska took on new strategic importance as a front line of defense against possible nuclear attacks from Soviet long-range bombers and missiles coming over the North Pole (the most direct route to the U.S. mainland). The Defense Department built air defense systems and early-

could do about it," said Al Charette, the *Nautilus'* sonar supervisor.<sup>58</sup> The Soviet Union developed nuclear submarines a few years later.

## Statehood and Oil Wealth

In the 1950s, Alaska's population continued to grow, but infrastructure development lagged behind, and the federal government still controlled virtually all Alaskan land.<sup>59</sup> Local politicians stepped up their lobbying for statehood. In 1958 Congress voted to admit Alaska as the 49th state, and President Dwight D. Eisenhower signed the legislation in January 1959.

With statehood, Alaska acquired about 104 million acres of federal land and control over submerged lands up to three miles offshore. It also gained authority to manage the fish and wildlife on its own lands.<sup>60</sup>

Alaska Native groups, fearing they might lose resources they had traditionally depended on, filed claims to secure their property rights. By the late 1960s so many claims were pending that the Interior Department suspended land transfers until the backlog could be resolved. Further impetus to address land claims came in 1968 when geologists discovered the huge Prudhoe Bay oil field on state land on Alaska's North Slope. Moving oil from the North Slope to markets would require a pipeline to ports in southern Alaska, and the state needed rights-of-way across federal lands to build the pipeline.

In 1971 Congress enacted the Alaska Native Claims Settlement Act (ANCSA), which awarded Alaska Natives the right to select 44 million acres of land, plus a cash settlement of nearly \$962 million for lands they gave up. The law created 13 regional corporations to own and manage Native assets. Individual Natives were enrolled as shareholders in the corporations and required to hold their stock for 20 years.<sup>61</sup>

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KullukResponse/Judy Patrick

*Shell Oil's drilling rig, the Kulluk, ran aground off Sitkalidak Island, in the Gulf of Alaska, while it was being towed to Seattle for maintenance in late December 2012. No oil spilled, according to the Coast Guard. The rig was shipped to Singapore for repairs in March. Vast quantities of undiscovered oil and natural gas are thought to lie in the Arctic, much of it offshore. In the wake of Shell's difficulties, environmentalists urged the Obama administration to "carefully reassess whether and how offshore drilling in the Arctic Ocean is possible or prudent."*

its ships from coal to oil). In 1976, the area would be renamed the National Petroleum Reserve.<sup>56</sup>

During World War II, Japanese forces in the Pacific posed a threat to Alaska. In 1942 the Japanese bombed Dutch Harbor, a naval facility in Alaska's Aleutian Islands. Japanese troops occupied two other Aleutian islands, but U.S. and Canadian forces recaptured

warning radar sites across the territory and expanded naval bases to track Soviet submarines in the North Pacific.

In 1958 the *Nautilus*, the world's first nuclear-powered submarine, traveled under sea ice to the North Pole, demonstrating that U.S. military power could reach far into the Arctic. "[W]e could be right in [the Soviet Union's] backyard, and there was nothing they

# Chronology

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## 1860s-1960s

*Nations explore Arctic for resources.*

**1867**

Russia sells Alaska to the United States for \$7.2 million.

**1905**

Norwegian explorer Roald Amundsen navigates Northwest Passage.

**1909**

U.S. explorer Robert Peary claims to be first to reach the North Pole.

**1922**

Oil exploration begins on Alaska's North Slope.

**1925**

Canada is first nation to claim territory extending to North Pole.

**1945**

President Harry S. Truman claims jurisdiction over all resources on the U.S. continental shelf.

**1959**

Alaska becomes the 49th state.

**1968**

Major oil and gas deposits are discovered in Alaska's Prudhoe Bay.

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## 1970s-1980s

*Alaska's oil industry develops quickly.*

**1971**

Congress passes the Alaska Native Claims Settlement Act, transferring 44 million acres to 13 Native regional economic development corporations.

**1973**

U.N. conference convenes to write

a global treaty governing use of the oceans.

**1977**

Trans-Alaska pipeline starts pumping oil 800 miles from northern Alaska to the ice-free southern port of Valdez. . . . Inuit establish the Inuit Circumpolar Council to represent their interests. . . . Soviet nuclear-powered icebreaker *Arktika* is the first ship to reach the North Pole.

**1982**

U.N. adopts the Convention on the Law of the Sea (UNCLOS) and opens it for ratification. Eventually 166 nations, not including the United States, will ratify it.

**1984**

Snohvit gas field is discovered in Norway's Barents Sea.

**1989**

The *Exxon Valdez* oil tanker runs aground in Alaska's Prince William Sound, spilling 11 million gallons of oil and contaminating over 1,000 miles of shoreline.

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## 1990s-Present

*Arctic nations seek a balance between cooperation and competition.*

**1994**

UNCLOS enters into force.

**1999**

Canada establishes Nunavut Territory in the north, comprising a fifth of the country, to restore partial sovereignty to Canadian Inuit.

**2001**

Russia becomes first Arctic nation to claim sovereignty over the North Pole, using a process set up under UNCLOS.

**2007**

The Northwest Passage is ice-free for first time on record. . . . Russia plants its flag on the North Pole seabed, galvanizing other Arctic nations into asserting their own sovereignty. . . . U.S. Senate Foreign Relations Committee approves UNCLOS, bringing it closer to ratification.

**2008**

U.S. authorizes oil and gas exploration in Chukchi Sea. . . . Polar bear is listed as a threatened species due to the decline of its sea ice habitat. . . . Arctic nations agree to use UNCLOS to resolve Arctic territorial claims. . . . U.S. and Canada begin collaborating on mapping the Arctic seabed to pursue continental shelf claims.

**2009**

A federal fishery management council votes to close off fishing in Alaskan Arctic waters to allow research on local fish stocks and the effects of climate change on the area.

**2011**

Arctic Council member nations sign binding agreement to coordinate search and rescue operations.

**2012**

Royal Dutch Shell attempts exploratory drilling in the Beaufort and Chukchi seas but struggles in Arctic conditions. . . . Norwegian company Statoil postpones plans to drill offshore exploratory wells in the Alaskan Arctic.

**2013**

U.S. and Chinese scientists predict ice-free Arctic summers by mid-century. . . . Environmentalists call for suspending Arctic offshore drilling. . . . An Interior Department review bans Shell offshore Arctic drilling pending more detailed plans. . . . Obama administration publishes a U.S. Arctic strategy.

# Warming Arctic Has Repercussions Elsewhere

*Melting ice affects weather, ocean levels in other regions.*

**T**he Arctic may be harsh and challenging, but it is also extremely sensitive to climate change. Rapid warming in the vast region around the North Pole has greatly reduced the extent and thickness of Arctic sea ice over the past several decades, altering the region's ecology. But the changing climate in the Arctic also is having major impacts on weather and climate patterns far beyond the region.

Since the mid-1960s, average annual air temperatures over land in the Arctic have risen about 2 degrees Celsius (3.6 degrees Fahrenheit). Temperatures have increased twice as fast as those at lower latitudes — a phenomenon known as “Arctic amplification.”<sup>1</sup> Major reasons for the increase include:

- **Melting sea ice and snow cover on land.** Snow and ice reflect a large fraction of solar energy back into space. But bare land and open water are darker, so they absorb more sunlight. In a vicious cycle that scientists call a positive feedback loop, the warming Arctic temperatures melt more snow and ice, which in turn exposes more bare ground or ocean that retains more of the sun's heat, further increasing warming.

- **Black carbon (fine soot) emissions.** Produced from burning fossil fuels and biomass materials such as wood and crop wastes, these pollutants are carried northward by winds for thousands of miles. Often they collect in the Arctic, where they fall to the ground in rain and snow. The dark particles absorb, rather than deflect, solar energy, warming the surfaces below. In 2009 NASA scientists estimated that black carbon pollution accounted for up to half of recent Arctic warming.<sup>2</sup> Last year, a study estimated that cutting black carbon and other short-lived pollutants could reduce warming in the Arctic and the Himalayas by up to two-thirds over the next several decades.<sup>3</sup>

As sea ice melts and shrinks, food webs may be disrupted. Floating sea ice serves as the food base for Arctic ecosystems. Frozen seawater forms networks of ice crystals surrounded by small spaces filled with brine. Microscopic organisms (mainly algae) grow inside these brine channels. Tiny crustaceans and small plankton feed on the algae and in turn serve as food for larger organisms, such as fish and seals.

Many large animals forage, rest and reproduce on sea ice, including polar bears, walrus and seals, so longer ice-free

seasons can push these animals into new habitats, reducing their abundance.<sup>4</sup>

Sea ice also protects coastal villages from storms. “When the sea is covered with ice, storms don't create huge waves that pound the shore or winds that blow inland,” says Orson Smith, a professor of civil engineering at the University of Alaska. “Without sea ice, you get storm surges that push water up onto the coasts, as we see in other parts of the United States during hurricanes and other large coastal storms.”

Climate change is also melting permafrost (perennially frozen ground, usually starting a few centimeters below the surface) in many parts of Alaska. “When that happens, building foundations and roads sink,” says Smith.

Climate change in the Arctic has implications for weather elsewhere. Two 2012 studies found that Arctic warming was slowing the polar jet stream — powerful winds that blow at high speeds from west to east across North America at the point where cold polar air meets warmer air from lower latitudes. When the jet stream slows, it starts to move in wavelike north/south patterns. These waves carry warm air into the Arctic and push cold Arctic air further south. They also stall weather systems for extended periods of time, producing longer warm, cool and wet periods. These changes, researchers suggested, could be associated with extreme weather events at lower latitudes, such as extra snowy U.S. winters in 2009-10 and 2010-11.<sup>5</sup>

Arctic warming also accelerates glacier melting. According to the U.S. Geological Survey, from the 1950s through the 1990s Alaskan glaciers lost 13 cubic miles of ice yearly — and that rate doubled in the 2000s. Melting glaciers in Alaska and British Columbia, Canada, account for about 8 percent of ice melt worldwide, and melting glaciers account for just over half of the current rates of global sea-level rise.<sup>6</sup>

“Melting of Northern Hemisphere ice will be an increasingly important factor in sea-level rise,” says James McCarthy, a professor of biological oceanography at Harvard University and member of the U.S. Arctic Research Commission. “That will stress our coasts, especially during major storms like [Hurricanes] Sandy or Katrina. All Americans pay the price for disasters like that.”

Arctic warming also could intensify global change in other ways in the future. Scientists are studying whether organic

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Thousands of workers moved to Alaska in the 1970s and early '80s to work on the Trans-Alaska Pipeline and in the state's booming oil industry. Southern Alaska attracted most of the economic and population growth, but revenues from North Slope oil enriched the en-

tire state. In 1982 the Alaska Permanent Fund, a state-controlled sovereign wealth fund, began sending annual checks to residents to return some oil and gas revenues to Alaskans.<sup>62</sup>

As the state grew, Alaska Natives benefited socially and economically. Between 1970 and '80 the number of Alaska Na-

tives completing high school rose from 37 percent to 59 percent, and average family income rose by 39 percent. However, Native Alaskans were still poorer, less educated and less healthy than non-natives. A majority of Native Alaskans continued to live in rural areas, where living costs were higher and fewer so-

materials such as plants and peat stored in permafrost could release carbon dioxide — the main greenhouse gas that contributes to climate change — as the permafrost melts. But researchers question how much organic material lies under the permafrost and how much carbon would be released under different scenarios. In addition, enhanced plant growth — stimulated by warming temperatures and rising carbon dioxide levels in the atmosphere — could boost the amount of carbon removed from the air by plants, partly offsetting the permafrost releases.<sup>7</sup> A 2012 United Nations Environment Programme report called for a special international assessment of how thawing permafrost could affect climate change and noted that this issue is not currently programmed into global climate models.<sup>8</sup>

Also under study is the question of whether methane hydrates — frozen gas deposits located in cold zones under high pressure, which occur beneath Arctic permafrost, on the Arctic seabed, and under the seabed — could be released to the atmosphere as the seas warm. Methane is a powerful greenhouse gas with 25 times the warming effect of carbon dioxide (although it remains in the atmosphere for a much shorter time, so it has less overall impact on climate.) Some analyses, including a recent commentary in the prominent journal *Nature*, have warned that sudden, devastating large-scale release of methane could cause drastic warming within as little as 50 years.<sup>9</sup>

Other researchers, however, are skeptical of this scenario, widely referred to as a “methane bomb.” Such an impact is “so unlikely as to be completely pointless talking about,” said Gavin Schmidt, a NASA climate specialist.<sup>10</sup> Other critics noted that *Nature* had published an article in 2011 suggesting that a catastrophic methane release within the next several centuries was virtually impossible.<sup>11</sup>

— Jennifer Weeks

<sup>1</sup> Jessica Blunden and Derek S. Arndt, “State of the Climate in 2012,” *Bulletin of the American Meteorological Society*, vol. 94, no. 8 (2013), pp. S111-S112, <http://dx.doi.org/10.1175/2013BAMSStateoftheClimate.1>.

<sup>2</sup> “Aerosols May Drive a Significant Portion of Arctic Warming,” NASA, April 8, 2009, [www.nasa.gov/topics/earth/features/warming\\_aerosols.html](http://www.nasa.gov/topics/earth/features/warming_aerosols.html).

<sup>3</sup> Andrew Freedman, “Groundbreaking New Study Shows How to Reduce



AFP/Getty Images/Gabriel Bouys

*Melting sea ice indirectly caused the destruction of this house in Shishmaref, an Alaskan village on an island in the Chukchi Sea. Sea ice prevents storms from creating huge waves that pound the shore, causing beach erosion and other damage.*

Near-Term Global Warming,” Climate Central, Jan. 12, 2012, [www.climatecentral.org/news/groundbreaking-new-study-shows-how-to-reduce-near-term-global-warming](http://www.climatecentral.org/news/groundbreaking-new-study-shows-how-to-reduce-near-term-global-warming).

<sup>4</sup> Eric Post, et al., “Ecological Consequences of Sea-Ice Decline,” *Science*, vol. 341, Aug. 2, 2013, pp. 520-521.

<sup>5</sup> Jennifer A. Francis and Stephen J. Vavrus, “Evidence Linking Arctic Amplification to Extreme Weather,” *Geophysical Research Letters*, vol. 39, L06801 (2012); James E. Overland, et al., “The Recent Shift in Early Summer Arctic Atmospheric Circulation,” *Geophysical Research Letters*, vol. 39, L19804 (2012).

<sup>6</sup> Carl J. Markon, Sarah F. Trainor and F. Stuart Chapin, eds., “The United States National Climate Assessment — Alaska Technical Regional Report,” U.S. Geological Survey circular 1379 (2012), pp. 45-46, <http://pubs.usgs.gov/circ/1379/pdf/circ1379.pdf>.

<sup>7</sup> “Policy Implications of Warming Permafrost,” United Nations Environment Programme, 2012, p. 19, [www.unep.org/pdf/permafrost.pdf](http://www.unep.org/pdf/permafrost.pdf).

<sup>8</sup> *Ibid.*

<sup>9</sup> Gail Whiteman, Chris Hope and Peter Wadhams, “Climate Science: Vast Costs of Arctic Change,” *Nature*, vol. 499, July 25, 2013, [www.nature.com/nature/journal/v499/n7459/pdf/499401a.pdf](http://www.nature.com/nature/journal/v499/n7459/pdf/499401a.pdf).

<sup>10</sup> Chris Mooney, “How Much Should You Worry About An Arctic Methane Bomb?” *Grist*, Aug. 9, 2013, <http://grist.org/climate-energy/how-much-should-you-worry-about-an-arctic-methane-bomb/>.

<sup>11</sup> Andrew C. Revkin, “Arctic Methane Credibility Bomb,” *The New York Times*, July 25, 2013, <http://dotearth.blogs.nytimes.com/2013/07/25/arctic-methane-credibility-bomb/>.

cial services were available compared to urban Anchorage and Fairbanks.<sup>63</sup>

## Arctic Warming

With the end of the Cold War and the collapse of the Soviet

Union in 1991, U.S. concerns about a long-range nuclear attack over the North Pole eased. In 1994 President Bill Clinton signed Presidential Decision Directive 26, hailing new opportunities for “collaboration among all eight Arctic nations on environmental protection, environmentally sustainable de-

velopment, concerns of indigenous peoples and scientific research.”<sup>64</sup>

Though geographically remote, the Arctic was becoming acutely vulnerable to global environmental threats. Ocean currents and global wind patterns carried toxic environmental chemicals thousands

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## Arctic and Antarctic Are Poles Apart

*Both regions are cold and remote, but they differ in many ways.*

	Arctic	Antarctic
<b>Geography</b>	Vast ocean covered by constantly shifting ice sheets; surrounded by land that forms the northern regions of Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the United States.	Solid land mass with mountains rising to 16,000 feet, surrounded by ocean. Ice covers 98 percent of land to average depth of one mile or more.
<b>Plant life</b>	Shrubs, flowers grasses, mosses and lichens on tundra (northernmost zone); farther south large forests of spruce, larch, aspen, birch and pine.	Very few plants except for mosses, algae and lichens.
<b>Animal life</b>	Land mammals include grizzly and black bears, wolves, musk ox, wolverines, foxes, caribou and smaller species such as hares, voles and shrews. Seals and polar bears spend much of their lives on sea ice.	No year-round land animals except for micro-organisms; all birds and mammals spend much of their lives in the ocean, including penguins, seabirds and seals.
<b>Human settlement (historic)</b>	Earliest evidence of human settlement dates back 30,000 to 40,000 years (western Siberia). First North American settlement occurred about 15,000 years ago.	No indigenous population. The first explorer to cross the Antarctic Circle was Capt. James Cook, in 1773.
<b>Current human population</b>	Approximately 4 million people, of which about 10 percent (400,000) belong to more than 40 indigenous groups.	Between 500 and 1,000 visiting research scientists at more than 60 scientific bases, depending on season. No long-term residents.
<b>Largest cities and populations</b>	Murmansk (307,000), Norilsk (175,000), Vorkuta (70,000), Russia; Tromso, Norway (68,000); Barrow, Alaska (4,000), is the only city in the U.S. Arctic.	None
<b>Treaties and organizations</b>	No broad regional treaty, but international law provides guidelines on issues such as navigation rights, ship operations, boundary disputes and marine conservation. <b>Arctic Council</b> , an international coordinating organization of the eight Arctic nations, meets every two years; six non-Arctic nations were granted observer status in 2013.	<b>Antarctic Treaty</b> (1959, 50 nations). Members pledge that Antarctica will be used only for peaceful purposes and that they will support scientific research and share their findings. Protocols to treaty address environmental protection and conservation of marine resources. <b>Scientific Committee on Antarctic Research</b> , an international body, coordinates research.
<b>Major climate change impacts</b>	Average temperatures are warming twice as rapidly as in lower-latitude regions. Drastic shrinkage of sea ice and thawing permafrost.	Rapid warming on West Antarctic Peninsula. Total sea ice cover is slowly increasing, but Antarctic ice is expanding in some areas and shrinking in others.
<b>Natural resources</b>	Known to exist: Coal, copper, diamonds, gold, iron, lead, natural gas, nickel, oil, palladium, platinum, silver, uranium, zinc and rare earth metals.	Little known about potential reserves. Mining activities, except for scientific research, are banned under a protocol to the Antarctic Treaty.

Sources: "Polar Discovery: Compare the Poles," Woods Hole Oceanographic Institution, <http://polardiscovery.whoi.edu/poles/index.html>; European Union Arctic Centre Information Initiative, [www.arcticcentre.org/?DeptID=7768](http://www.arcticcentre.org/?DeptID=7768) (current population); Charles Emmerson, et al., Arctic Opening: Opportunity and Risk in the High North (2012), pp. 26-27, [www.chathamhouse.org/sites/default/files/public/Research/Energy,%20Environment%20and%20Development/0412arctic.pdf](http://www.chathamhouse.org/sites/default/files/public/Research/Energy,%20Environment%20and%20Development/0412arctic.pdf).

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of miles north from industrialized countries, concentrating them in Arctic regions.<sup>65</sup> And scientists studying global climate change detected ominous trends: rapid warming of temperatures across the Arctic and shrinking Arctic sea ice.

In the mid-1990s researchers began reporting that Arctic sea ice was shrinking — a result, according to global climate models, of rising levels of heat-trapping greenhouse gases in the atmosphere.<sup>66</sup> Field studies also found that existing ice was becoming thinner.<sup>67</sup> By 2000, scientists were predicting the Arctic Ocean could be ice-free in summertime within as little as 50 years.<sup>68</sup>

In 2004 the Arctic Climate Impact Assessment, a major scientific study prepared at the request of the Arctic Council members, released its findings in three reports. “The Arctic is now experiencing some of the most rapid and severe climate change on earth,” it stated. These changes were likely to increase access to resources and shipping routes but would have major impacts on plants, animals and humans throughout the region.<sup>69</sup>

Environmentalists seized on polar bears as a potent symbol of climate change effects. In 2005 the Center for Biological Diversity, a national environmental advocacy group, petitioned the Interior Department to list polar bears as an endangered species.<sup>70</sup> Three years later, the Interior Department designated the polar bear as “threatened,” a less urgent status than endangered.<sup>71</sup>

By this time flooding and erosion from climate change were endangering some Alaska Native communities, most of which were located along rivers and coastlines. In 2009 the U.S. Government Accountability Office reported that 31 Alaska communities were threatened and that 12 were seeking to relocate. But no overarching federal program was available to help these villages

relocate, and the communities often failed to qualify for federal disaster preparedness and recovery programs.<sup>72</sup> ■

## CURRENT SITUATION

### Outside Interests

Many nations, including some located far from the Arctic Circle, are interested in commercial opportunities in the Arctic. Some, including China and Japan, have already sent scientists to conduct research in the Arctic. And many companies around the world would like to compete to manufacture equipment for Arctic development, such as oil drilling platforms or icebreaking ships.

Earlier this year the Arctic Council admitted six non-Arctic countries as observers: China, India, Singapore, Italy, Japan and South Korea. Opinion among Arctic nations reportedly was mixed about this step: Canada had warned before the meeting that expansion could complicate the council’s work, and Russia was said to be reluctant. But Nordic countries argued that new participants would make the council “a lot more relevant to the whole world,” in the words of Espen Barth Eide, Norway’s foreign minister.<sup>73</sup>

Many international observers agree. “The Arctic Council could either remain a regional club or let others participate, and it saw that there was a global role to play,” says Conley of the Center for Strategic and International Studies. “If other nations had been put off, they could have created competing structures, which wouldn’t have served anyone’s purpose.”

The council rejected the European Union’s request for observer status because of disputes between Arctic

countries and the EU over seal hunting. It also postponed considering applications from Greenpeace and several other international organizations until its 2015 meeting.<sup>74</sup>

China has shown strong interest in Arctic affairs. As a major exporting nation, China would benefit from opportunities to send cargo ships through the Arctic. Along with India, China also is a potential customer for Arctic oil and gas.<sup>75</sup> After China was admitted to the Arctic Council, the country’s Polar Research Institute announced that it would establish a joint China-Nordic Arctic Research Center in Shanghai to fund scholarships and research. “Understanding the Arctic is incredibly difficult. We need all the talented people we can get,” said Kim Holmen, international director of the Norwegian Polar Institute.<sup>76</sup>

As the Arctic Council’s profile rises, some observers say the United States needs an Arctic ambassador like the officials who represent other countries in the council. Even some non-Arctic nations, such as Japan, have appointed Arctic ambassadors. In the United States, dozens of federal agencies, states and tribes help make Arctic policy, managed by six interagency groups at the White House. Those groups include representatives from the departments of State, Defense, Commerce, Homeland Security, Transportation and Energy, among other federal agencies. The most senior policy group for the Arctic coordinates Alaskan energy development and is led by a deputy secretary of the Interior.<sup>77</sup>

“It is not news . . . that America is behind the curve when it comes to Arctic development and planning,” Alaskan journalist Carey Restino wrote in May. “An Arctic ambassador would represent this country’s interests as well as educate our nation’s leaders on the importance of these issues.” She noted that the United States has ambassadors-at-large handling specific issues such as international religious freedom, global women’s issues and HIV and AIDS.<sup>78</sup>

## Drilling on Hold

After Shell's difficulties in the Bering and Chukchi seas last year, environmentalists and some indigenous groups want the government to suspend Arctic offshore drilling. Although the Obama administration continues to support Arctic oil and gas production, federal regulators are re-evaluating rules for energy companies operating in the region. The companies are waiting to see what those new regulations will require.

"[F]ar more ably than its many critics, Shell has proven the folly of Arctic offshore drilling," the leaders of 18 national environmental advocacy groups wrote to then-Interior Secretary Ken Salazar last January, calling for a moratorium on offshore oil and gas development in the Arctic.<sup>82</sup>

Industry advocates reply that, notwithstanding Shell's difficulties, energy companies have substantial experience operating offshore in difficult conditions. "Shell's project was the first proposed for some time in the Chukchi Sea, but

ter. That's relevant to project management, but it doesn't really bear on the drilling program," he says. Oil industry representatives are waiting to see what kind of standards federal regulators will set for future drilling permits. But they expect that the permitting process will become more intensive.

Shell may also seek permits for new projects in 2014, but before it can carry out further offshore operations the Interior Department has required it to develop "a comprehensive and integrated operational plan" covering each stage of work and to commission an independent reviewer to conduct a full audit of its management systems.<sup>83</sup>

"The department has been soliciting a lot of information from industry over the past five years to clarify what the impacts of Arctic operations will be," says Ranger. "This is likely to be a deep dive into project planning. There's no track record for it."

Alaska officials still support onshore and offshore energy production. "Other nations are beginning to drill and develop in the North, whether we do or not. The answer is not to shelve projects but to do them right — to be leaders and set the bar high," Lt. Gov. Treadwell said in July.



Getty Images/The Denver Post/Andy Cross

Alaska Native Lillian Lane prepares locally caught whale meat and skin at her home in Point Hope, one of the oldest continuously occupied communities in North America. Storm-caused erosion threatens the ancient outpost, where residents live a mostly subsistence life of hunting whales, seal, caribou and walrus and fishing for salmon. Coastal Alaska residents generally have difficulty obtaining federal disaster relief for flooding and erosion damage.

Shell sent two floating drilling rigs and 20 support vessels to the Arctic and planned to drill up to 10 exploratory wells in the Beaufort and Chukchi seas.<sup>79</sup> The company drilled two nonproducing wells but failed to win Coast Guard approval of its oil-spill containment barge when a containment dome sank and was crushed by water pressure during a test.<sup>80</sup> After the company left the drill sites, its *Kulluk* rig ran aground near Kodiak Island while being towed in stormy weather.<sup>81</sup>

[the oil industry has] been doing a lot of work in areas like the Greenland Sea, the Sakhalin Basin in Russia and the North Sea," says Richard Ranger, a senior policy adviser at the American Petroleum Institute. "With each new project, companies draw on relevant lessons from other places."

Moreover, he asserts, Shell executed its operations at the drill sites satisfactorily. "Interior's main concerns [in its review] related to towing the *Kulluk* across the Gulf of Alaska in midwin-

## Displaced Towns

In Shishmaref and Kivalina, native villages located on the Chukchi Sea, buildings have fallen into the sea, and erosion threatens key facilities in both towns, including airports, drinking water supplies and sewage containment areas. Flooding in Newtok, near the Bering Sea in western Alaska, has damaged the village's barge landing and repeatedly flooded its water supply, spreading raw sewage throughout the village.<sup>84</sup>

All three of these villages have decided to relocate to avoid further threats from climate change. But federal disaster relief programs are limited, and

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# At Issue:

## *Should the United States suspend Arctic offshore drilling?*



**DANIEL J. INULAK LUM**  
*INUPIAT ESKIMO; AUTHOR OF NUVUK, THE NORTHERNMOST*

WRITTEN FOR *CQ RESEARCHER*, SEPTEMBER 2013

**t**he United States should suspend offshore drilling, including new lease sales, in the Arctic Ocean because a major oil spill would devastate our rich marine environment and the coastal communities that depend on it. Shell Oil has demonstrated it lacks the equipment and ability to operate safely in the Beaufort and Chukchi seas off Alaska's North Slope. Industry and government have not proved they can satisfactorily respond to oil spills at these drilling sites, where heavy seas and ocean ice consistently prevent the successful deployment of drilling and safety equipment.

Shell's poor track record and the Interior Department's critical review of its operations only punctuate why drilling and lease sales should be suspended. In 2012 alone, Shell's drill ship *Noble Discoverer* almost ran aground near Dutch Harbor; its *Kulluk* drill rig grounded near Kodiak Island after its super-tug lost power; the oil spill response barge *Arctic Challenger* couldn't meet safety standards and was absent during drilling operations; and Shell's oil spill containment dome, designed to vacuum up oil spills gushing beneath the surface, was "crushed like a beer can" during sea-trial tests in Puget Sound according to an Interior Department official. The Coast Guard found violations on Shell's ships and has turned over its investigation to the Department of Justice. Now picture these kinds of events shaping the "development" of the Arctic Ocean.

Politicians, industry scientists, marketing firms and corporate representatives continually hold conferences on oil-spill response all over Alaska. They've produced plenty of reports, but not a single successful demonstration of full oil-spill response capabilities at the Arctic drilling sites under real conditions, with moving broken ice and massive sheets of pack ice. While some skimming, booming and towing systems are tested and certified in protected bays around Alaska, conditions in these areas are far from those in Arctic waters where offshore development is occurring. Industry and government agencies want Alaskans to trust their response plans and systems, but we need proven capabilities!

Coastal communities along Arctic Alaska rely on the ocean to subsist. Abundant harvests of fish and marine mammals sustain rural Alaskan populations, providing healthy, rich food in a harsh and challenging environment. Intricate food chains connect the Arctic Ocean environment to its native stewards nutritionally and culturally. These rural communities have a way of life already challenged by a changing climate and now are threatened by dysfunctional offshore development.



**SEN. MARK BEGICH, D-ALASKA**

WRITTEN FOR *CQ RESEARCHER*, SEPTEMBER 2013

**t**he vast oil and gas resources off Alaska's Arctic coast represent a challenge and opportunity America cannot afford to ignore.

Government estimates indicate the Chukchi and Beaufort seas hold 24 billion barrels of oil and more than 100 trillion cubic feet of natural gas. These numbers are enormous by any definition. Speaking with their wallets, major oil and gas producers have paid the federal government more than \$3 billion to access these resources.

For Alaskans, long providers of responsibly produced energy to our nation, it's clear why we should develop these resources.

Each day, Americans drive 250 million cars and trucks. While new federally mandated fuel-economy standards are leading to greater vehicle efficiency, we still burn about 7 billion barrels of oil annually. About half that amount comes from other countries, including many that do not have our best interests at heart. Coupled with vast oil and gas production gains from the Bakken Shale in North Dakota and other regions, the Arctic Ocean can bring us closer to energy independence.

Admittedly, challenges have come up as we return to these Arctic basins 20 years after some 35 exploration wells were drilled without incident. Federal permitting agencies were slow to staff up and initially lacked coordination and cooperation.

But with the help of an executive order by President Obama and the heroic efforts of former Interior Deputy Secretary David Hayes, the Alaska Inter-Agency Energy Working Group brought people and agencies together, shortened permit lead times and made government more sensible and responsive.

The producers also had high-profile setbacks. Shell's troubles transporting the *Kulluk* drill rig this winter, some 1,000 miles away from its drill site, demonstrated both the logistical challenges and capabilities of industry and government.

Just as improving technology has delivered startling, new production gains in oil and natural gas from source rock in unexpected places, the technology also exists to manage geologically simple wells drilled in shallow Arctic waters.

As we learn more about Arctic marine ecosystems, weather, currents and winter ice movements, we also must learn more about energy resources through active exploration. The investments and infrastructure needed to bring them to market are substantial and will take nearly a decade to put in place.

While we must be prudent, we should not hesitate to responsibly produce Arctic resources to reduce our dependence on foreign oil.

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native villages often do not qualify for them. A state-level working group, established under former Gov. Palin in 2007 to aid threatened communities, lapsed in 2011.

"We're using anachronistic models of disaster relief, and we need new federal leadership to figure out the right response," says Robin Bronen, executive director of the Alaska Immigration Justice Project in Anchorage. Federal disaster relief programs focus on extreme weather events, such as Hurricane Sandy in 2012, that displace large numbers of people, but Alaska's coastal communities are contending with slowly encroaching sea levels as well as the risk of extreme weather.

"We need a different framework for addressing the slow creep of sea-level rise and making decisions about how to adapt infrastructure so that it will last," says Bronen.

Newtok residents have identified a new site nine miles away, but town officials are struggling to raise the estimated \$130 million needed from state and federal agencies to move. Many Alaskan state agencies will not fund the construction of new facilities at a relocation site when the community does not already reside there.

"I think it's going to be piece by piece with each community and many different pots of money," said Lt. Gov. Treadwell.<sup>85</sup>

Alaska Natives have trouble obtaining federal disaster relief for flooding and erosion damage for several reasons. Relocation projects for a few hundred residents have a high ratio of costs to benefits, which weighs against them in the grant award process. Very few federal disaster declarations have been issued for gradual flooding and erosion problems. And unincorporated villages cannot participate in FEMA's National Flood Insurance Program.<sup>86</sup>

Many news reports have called these villagers "climate refugees," but Bro-

nen, an immigration lawyer, disputes the use of that term. "Refugees are moving across borders, not people who have been internally displaced in their own countries," she says. "And in a policy context, it implies that a person's national government is persecuting them or leaving them exposed to harm. Victims of Hurricane Katrina were highly offended to be called refugees, because they were in their own country and expected help from their government."

Bronen would like to see the Obama administration convene a task force to develop responses to climate change effects like those that threaten Alaska Native villages. "Climate change will force millions of people around the world to relocate, and there's no plan in place," she says. "The United States could create a model for helping people all around the world who are displaced by climate change." ■

## OUTLOOK

### Changes and Opportunities

Arctic experts and observers have many different views on U.S. priorities in the region, but many have common themes. Some critics say recent rhetoric has over-emphasized the likelihood of international competition in the Arctic and ignored opportunities for nations to cooperate.

"I don't see a race for resources or some kind of looming clash," says Conley of the Center for Strategic and International Studies. "We're not seeing new threats to sovereignty. Russia and Norway are exploring Arctic resources, but they're doing it in a cooperative international framework. We're trending in a good direction. But we need to invest in the Arctic today to stay on that track."

Alaska officials say the Obama administration's Arctic strategy does not address economic development. "It's a terrible omission because this region is ripe for more than \$100 billion in investments now. That will strengthen the U.S. economy and increase regional energy independence," Lt. Gov. Treadwell said in July.<sup>87</sup> "Smart business requires reliable and clear decision-making. Instead Alaska is forced to work with unworkable mandates from an absentee landowner who doesn't want to talk about the economy."

Some experts say ratifying the Law of the Sea convention is an even higher priority, since it would codify U.S. rights to Arctic resources within its extended territory. It would also give the United States more leverage in discussions about managing the Arctic.

"China considers itself an Arctic nation, and they're up there with ice-breakers. We won't even have resources to develop unless we get jurisdiction under UNCLOS," says Harun of Pacific Environment. "We should be part of the international framework for managing the region."

Toward that end, Harvard's McCarthy recommends that the United States develop a coordinated national Arctic research program. The National Science Foundation manages an Antarctic Research Program that supports scholars in many scientific fields, but work on Arctic issues does not receive the same kind of focus.

"Current funding isn't adequate to support what we need to understand Arctic ecosystems and processes, such as how nutrients are transported and how sea ice is changing. There's a huge research agenda, and we're barely scratching the surface," says McCarthy. Ratifying UNCLOS would also advance scientific goals, he says. "The Law of the Sea treaty will guide how the central Arctic is used, not just commercially but for research. Treaty members have standing that lets them shape how areas beyond national exclusive economic zones will be used," he says.

In debates about U.S. and international interests in the Arctic, the challenge of managing change looms greatest for the region's residents. "The Internet has come to northwest Alaska. Rap music. Cell phones. Canadian whiskey. Ipods. Ebay. YouTube. Low-rise jeans," writes award-winning author Seth Kantner, who grew up hunting, trapping and fishing in the Brooks Range of northern Alaska and lives in northwest Alaska today.

Modern conveniences and development have transformed Arctic residents' historic connection to their land. "If you can turn your back to the wind, not see or know . . . out on the land, the caribou are in storm and cold right now; they are cratering down through drifted snow to get to the tundra to feed. Those hunters, the wolves, they are there, too," writes Kantner. "Neither has changed hardly a blink in the last how many thousand years. We are the ones who have changed. And I'm afraid we've only just begun." <sup>88</sup> ■

## Notes

<sup>1</sup> "Arctic Report Card: Update for 2012," National Oceanographic and Atmospheric Administration, Jan. 21, 2013, [www.arctic.noaa.gov/reportcard/exec\\_summary.html](http://www.arctic.noaa.gov/reportcard/exec_summary.html).

<sup>2</sup> For background, see Jennifer Weeks, "Climate Change," *CQ Researcher*, June 14, 2013, pp. 521-544.

<sup>3</sup> "Polar Discovery," Woods Hole Oceanographic Institution, <http://polardiscovery.whoi.edu/arctic/geography-en.html>.

<sup>4</sup> Arctic sea ice expands during cold months and shrinks during warm months, typically reaching its maximum extent in March and its minimum point in September. National Snow and Ice Data Center, Boulder, Colo., <ftp://sidacs.colorado.edu/DATASETS/NOAA/G02135/Sep/> (figures are for sea ice extent in September, converted to square miles).

<sup>5</sup> "Arctic Nearly Free of Summer Sea Ice During 1st Half of 21st Century," National Oceanic and Atmospheric Administration, April 12, 2013, [www.noaanews.noaa.gov/stories2013//20130412\\_arcticseaice.html](http://www.noaanews.noaa.gov/stories2013//20130412_arcticseaice.html).

<sup>6</sup> See also Brian Beary, "Race for the Arctic," *CQ Global Researcher*, August 2008, pp. 213-242.

<sup>7</sup> Undiscovered recoverable resources are believed to exist based on geological modeling and to be recoverable using today's technology. "Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle," U.S. Geological Survey, 2008, <http://pubs.usgs.gov/fs/2008/3049/>.

<sup>8</sup> Denmark is considered an Arctic nation because it controls the Faroe Islands and Greenland, most of which lies above the Arctic Circle.

<sup>9</sup> Secretary of State John Kerry, remarks at the Arctic Council Ministerial Meeting, Kiruna, Sweden, May 15, 2013, [www.state.gov/secretary/remarks/2013/05/209403.htm](http://www.state.gov/secretary/remarks/2013/05/209403.htm).

<sup>10</sup> "National Strategy for the Arctic Region," The White House, May 2013, [www.whitehouse.gov/sites/default/files/docs/nat\\_arctic\\_strategy.pdf](http://www.whitehouse.gov/sites/default/files/docs/nat_arctic_strategy.pdf) (quote on p. 4).

<sup>11</sup> "Political Reaction to Obama Administration's National Strategy for the Arctic," May 10, 2013, [www.blog.haulinggear.com/2013/05/political-reaction-to-obama.html](http://www.blog.haulinggear.com/2013/05/political-reaction-to-obama.html).

<sup>12</sup> The law, nicknamed the Alaska Lands Act, set aside more than 100 million acres of federal lands in Alaska as national parks, wildlife refuges, national monuments, wilderness areas and national parks. For background, see "What is ANILCA?" National Parks Conservation Association, Oct. 27, 2011, [www.npca.org/news/media-center/fact-sheets/anilca.html](http://www.npca.org/news/media-center/fact-sheets/anilca.html).

<sup>13</sup> Mead Treadwell, speech at the Center for Strategic and International Studies, Washington, D.C., July 30, 2013, <http://csis.org/event/benefits-and-costs-cold>.

<sup>14</sup> Heather A. Conley, *et al.*, "Arctic Economics in the 21st Century: The Benefits and Costs of Cold," Center for Strategic and International Studies, July 2013, p. 61, <http://csis.org/event/benefits-and-costs-cold>. For background on new gas discoveries, see Daniel McGlynn, "Fracking Controversy," *CQ Researcher*, Dec. 16, 2011, pp. 1049-1072.

<sup>15</sup> Conley, "Arctic Economics," *op. cit.*, pp. 61-63.

<sup>16</sup> "Department of the Interior Releases Assessment of Shell's 2012 Arctic Operations," March 14, 2013, [www.doi.gov/news/pressreleases/department-of-the-interior-releases-assessment-of-shells-2012-arctic-operations.cfm](http://www.doi.gov/news/pressreleases/department-of-the-interior-releases-assessment-of-shells-2012-arctic-operations.cfm); Margaret Kriz Hobson, "Is Arctic Oil Exploration Dead in the U.S.?" *EnergyWire*, July 18, 2013, [www.eenews.net/stories/1059984582](http://www.eenews.net/stories/1059984582).

<sup>17</sup> Lisa Demer, "EPA Fines Shell More Than \$1 Million for Pollution Violations in Alaska Arctic," *Anchorage Daily News*, Sept. 5, 2013, [www.adn.com/2013/09/05/3060253/epa-fines-shell](http://www.adn.com/2013/09/05/3060253/epa-fines-shell)

[more-than-1-million.html](http://www.adn.com/2013/09/05/3060253/epa-fines-shell).

<sup>18</sup> Clifford Krauss, "ConocoPhillips Suspends Its Arctic Drilling Plans," *The New York Times*, April 10, 2013, [www.nytimes.com/2013/04/11/business/energy-environment/conocophillips-suspends-arctic-drilling-plans.html](http://www.nytimes.com/2013/04/11/business/energy-environment/conocophillips-suspends-arctic-drilling-plans.html).

<sup>19</sup> Letter to Interior Secretary Ken Salazar from 18 regional and national conservation advocacy groups, Jan. 9, 2013, <http://earthjustice.org/sites/default/files/ArcticCEOlettertoDOL.pdf>.

<sup>20</sup> Joint Statement of Indigenous Solidarity for Arctic Protection, [www.greenpeace.org/canada/Global/Canada/pr/2013/05/statement-postconference.pdf](http://www.greenpeace.org/canada/Global/Canada/pr/2013/05/statement-postconference.pdf).

<sup>21</sup> See U.S. Geological Survey, "Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle," 2008, <http://pubs.usgs.gov/fs/2008/3049/>. Natural gas liquids are components of natural gas such as propane and butane that are extracted during processing.

<sup>22</sup> For background see [www.continentalshelf.org/about/1143.aspx](http://www.continentalshelf.org/about/1143.aspx). Although the United States has not joined UNCLOS, President Ronald Reagan issued a proclamation in 1983 that claimed jurisdiction over activities in the U.S. EEZ. Proclamation 5030, March 10, 1983, [www.archives.gov/federal-register/codification/proclamations/05030.html](http://www.archives.gov/federal-register/codification/proclamations/05030.html).

<sup>23</sup> For more information see "Continental Shelves," Marine Bio Conservation Society, <http://marinebio.org/oceans/continental-shelves.asp>.

<sup>24</sup> The hearings took place on May 23, June 14, and June 28, 2012, [www.foreign.senate.gov/hearings/](http://www.foreign.senate.gov/hearings/).

<sup>25</sup> Testimony before the Senate Foreign Relations Committee, June 28, 2012, p. 5, [www.foreign.senate.gov/imo/media/doc/REVISED\\_Gerard\\_Testimony.pdf](http://www.foreign.senate.gov/imo/media/doc/REVISED_Gerard_Testimony.pdf).

<sup>26</sup> Kristina Wong and Sean Lengell, "DeMint: Law of the Sea Treaty Now Dead," *The Washington Times*, July 16, 2012, [www.washingtontimes.com/news/2012/jul/16/demint-says-law-sea-treaty-now-dead/?page=all](http://www.washingtontimes.com/news/2012/jul/16/demint-says-law-sea-treaty-now-dead/?page=all).

<sup>27</sup> Letter to U.S. Sens. Ted Stevens and Lisa Murkowski, Sept. 13, 2007, [http://archive2.global.solutions.org/files/general/Palin\\_LOS\\_Letter.pdf](http://archive2.global.solutions.org/files/general/Palin_LOS_Letter.pdf).

<sup>28</sup> Eddie Hunsinger and Eric Sandberg, "The Alaska Native Population," *Alaska Economic Trends*, April 2013, p. 4, <http://labor.state.ak.us/trends/apr13.pdf>.

<sup>29</sup> Stephanie Martin and Alexandra Hill, "The Changing Economic Status of Native Alaskans, 1970-2007," Institute of Social and Economic Research, University of Alaska-Anchorage, July 2009, [www.iser.uaa.alaska.edu/Publications/webnote/WebNote5.pdf](http://www.iser.uaa.alaska.edu/Publications/webnote/WebNote5.pdf).

<sup>30</sup> “Alaska Native Cultures,” University of Alaska-Fairbanks, <http://fna.community.uaf.edu/alaska-native-cultures/>.

<sup>31</sup> For more information about Native corporations and resource development, see “Alaska’s native corporations,” Alaska Resource Development Council, [www.akrdc.org/issues/native-corporations/overview.html](http://www.akrdc.org/issues/native-corporations/overview.html).

<sup>32</sup> “Joint Statement of Indigenous Solidarity for Arctic Protection,” [www.greenpeace.org/canada/Global/canada/pr/2013/05/statement\\_postconference.pdf](http://www.greenpeace.org/canada/Global/canada/pr/2013/05/statement_postconference.pdf).

<sup>33</sup> “Regional Alaska Native Corporations: Status 40 Years After Establishment, and Future Considerations,” U.S. Government Accountability Office, GAO-13-121 (December 2012), p. 39, [www.gao.gov/assets/660/650857.pdf](http://www.gao.gov/assets/660/650857.pdf).

<sup>34</sup> Richard Harris, “Native Alaskans Divided on State’s Oil Drilling Debate,” National Public Radio, March 20, 2012, [www.npr.org/2012/03/20/148754357/native-alaskans-divided-on-states-oil-drilling-debate](http://www.npr.org/2012/03/20/148754357/native-alaskans-divided-on-states-oil-drilling-debate).

<sup>35</sup> “Alaska Energy Brief,” Alaska Federation of Natives, May 2012, p. 5, [www.nativefederation.org/wp-content/uploads/2012/10/2012-afn-cap-alaska-day-brief.pdf](http://www.nativefederation.org/wp-content/uploads/2012/10/2012-afn-cap-alaska-day-brief.pdf).

<sup>36</sup> *Ibid.*

<sup>37</sup> *Ibid.*, p. 5. The Alaska Federation of Natives represents the state’s 13 for-profit regional Native corporations, 244 Native villages, and 12 regional non-profit tribal consortia.

<sup>38</sup> “Alaska Native Priorities for the 2012-2013 Presidential and Congressional Transition,” Alaska Federation of Natives, December 2012, pp. 9-10, [www.nativefederation.org/wp-content/uploads/2012/10/AFN\\_TransitionWhitePaper\\_121912.pdf](http://www.nativefederation.org/wp-content/uploads/2012/10/AFN_TransitionWhitePaper_121912.pdf).

<sup>39</sup> “Alaska Renewable Energy Profile 2010,” U.S. Energy Information Administration, March 8, 2012, [www.eia.gov/renewable/state/Alaska/](http://www.eia.gov/renewable/state/Alaska/).

<sup>40</sup> Margaret Kriz Hobson, “Limited Resources May Force Coast Guard to Get Creative During Next Arctic Traffic Jam,” *EnergyWire*, Nov. 30,

2012, [www.eenews.net/stories/1059973122](http://www.eenews.net/stories/1059973122); Antonietta Rico, “Papp: No Plans for More Coasties in Arctic,” *Navy Times*, June 1, 2013, [www.navytimes.com/article/20130601/NEWS03/306010006/Papp-No-plans-more-Coasties-Arctic](http://www.navytimes.com/article/20130601/NEWS03/306010006/Papp-No-plans-more-Coasties-Arctic).

<sup>41</sup> “Secretary Clinton Signs the Arctic Search and Rescue Agreement with Other Arctic Nations,” U.S. Department of State, May 12, 2011, [www.state.gov/r/pa/prs/ps/2011/05/163285.htm](http://www.state.gov/r/pa/prs/ps/2011/05/163285.htm).

<sup>42</sup> “Begich Provision to Spur Arctic Deepwater Port Development Clears the Senate,” May 14, 2013, [www.begich.senate.gov/public/index.cfm/pressreleases?ID=79aa5f62-701c-4907-8d67-a06764482822](http://www.begich.senate.gov/public/index.cfm/pressreleases?ID=79aa5f62-701c-4907-8d67-a06764482822).

<sup>43</sup> Alexandra Gutierrez, “Begich Calls for Investment in Arctic Ports,” Alaska Public Radio, March 4, 2013, [www.alaskapublic.org/2013/03/04/begich-calls-for-investment-in-arctic-ports/](http://www.alaskapublic.org/2013/03/04/begich-calls-for-investment-in-arctic-ports/).

<sup>44</sup> For details see [www.poa.usace.army.mil/Library/ReportsandStudies/AlaskaRegionalPortsStudy.aspx](http://www.poa.usace.army.mil/Library/ReportsandStudies/AlaskaRegionalPortsStudy.aspx).

<sup>45</sup> Statement of Jack Omelak before the U.S. Senate Committee on Commerce, Science, and Transportation, Subcommittee on Oceans, Atmosphere, Fisheries and Coast Guard, Anchorage, Alaska, March 27, 2013, [www.commerce.senate.gov/public/?a=Files.Serve&File\\_id=80540302-2c7c-4eda-883c-c02328f70045](http://www.commerce.senate.gov/public/?a=Files.Serve&File_id=80540302-2c7c-4eda-883c-c02328f70045).

<sup>46</sup> Statement of Matt Ganley before the U.S. Senate Committee on Commerce, Science, and Transportation, Subcommittee on Oceans, Atmosphere, Fisheries and Coast Guard, Anchorage, Alaska, March 27, 2013, p. 2, [www.commerce.senate.gov/public/?a=Files.Serve&File\\_id=87addd59-89e7-4220-816f-6fc1c40a46f6](http://www.commerce.senate.gov/public/?a=Files.Serve&File_id=87addd59-89e7-4220-816f-6fc1c40a46f6).

<sup>47</sup> Hillary Mayell, “Bones, Tools Push Back Human Settlement in Arctic Region,” *National Geographic News*, Oct. 2, 2001, [http://news.nationalgeographic.com/news/2001/10/1001\\_arctichabitation.html](http://news.nationalgeographic.com/news/2001/10/1001_arctichabitation.html).

<sup>48</sup> John McCannon, *A History of the Arctic: Nature, Exploration and Exploitation* (2012),

pp. 30-31, 34.

<sup>49</sup> Teresa Hull and Linda Leask, “Dividing Alaska, 1867-2000” Changing Land Ownership and Management, *Alaska Review of Social and Economic Conditions*, November 2000, p. 2, [www.iser.uaa.alaska.edu/Publications/Landswebfiles/lands.pdf](http://www.iser.uaa.alaska.edu/Publications/Landswebfiles/lands.pdf).

<sup>50</sup> McCannon, *op. cit.*, pp. 180-181.

<sup>51</sup> Bruce Henderson, “Who Discovered the North Pole?” *Smithsonian*, April 2009, [www.smithsonianmag.com/history-archaeology/Cook-vs-Peary.html](http://www.smithsonianmag.com/history-archaeology/Cook-vs-Peary.html).

<sup>52</sup> Patricia Pierce Erikson, “Meet the Other Pearys,” *Portland Monthly*, December 2010, [www.portlandmonthly.com/portmag/2010/12/meet-the-other-pearys/](http://www.portlandmonthly.com/portmag/2010/12/meet-the-other-pearys/).

<sup>53</sup> In 1988 *National Geographic* published an article that reexamined Peary’s papers and concluded that he had probably missed the pole. Bruce Henderson, “Who Discovered the North Pole?”, *op. cit.*

<sup>54</sup> “Alaskans and the United States,” *Alaska History and Cultural Studies*, [www.akhistorycourse.org/articles/article.php?artID=170](http://www.akhistorycourse.org/articles/article.php?artID=170).

<sup>55</sup> “When was oil discovered and developed in Alaska?” Alaska Historical Society, [www.alaskahistoricalsociety.org/index.cfm/discover-alaska/FAQs/10](http://www.alaskahistoricalsociety.org/index.cfm/discover-alaska/FAQs/10).

<sup>56</sup> For more information see “National Petroleum Reserve — Alaska,” Bureau of Land Management, [www.blm.gov/ak/st/en/prog/energy/oil\\_gas/npra.html](http://www.blm.gov/ak/st/en/prog/energy/oil_gas/npra.html).

<sup>57</sup> “Military History in Alaska, 1867-2000,” Joint Base Elmendorf-Richardson, Nov. 13, 2006, [www.jber.af.mil/library/factsheets/factsheet.asp?id=5304](http://www.jber.af.mil/library/factsheets/factsheet.asp?id=5304).

<sup>58</sup> Jason Reagle, “The First ICEx,” *Undersea Warfare*, Summer 2009, [www.navy.mil/navydata/cno/n87/usw/usw\\_summer\\_09/nautilus.html](http://www.navy.mil/navydata/cno/n87/usw/usw_summer_09/nautilus.html).

<sup>59</sup> Hull and Leask, *op. cit.*, p. 3.

<sup>60</sup> *Ibid.*, p. 2.

<sup>61</sup> Janie Leask, “The Alaska Claims Settlement,” August 1984, [www.alaskool.org/projects/ancsa/JLeask/Alaska\\_Claims\\_Settlement\\_JLeask.htm](http://www.alaskool.org/projects/ancsa/JLeask/Alaska_Claims_Settlement_JLeask.htm).

<sup>62</sup> A sovereign wealth fund is a government-controlled fund used to manage revenues from the sale of valuable natural resources such as oil, natural gas or minerals. For background see Jennifer Weeks, “The Resource Curse,” *CQ Researcher*, Dec. 20, 2011, pp. 597-622.

<sup>63</sup> “Changes in the Well-Being of Alaska Since ANCSA,” *Alaska Review of Social and Economic Conditions*, November 1984, [www.alaskool.org/projects/ancsa/arsec.pdf](http://www.alaskool.org/projects/ancsa/arsec.pdf).

<sup>64</sup> Presidential Decision Directive/NSC-26, June 9, 1994, p. 2, [www.clintonlibrary.gov/pdd.html](http://www.clintonlibrary.gov/pdd.html).

## About the Author



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<sup>65</sup> For an overview see Marla Cone, *Silent Snow: The Slow Poisoning of the Arctic* (2006).

<sup>66</sup> For example, see Malcolm Browne, "Ice Shifts May Be Tied To Warming," *The New York Times*, Nov. 18, 1997, [www.nytimes.com/1997/11/18/science/ice-shifts-may-be-tied-to-warming.html](http://www.nytimes.com/1997/11/18/science/ice-shifts-may-be-tied-to-warming.html).

<sup>67</sup> Malcolm W. Browne, "Researchers Find Signs of Warming in Arctic Air, Ice and Water," *The New York Times*, Oct. 20, 1998, [www.nytimes.com/1998/10/20/us/researchers-find-signs-of-warming-in-arctic-air-ice-and-water.html](http://www.nytimes.com/1998/10/20/us/researchers-find-signs-of-warming-in-arctic-air-ice-and-water.html); William K. Stevens, "Thinning Sea Ice Stokes Debate on Climate," *The New York Times*, Nov. 17, 1999, [www.nytimes.com/1999/11/17/us/thinning-sea-ice-stokes-debate-on-climate.html](http://www.nytimes.com/1999/11/17/us/thinning-sea-ice-stokes-debate-on-climate.html).

<sup>68</sup> Walter Gibbs, "Research Predicts Summer Doom for Northern Icecap," *The New York Times*, July 11, 2000, [www.nytimes.com/2000/07/11/science/research-predicts-summer-doom-for-northern-icecap.html](http://www.nytimes.com/2000/07/11/science/research-predicts-summer-doom-for-northern-icecap.html).

<sup>69</sup> "Impacts of a Warming Arctic," *Arctic Climate Impact Assessment* (2004), pp. 10-11, [www.amap.no/documents/doc/impacts-of-a-warming-arctic-2004/786](http://www.amap.no/documents/doc/impacts-of-a-warming-arctic-2004/786).

<sup>70</sup> Full text of petition at [www.biologicaldiversity.org/species/mammals/polar\\_bear/pdfs/15976\\_7338.pdf](http://www.biologicaldiversity.org/species/mammals/polar_bear/pdfs/15976_7338.pdf).

<sup>71</sup> Juliet Eilperin, "Polar Bear is Named Threatened Species," *The Washington Post*, May 15, 2008, [www.washingtonpost.com/wp-dyn/content/story/2008/05/14/ST2008051403984.html](http://www.washingtonpost.com/wp-dyn/content/story/2008/05/14/ST2008051403984.html).

<sup>72</sup> "Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages Threatened by Flooding and Erosion," U.S. Government Accountability Office, GAO-09-551 (June 2009), [www.gao.gov/new.items/d09551.pdf](http://www.gao.gov/new.items/d09551.pdf).

<sup>73</sup> Ellen Emmerentze Jervell and Alistair MacDonald, "Six Nations Win Seats on Arctic Council," *The Wall Street Journal*, May 15, 2013, <http://online.wsj.com/article/SB10001424127887324767004578484621098493056.html>.

<sup>74</sup> *Ibid.*

<sup>75</sup> Stephen Blank, "Exploring China's Arctic Icebreaker," *Asia Times*, July 7, 2013, [www.atimes.com/atimes/China/CHIN-02-170713.html](http://www.atimes.com/atimes/China/CHIN-02-170713.html).

<sup>76</sup> Trude Patterson, "China Boosts Arctic Research," *Barents Observer*, June 7, 2013, <http://barentsobserver.com/en/arctic/2013/06/china-boosts-arctic-research-07-06>.

<sup>77</sup> The groups are the Arctic Policy Group; the Interagency Arctic Research Policy Committee; the Interagency Policy Committee on the Arctic; the Interagency Working Group on Coordination of Domestic Energy Development and Permitting in Alaska; the Maritime Security Working Group; and the National Ocean Council. Heather A. Conley, *et al.*,

## FOR MORE INFORMATION

**Alaska Immigration Justice Project**, 431 West 7th Ave., Suite 208, Anchorage, AK 99501; 907-279-2457; [www.akijp.org](http://www.akijp.org). Nonprofit agency that provides low-cost legal assistance to immigrants and refugees in Alaska.

**American Petroleum Institute**, 1220 L St., N.W., Washington, DC 20005; 202-682-8000; [www.api.org](http://www.api.org). National trade association representing the U.S. oil and natural gas industries.

**Center for Strategic and International Studies**, 1800 K St., N.W., Washington, DC 20006; 202-887-0200; [www.csis.org](http://www.csis.org). Centrist think tank that offers bipartisan policy proposals on U.S. security issues.

**Marine Conservation Alliance**, 4005 20th Ave. W, Suite 115, Seattle, WA 98199; 206-535-8357; [www.marineconservationalliance.org](http://www.marineconservationalliance.org). A coalition that promotes science-based policies for managing the marine resources of the North Pacific and Bering Sea.

**Office of Indian Energy Policy and Programs**, U.S. Department of Energy, 1000 Independence Ave., S.W., Washington, DC 20585; 202-586-1272; <http://energy.gov/indianenergy/office-indian-energy-policy-and-programs>. Directs and coordinates federal programs that assist tribes with energy development, infrastructure, costs and electrification of tribal lands.

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**U.S. Arctic Research Commission**, 4350 North Fairfax Dr., Suite 510, Arlington, VA 22203; 703-525-0111; [www.arctic.gov](http://www.arctic.gov). A small independent federal agency established in 1984 that works with other federal agencies to plan and guide scientific research on Arctic issues.

"The New Foreign Policy Frontier: U.S. Interests and Actors in the Arctic," Center for Strategic and International Studies, March 2013, p. 23, <http://csis.org/publication/new-foreign-policy-frontier>.

<sup>78</sup> Carey Restino, "Opinion: Arctic Ambassador a Good Idea," *The Dutch Harbor Fisherman*, May 3, 2013, [www.thedutchharborfisherman.com/article/1318arctic\\_ambassador\\_a\\_good\\_idea](http://www.thedutchharborfisherman.com/article/1318arctic_ambassador_a_good_idea).

<sup>79</sup> "Review of Shell's 2012 Alaska Offshore Oil and Gas Exploration Program," *Report to the Secretary of the Interior*, March 8, 2013, pp. 11-12, 16, [www.doi.gov/news/pressreleases/upload/Shell-report-3-8-13-Final.pdf](http://www.doi.gov/news/pressreleases/upload/Shell-report-3-8-13-Final.pdf).

<sup>80</sup> *Ibid.*, p. 19.

<sup>81</sup> *Ibid.*, pp. 29-30.

<sup>82</sup> Jan. 9, 2013, letter to Secretary Salazar, [www.earthjustice.org/sites/default/files/ArcticCEOlettertoDOI.pdf](http://www.earthjustice.org/sites/default/files/ArcticCEOlettertoDOI.pdf).

<sup>83</sup> "Review of Shell's Offshore Oil and Gas Exploration Program," *op. cit.*, p. 2.

<sup>84</sup> Robin Bronen, "Climate-Induced Displacement of Alaska Native Communities," Brookings Project on Internal Displacement, Jan. 30, 2013, pp. 12-17, [www.brookings.edu/research/papers/2013/01/30-arctic-alaska-bronen](http://www.brookings.edu/research/papers/2013/01/30-arctic-alaska-bronen).

<sup>85</sup> Suzanne Goldenberg, "'It's Happening Now . . . The Village is Sinking,'" *The Guardian*, May 15, 2013, [www.theguardian.com/environment/interactive/2013/may/15/newtok-safer-ground-villagers-nervous](http://www.theguardian.com/environment/interactive/2013/may/15/newtok-safer-ground-villagers-nervous).

<sup>86</sup> "Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages Threatened by Flooding and Erosion," U.S. Government Accountability Office, GAO-09-551, June 2009, pp. 22-24, [www.gao.gov/assets/300/290468.pdf](http://www.gao.gov/assets/300/290468.pdf).

<sup>87</sup> Speech at the Center for Strategic and International Studies, Washington, D.C., July 30, 2013, <http://csis.org/event/benefits-and-costs-cold>.

<sup>88</sup> Seth Kantner, "Caribou Currency," in *Arctic Voices: Resistance at the Tipping Point*, Subhankar Banarjee, ed. (2012).

# Bibliography

## Selected Sources

### Books

**Bernard, C. B.,** *Chasing Alaska: A Portrait of the Last Frontier Then and Now*, Lyons Press, 2013.

A journalist roams across Alaska, charting the travels of an ancestor who explored the area at the turn of the 20th century.

**Grant, Shelagh D.,** *Polar Imperative: A History of Arctic Sovereignty in North America*, Douglas & McIntyre, 2011.

A Trent University (Canada) researcher provides an history of nations' claims to Arctic territorial rights.

**McGhee, Robert,** *The Last Imaginary Place: A Human History of the Arctic World*, Oxford University Press, 2005.

An archaeologist at the Canadian Museum of Civilization recounts the history of human settlement of the Arctic.

**Østreg, Willy, et al.,** *Shipping in Arctic Waters: A Comparison of the Northeast, Northwest and Trans Polar Passages*, Springer-Verlag, 2013.

The authors evaluate the conditions along three Arctic transportation corridors.

### Articles

**"Arctic Politics: Cosy Amid the Thaw,"** *The Economist*, March 24, 2012, [www.economist.com/node/21551029](http://www.economist.com/node/21551029).

The British newsweekly reports on the Arctic Council's growing importance as a forum for cooperation among Arctic nations.

**"A New Normal for Arctic Sea Ice,"** National Snow & Ice Data Center, July 2, 2013, <http://nsidc.org/arcticseaicenews/2013/07/a-new-average-for-arctic-sea-ice/>.

The national data center monitors Arctic sea ice and finds it is shrinking by about 3.6 percent per decade.

**Bellinger III, John B.,** "Treaty on Ice," *The New York Times*, June 23, 2008, [www.nytimes.com/2008/06/23/opinion/23bellinger.html?\\_r=0](http://www.nytimes.com/2008/06/23/opinion/23bellinger.html?_r=0).

A legal adviser to former Secretary of State Condoleezza Rice argues that the United States should ratify the Law of the Sea Convention to protect its rights to Arctic offshore resources.

**Freedman, Andrew,** "In Rapidly Changing Arctic, U.S. Playing Game of Catch-Up," *Climate Central*, July 21, 2013, [www.climatecentral.org/news/in-rapidly-changing-arctic-u.s.-playing-game-of-catch-up-16271](http://www.climatecentral.org/news/in-rapidly-changing-arctic-u.s.-playing-game-of-catch-up-16271).

A science journalist reports on how U.S. military and scientific agencies are scrambling to cope with the looming prospect of a seasonally ice-free Arctic Ocean.

**Goldenberg, Suzanne,** "America's Climate Refugees," *The Guardian*, May 13-15, 2013, [www.guardian.co.uk/environment/interactive/2013/may/13/newtok-alaska-climate-change-refugees](http://www.guardian.co.uk/environment/interactive/2013/may/13/newtok-alaska-climate-change-refugees).

**ment/interactive/2013/may/13/newtok-alaska-climate-change-refugees.**

The British newspaper examines threats to native Alaskan communities from climate change in a three-part, multimedia series.

**Hobson, Margaret Kriz,** "Offshore Drilling: Is Arctic Oil Exploration Dead in the U.S.?" *EnergyWire*, July 18, 2013, [www.eenews.net/stories/1059984582](http://www.eenews.net/stories/1059984582).

A journalist details how Shell's Arctic drilling setbacks in 2012 have slowed the rush to drill offshore in the American Arctic but says long-term interest remains strong.

**Struzik, Ed,** "China's New Arctic Presence Signals Future Development," *Yale Environment 360*, June 4, 2013, [http://e360.yale.edu/feature/chinas\\_new\\_arctic\\_presence\\_signals\\_future\\_development/2658/](http://e360.yale.edu/feature/chinas_new_arctic_presence_signals_future_development/2658/).

A Canadian journalist reports that China's recent observer-status admission to the Arctic Council signals that economic development of the increasingly ice-free region is becoming a top priority for Arctic nations and others.

### Reports and Studies

**"National Security Strategy for the Arctic Region,"** The White House, May 10, 2013, [www.whitehouse.gov/sites/default/files/docs/nat\\_arctic\\_strategy.pdf](http://www.whitehouse.gov/sites/default/files/docs/nat_arctic_strategy.pdf).

The Obama administration presents its three-pronged Arctic strategy: advancing U.S. security interests, pursuing responsible Arctic regional stewardship and strengthening international cooperation.

**"Review of Shell's 2012 Alaska Offshore Oil and Gas Exploration Program,"** Report to the Secretary of the Interior, U.S. Department of the Interior, March 8, 2013, [www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&pageid=348469](http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&pageid=348469).

An Interior Department review of Shell's offshore oil and gas exploration efforts in Alaska in 2012 finds that the company was not fully prepared to operate in Arctic conditions.

**Bronen, Robin,** "Climate-Induced Displacement of Alaska Native Communities," *Brookings Institution*, Jan. 30, 2013, [www.brookings.edu/research/papers/2013/01/30-arctic-alaska-bronen](http://www.brookings.edu/research/papers/2013/01/30-arctic-alaska-bronen).

An Alaska immigration-rights lawyer contends that government agencies are not providing the right kind of support to relocate communities threatened by climate change.

**Conley, Heather A.,** "The New Foreign Policy Frontier: U.S. Interests and Actors in the Arctic," *Center for Strategic and International Studies*, April 22, 2013, <http://csis.org/publication/new-foreign-policy-frontier>.

A centrist think tank calls for the United States to update its Arctic policy and for high-level U.S. officials to focus more on the region.

# The Next Step:

## *Additional Articles from Current Periodicals*

### ***Development in the Region***

**Baczynska, Gabriela, "Veteran explorer stakes Russia's claim over the Arctic," Reuters, Feb. 27, 2013, [www.reuters.com/article/2013/02/27/us-russia-arctic-idUSBRE91Q11F20130227](http://www.reuters.com/article/2013/02/27/us-russia-arctic-idUSBRE91Q11F20130227).**

A Russian polar explorer is spearheading Russia's effort to claim more of the Arctic shelf in the mineral-rich region.

**Berkman, Paul Arthur, "Preventing an Arctic Cold War," *The New York Times*, March 12, 2013, [www.nytimes.com/2013/03/13/opinion/preventing-an-arctic-cold-war.html](http://www.nytimes.com/2013/03/13/opinion/preventing-an-arctic-cold-war.html).**

Arctic and non-Arctic states need to work together to manage the region's resources so development is both sustainable and peaceful, says an op-ed columnist.

**Bolstad, Erika, "White House airs new policy on key Arctic challenges; President says it aims to balance conflicting goals in the region," *Anchorage Daily News*, May 11, 2013, [www.adn.com/2013/05/10/2898235/white-house-outlines-new-policy.html](http://www.adn.com/2013/05/10/2898235/white-house-outlines-new-policy.html).**

President Obama lays out a national strategy to pursue economic opportunities in the Arctic while conserving its environment.

### ***Native Communities***

**Hanley, Charles J., "Traditional life slipping away in Greenland," *Los Angeles Times*, Dec. 4, 2011.**

The traditional Inuit way of life in Greenland is changing rapidly along with the Arctic environment.

**McNicholas, Laurie, "Arctic communities want role in oil spill response activities," *The Nome Nugget (Alaska)*, Aug. 22, 2013, [www.nomenugget.net/archives/2013/08.22.13%20NN.pdf](http://www.nomenugget.net/archives/2013/08.22.13%20NN.pdf).**

As oil and gas exploration expands in the Arctic, Alaskan communities want to be included in responses to shipping accidents and oil spills.

**Rosenthal, Elisabeth, "A Melting Greenland Weighs Perils Against Potential," *The New York Times*, Sept. 24, 2013, [www.nytimes.com/2012/09/24/science/earth/melting-greenland-weighs-perils-against-potential.html?pagewanted=all](http://www.nytimes.com/2012/09/24/science/earth/melting-greenland-weighs-perils-against-potential.html?pagewanted=all).**

As commercial fishing declines, new mining opportunities are appearing on the horizon for a Greenland community.

### ***Offshore Drilling***

**Joling, Dan, "Begich: Shipping riskier than drilling in Arctic," *Juneau Empire.com*, March 13, 2013, <http://juneauempire.com/state/2013-03-28/begich-shipping-riskier-drilling-arctic#.UhuMEtI3s30>.**

Sen. Mark Begich, D-Alaska, said he is more concerned about the risks of shipping accidents than the dangers of offshore drilling.

**Sullivan, Dan, "It's time to develop our Arctic resources," CNN, July 20, 2012, [www.cnn.com/2012/07/20/opinion/sullivan-arctic-drilling](http://www.cnn.com/2012/07/20/opinion/sullivan-arctic-drilling).**

Development of Alaska's mineral resources will promote the nation's interests, argues an Alaskan government official.

### ***Warming Climate***

**"Polar bear hunting and migration 'hit by warming climate,'" *The Guardian*, March 20, 2013, [www.theguardian.com/environment/2013/mar/20/polar-bear-hunting-migration-warming-climate](http://www.theguardian.com/environment/2013/mar/20/polar-bear-hunting-migration-warming-climate).**

Polar bears' hunting time on sea ice is declining as the Arctic warms up, affecting their health and the ability of cubs to survive to adulthood.

**Reinwald, Pete, "Something strange in the air," *The Chicago Tribune*, Aug. 22, 2013, [http://articles.chicagotribune.com/2013-08-22/news/ct-met-weird-weather-2013-0822\\_1\\_weird-weather-jet-stream-the-weather-channel](http://articles.chicagotribune.com/2013-08-22/news/ct-met-weird-weather-2013-0822_1_weird-weather-jet-stream-the-weather-channel).**

The warming of the Arctic is causing changes in the polar jet stream, resulting in prolonged weather events, according to several scientists.

**Spotts, Pete, "Arctic sea ice falls to record low. Global warming?" *The Christian Science Monitor*, Sept. 8, 2012, [www.csmonitor.com/Environment/2012/0908/Arctic-sea-ice-falls-to-record-low.-Global-warming](http://www.csmonitor.com/Environment/2012/0908/Arctic-sea-ice-falls-to-record-low.-Global-warming).**

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Jost, Kenneth. "Remembering 9/11." *CQ Researcher*, September 2, 2011, 701-732.

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