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Changes in the Arctic: Background and Issues for Congress

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Committees of Congress

Summary

The diminishment of Arctic sea ice has led to increased human activities in the Arctic, and has heightened interest in, and concerns about, the region's future. The United States, by virtue of Alaska, is an Arctic country and has substantial interests in the region. The seven other Arctic states are Russia, Canada, Iceland, Denmark (by virtue of Greenland), Norway, Sweden, and Finland. The Arctic Research and Policy Act (ARPA) of 1984 (Title I of P.L. 98-373 of July 31, 1984) "provide[s] for a comprehensive national policy dealing with national research needs and objectives in the Arctic." The National Science Foundation (NSF) is the lead federal agency for implementing Arctic research policy. The Arctic Council, created in 1996, is the leading international forum for addressing issues relating to the Arctic. The United Nations Convention on the Law of the Sea (UNCLOS) sets forth a comprehensive regime of law and order in the world's oceans, including the Arctic Ocean. The United States is not a party to UNCLOS.

An array of climate changes in the Arctic is now documented by observing systems, with more expected with future greenhouse gas-driven climate change. Observed physical changes in the Arctic include warming ocean, soil, and air temperatures; melting permafrost; shifting vegetation and animal abundances; and altered characteristics of Arctic cyclones. A monitoring report of the Arctic Council concluded in 2019 that "the Arctic biophysical system is now clearly trending away from its previous state [in the 20th century] and into a period of unprecedented change, with implications not only within but also beyond the Arctic."

Over the past 10 to 15 years, the emergence of great power competition between the United States, Russia, and China has introduced elements of competition and tension into the Arctic's geopolitical environment. The Russia-Ukraine war further affected the region's geopolitical environment. President Trump on multiple occasions has expressed an interest in having the United States annex Greenland. U.S. annexation of Greenland would substantially expand U.S. Arctic territory. The Trump Administration's interest in annexing Greenland has affected U.S.-Danish relations.

The Department of Defense (DOD) and the Coast Guard are devoting increased attention to the Arctic in their planning, budgeting, and operations. Whether DOD and the Coast Guard are taking sufficient actions for defending U.S. interests in the region is a topic of congressional oversight. The Coast Guard has two operational polar icebreakers, has purchased a commercial icebreaker that it is converting into a third polar icebreaker, and is procuring new polar icebreakers.

The diminishment of Arctic ice could lead in coming years to increased commercial shipping on two trans-Arctic sea routes—the Northern Sea Route close to Russia, and the Northwest Passage close to Alaska and through the Canadian archipelago—though the rate of increase in the use of these routes might not be as great as sometimes anticipated in press accounts. International guidelines for ships operating in Arctic waters have been updated.

Changes to the Arctic brought about by warming temperatures will likely allow more onshore and offshore exploration for oil, gas, and minerals. Warming that causes permafrost to melt could pose challenges to onshore exploration activities. Increased vessel traffic (e.g., oil and gas exploration, cruise ships, expanded fishing activities) in the Arctic increase the risk of pollution in Arctic waters. Cleaning up oil spills in ice-covered waters will be more difficult than in other areas, primarily because effective strategies for cleaning up oil spills in ice-covered waters have yet to be developed. Changes in the Arctic could result in migration of fish stocks to new waters, and could affect protected species. The United States is working with other countries regarding the management of Arctic fish stocks.

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Introduction

The diminishment of Arctic sea ice has led to increased human activities in the Arctic, and has heightened interest in, and concerns about, the region's future. Issues such as geopolitical competition in the region between the United States, Russia, and the People's Republic of China (PRC, or China); increased military operations in the region by Russia and other Arctic countries; growth in commercial shipping through the Arctic; and oil, gas, and mineral exploration in the Arctic could affect the region's future.

The United States, by virtue of Alaska, is an Arctic country and has substantial political, economic, energy, environmental, and other interests in the region.[1] Decisions that Congress makes on Arctic-related issues could significantly affect these interests.

This report provides an overview of Arctic-related issues for Congress, and refers readers to more in-depth CRS reports on specific Arctic-related issues. Congressional readers with questions about an issue discussed in this report should contact the author or authors of the section of the report discussing that issue. The authors are identified by footnote at the start of each section.

This report does not track legislation on specific Arctic-related issues. For tracking of legislative activity, see the CRS reports relating to specific Arctic-related issues that are listed at the end of this report.

Background[2]

Definitions of the Arctic

There are multiple definitions of the Arctic that result in differing descriptions of the land and sea areas encompassed by the term. Policy discussions of the Arctic can employ varying definitions of the region, and readers should bear in mind that the definition used in one discussion may differ from that used in another. This CRS report does not rely on any one definition.

Arctic Circle Definition

The most common and basic definition of the Arctic defines the region as the land and sea area north of the Arctic Circle (a circle of latitude at about 66° 34′ North).[3] For surface locations within this zone, the sun is generally above the horizon for 24 continuous hours at least once per year (at the summer solstice) and below the horizon for 24 continuous hours at least once per year (at the winter solstice). The land and sea area within the Arctic Circle is about 8.14 million square

[1] This sentence originated in an earlier iteration of this CRS report and was later transferred by the Government Accountability Office (GAO) with minor changes to Government Accountability Office, *Coast Guard[:] Complete Performance and Operational Data Would Better Clarify Arctic Resource Needs*, GAO-24-106491, September 2024, highlights page and page 1.

[2] This section was prepared by Ronald O'Rourke, Specialist in Naval Affairs, Foreign Affairs, Defense, and Trade Division.

[3] Sources differ on the precise latitude of the Arctic Circle. One source states "The position of the Arctic Circle is not fixed and currently runs 66°33′50.4″ north of the Equator. Its latitude depends on Earth's axial tilt, which fluctuates by a margin of some 2° over a 41,000-year period, due to tidal forces resulting from the orbit of the Moon. Consequently, the Arctic Circle is currently drifting northwards at a speed of about 14.5 m (48 ft) per year." ("Arctic Circle," *Wikipedia*, updated May 16, 2025, accessed May 19, 2025, at https://en.wikipedia.org/wiki/Arctic_Circle.)

miles,[4] which is about 4.1% (or between 1/24th and 1/25th) of the Earth's surface, and more than twice the land area of the United States, which is about 3.5 million square miles.

The Arctic Circle definition of the Arctic includes the northernmost part of Alaska—more than one-quarter of the state's land area[5]—as well as the Chukchi Sea, which separates that part of Alaska from Russia, and U.S. territorial and Exclusive Economic Zone (EEZ) waters north of Alaska. It does not include the more southerly parts of Alaska or the Bering Sea, which separates that lower part of the state from Russia.

The Arctic Ocean, which is roughly at the center of the Arctic region, accounts for much of the region's total area. By one calculation, the Arctic Ocean has an area of about 6.01 million square miles, which is about 4.3% of the Earth's *ocean* area.[6] This figure uses boundaries for the Arctic Ocean that include some waters south of the Arctic Circle.[7] Other sources, using different boundaries for the Arctic Ocean, put the size of the Arctic Ocean at about 5.4 million square miles.[8]

Definition in Arctic Research and Policy Act (ARPA) of 1984

Section 112 of the Arctic Research and Policy Act (ARPA) of 1984 (Title I of P.L. 98-373 of July 31, 1984)[9] defines the Arctic as follows:

> As used in this title, the term "Arctic" means all United States and foreign territory north of the Arctic Circle and all United States territory north and west of the boundary formed by the Porcupine, Yukon, and Kuskokwim Rivers [in Alaska]; all contiguous seas, including the Arctic Ocean and the Beaufort, Bering, and Chukchi Seas; and the Aleutian chain.

This definition, which is codified at 15 U.S.C. 4111,[10] includes certain parts of Alaska below the Arctic Circle, including the Aleutian Islands and portions of central and western mainland Alaska, such as the Seward Peninsula and the Yukon Delta.

The U.S. Coast Guard states that "The U.S. Arctic encompasses some 2,521 miles of shoreline, an international strait adjacent to the Russian Federation, and 647 miles of land border with Canada above the Arctic Circle. The U.S. Exclusive Economic Zone (EEZ) in the Arctic contains

[4] Source: Figure provided to CRS by Geography and Map Division of Library of Congress, May 12, 2020, in consultation with the National Geodetic Survey (NGS) of National Oceanic and Atmospheric Administration (NOAA). Other sources provide different figures for the land and sea area within the Arctic Circle, such as 7.7 million square miles. (See, for example, "Arctic Circle," *Wikipedia*, updated May 16, 2025, accessed May 19, 2025.)

[5] Source: Lawrence Hamilton, Jochen Wirsing, Jessica Brunacini, and Stephanie Pfirman, "Arctic Knowledge of the U.S. Public," Arctic Research Consortium of the United States (ARCUS), undated, but with an internet address (https://www.arcus.org/witness-the-arctic/2017/5/highlight/2) and endnotes suggesting a date of 2017, which states: "More than a quarter of Alaska's land area lies north of the Arctic Circle."

[6] Source: NOAA, National Geophysical Data Center, "World Ocean Volumes," accessed May 19, 2025, at https://www.ncei.noaa.gov/sites/g/files/anmtlf171/files/2023-01/World%20Ocean%20Volumes.pdf. The table presented at that source states that the Arctic Ocean has an area of 15.558 million square kilometers, which converts to about 6.007 million square miles.

[7] See the map posted at NOAA, National Geophysical Data Center, "World Ocean Volumes," accessed May 19, 2025, at https://www.ncei.noaa.gov/sites/g/files/anmtlf171/files/2023-01/World%20Ocean%20Volumes.pdf.

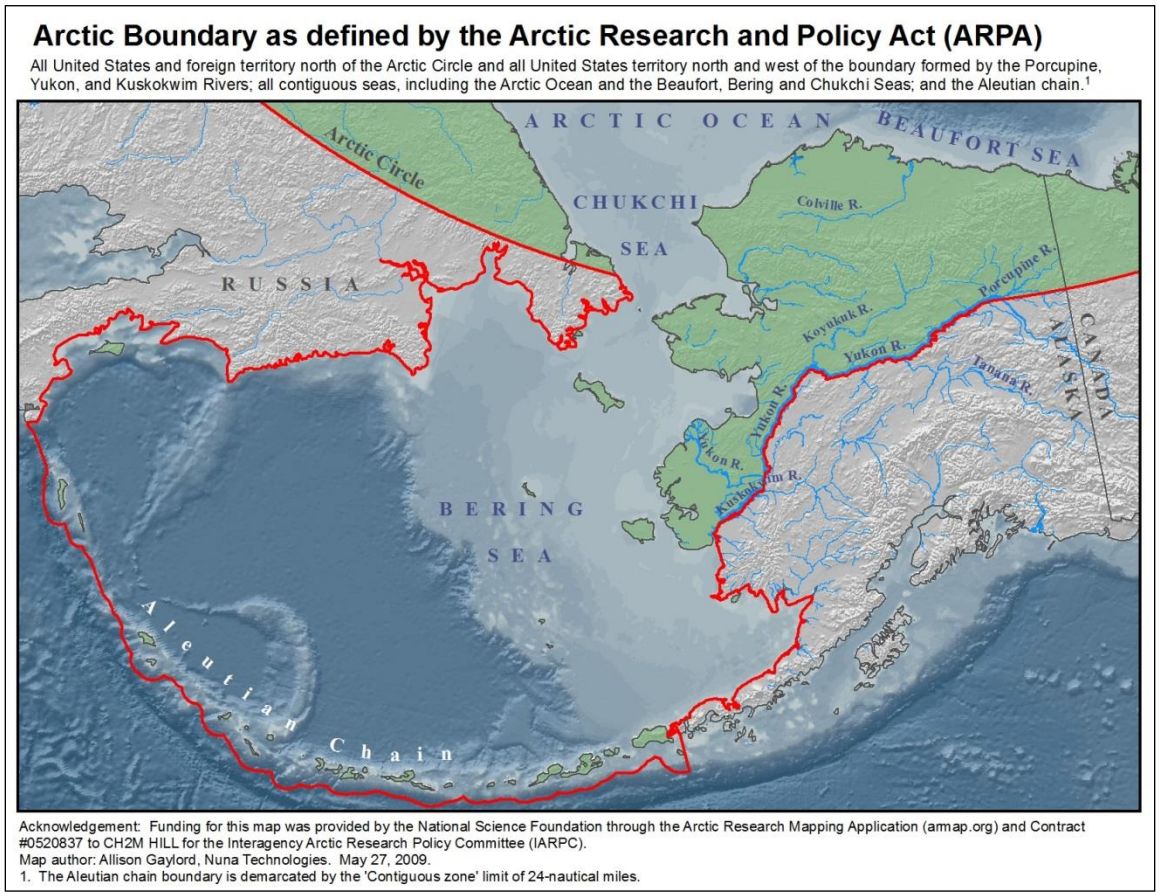
[8] See, for example, "Arctic Ocean," *Britannica (Encyclopedia Britannica)*, accessed May 19, 2025, at https://www.britannica.com/place/Arctic-Ocean; or "Arctic Ocean," *World Atl*as, accessed May 19, 2025, at https://www.worldatlas.com/seas/arctic-ocean.html.

[9] Title II of P.L. 98-373 is the National Critical Materials Act of 1984.

[10] As codified, the definition reads, "As used in this chapter..."

approximately 889,000 square miles of ocean."[11] **Figure 1** shows the Arctic area of Alaska as defined by ARPA; **Figure 2** shows the entire Arctic area as defined by ARPA.

Figure 1. Arctic Area of Alaska as Defined by ARPA



Source: U.S. Arctic Research Commission (https://www.arctic.gov/uploads/assets/ARPA_Alaska_only_150dpi.jpg, accessed May 19, 2025).

Other Definitions

Other definitions of the Arctic are based on factors such as average temperature, the northern tree line,[12] the extent of permafrost on land, the extent of sea ice on the ocean, or jurisdictional or administrative boundaries. A definition based on a climate-related factor could circumscribe differing areas over time as a result of changes in climate.

For example, the 10°C isotherm definition of the Arctic—a definition sometimes used in scientific and environmental discussions of the Arctic[13]—defines the region as the land and sea

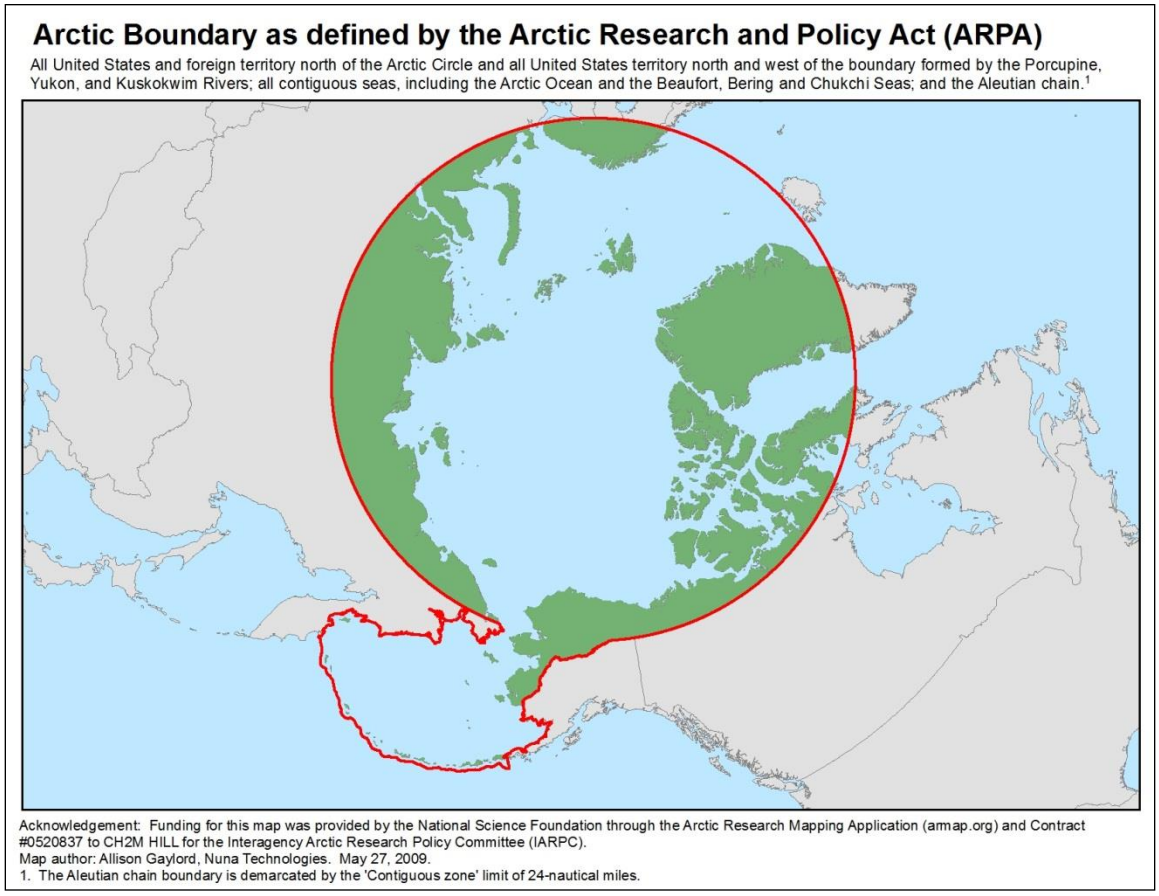
[11] Coast Guard, *Arctic Strategic Outlook*, April 2019, p. 11.

[12] For a map of the Arctic tree line boundary, see "Arctic Tree Line Boundary," Arctic Portal.org, accessed May 19, 2025, at https://arcticportal.org/maps/download/arctic-definitions/2424-arctic-tree-line-boundary.

[13] See, for example, "Boundaries of the Arctic," Climate Policy Watcher, updated December 6, 2023, accessed May 19, 2025, at https://web.archive.org/web/20240307164536/https://www.climate-policy-watcher.org/atmospheric-circulation/boundaries-of-the-arctic.html; "What is the Arctic?" National Snow & Ice Data Center, accessed May 19, 2025, at https://nsidc.org/learn/parts-cryosphere/arctic-weather-and-climate; Hobart M. King, "Where is the Arctic? (continued...)

area in the northern hemisphere where the average temperature for the warmest month (July) is below 10°C, or 50°F. This definition results in an irregularly shaped Arctic region that excludes some land and sea areas north of the Arctic Circle but includes some land and sea areas south of the Arctic Circle. This definition currently excludes all of Finland and Sweden, as well as some of Alaska above the Arctic Circle, while including virtually all of the Bering Sea and Alaska's Aleutian Islands.

Figure 2. Entire Arctic Area as Defined by ARPA



Source: U.S. Arctic Research Commission (https://www.arctic.gov/uploads/assets/ARPA_Polar_150dpi.jpg, accessed May 19, 2025).

As another example, the definition of the Arctic adopted by the Arctic Monitoring and Assessment Programme (AMAP)—a working group of the Arctic Council—"essentially includes the terrestrial and marine areas north of the Arctic Circle (66°32' N),[14] and north of 62° N in

What is its Boundary?" Geology.com, undated, accessed May 19, 2025, at https://geology.com/maps/where-is-the-arctic/; Fabian Baur and Bruno Kothe, "Climate and Climate Change in the Arctic," European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), April 28, 2020, accessed May 19, 2025, at https://www.eumetsat.int/science-blog/climate-and-climate-change-arctic; "The Arctic, as Defined by Summer Temperature," GRID-Arendal, accessed May 19, 2025, at https://www.grida.no/resources/7743; *Arctic Pollution Issues: A State of the Arctic Environment Report*, Arctic Monitoring and Assessment Programme, Oslo, 1997, p. 6, accessed May 19, 2025, at https://www.amap.no/documents/download/79/inline (cover page and front section) and https://www.amap.no/documents/download/68/inline (section that includes page 6).

[14] Regarding the precise latitude of the Arctic Circle, see footnote 3.

Asia and 60° N in North America, modified to include the marine areas north of the Aleutian chain, Hudson Bay, and parts of the North Atlantic, including the Labrador Sea."[15]

Some observers use the term "high north" as a way of referring to the Arctic, or make a distinction between the "high Arctic"—meaning, in general, the colder portions of the Arctic that are closer to the North Pole—and other areas of the Arctic that are generally less cold and farther away from the North Pole, which are sometimes described as the low Arctic or the subarctic.

Population of the Arctic

According to one estimate, about 4 million people, or about 0.05% of the world's population, live in the Arctic, of which roughly half (roughly 2 million) live in Russia's part of the Arctic,[16] and roughly 500,000 belong to Indigenous peoples.[17] Another source states "Approximately two and a half million of Russia's inhabitants live in Arctic territory, accounting for nearly half of the population living in the Arctic worldwide."[18] Another source, using a broader definition of the Arctic, concluded that just over 10 million people live in the Arctic, including 7 million in Russia's Arctic.[19]

[15] For examples of maps of the Arctic reflecting various definitions of the Arctic, see

- the map of the geographic areas described in Annex 1 of the May 2017 Agreement on Enhancing International Arctic Scientific Cooperation, accessed May 19, 2025, at both "Arctic Region," U.S. Department of State, https://2021-2025.state.gov/key-topics-office-of-ocean-and-polar-affairs/arctic/, and "Maps," U.S. Arctic Research Commission, https://www.arctic.gov/uploads/assets/arctic-sci-agree-150dpi-color.jpg.
- "Definitions of the Arctic," UN Environment Programme, accessed May 19, 2025, at https://www.grida.no/resources/7010;
- the collection of maps posted at "Arctic Definitions," Arctic Portal, accessed May 19, 2025, at https://arcticportal.org/maps/download/arctic-definitions;
- "Arctic Definition Map," Arctic Portal Library, accessed May 19, 2025, at http://library.arcticportal.org/1492/;
- the maps posted by the Arctic Centre of the University of Lapland, accessed May 19, 2025, at https://www.arcticcentre.org/EN/arcticregion/Maps/definitions and https://www.arcticcentre.org/EN/arcticregion/Maps/permafrost;
- Michael Paul and Göran Swistek, Russia in the Arctic: *Development Plans, Military Potential, and Conflict Prevention*, Stiftung Wissenschaft und Politik (SWP) (German Institute for International and Security Affairs), SWP Research Paper 3, February 2022, p. 10 (Map 1).

[16] Sources: "Arctic Peoples," Arctic Council, accessed May 19, 2025, at https://arctic-council.org/en/explore/topics/arctic-peoples/; National Snow & Ice Data Center, "Arctic People," accessed May 19, 2025, at https://web.archive.org/web/20220702084552/https://nsidc.org/cryosphere/arctic-meteorology/arctic-people.html; United Kingdom, House of Commons, Defence Committee, On Thin Ice: UK Defence in the Arctic, Twelfth Report of Session 2017–19, August 15, 2018 (Ordered by the House of Commons to be printed 19 July 2018), p. 6; "Arctic Indigenous Peoples," Arctic Centre, accessed May 19, 2025, at https://www.arcticcentre.org/EN/arcticregion/Arctic-Indigenous-Peoples.

[17] Source: "Permanent Participants," Arctic Council, accessed May 19, 2025, at https://arctic-council.org/en/about/permanent-participants/. The term Indigenous is not consistently defined in the international or domestic legal context. Some entities, such as the United Nations, have developed general guidelines for identifying Indigenous groups based on a variety of factors (see United Nations, "Who Are Indigenous Peoples?" fact sheet, https://www.un.org/esa/socdev/unpfii/documents/5session_factsheet1.pdf).

[18] "The Russian Federation," Arctic Council, accessed May 19, 2025, at https://arctic-council.org/en/about/states/russian-federation/.

[19] Timothy Heleniak, "The Future of Arctic Populations," *Polar Geography*, January 3, 2020. Another source states that "using more broad definition, according to the University of the Arctic Atlas, there are approximately 13.1 million people living in the area of the circumpolar North" ("Arctic Indigenous Peoples," Arctic Centre, accessed May 19, 2025, at https://www.arcticcentre.org/EN/arcticregion/Arctic-Indigenous-Peoples).

Eight Arctic States, Including Seven NATO Members and Five Arctic Coastal States

Eight countries have territory north of the Arctic Circle: the United States (Alaska), Russia, Canada, Iceland,[20] Denmark (by virtue of Greenland, a self-governing part of the Kingdom of Denmark), Norway, Sweden, and Finland. These eight countries are often referred to as the Arctic countries or Arctic States, and they are the member states of the Arctic Council, which is discussed further below.

The seven Arctic countries other than Russia are all members of NATO, and are sometimes referred to as the Arctic 7 or A7 states. Five of the eight Arctic countries—the United States, Canada, Denmark (by virtue of Greenland), Norway, and Russia—are considered Arctic coastal states because they have mainland coasts that front onto waters north of the Arctic Circle.

U.S. Identity as an Arctic Nation

As mentioned earlier, the United States, by virtue of Alaska, is an Arctic country and has substantial political, economic, energy, environmental, and other interests in the region. Even so, Alaska is geographically separated and somewhat distant from the other 49 states, and relatively few Americans—fewer than 70,000 as of 2024—live in the Arctic part of Alaska as shown in **Figure 1**.[21] A March 6, 2020, research paper on the Arctic in U.S. national identity, based on data collected in online surveys conducted in October-December 2019, stated: "We found that Americans continue to mildly disagree with the assertion that the United States is an Arctic nation with broad and fundamental interests in the region."[22]

[20] The northern coast of mainland Iceland is just south of the Arctic Circle, but the Arctic Circle passes through Grimsey Island, a small offshore island of Iceland that is about 25 miles north of the northern coast of mainland Iceland. The northern part of Grimsey Island is Iceland's territory north of the Arctic Circle. See, for example, "Grímsey," *Wikipedia*, updated April 3, 2025, accessed May 19, 2025 at https://en.wikipedia.org/wiki/Gr%C3%ADmsey; "Is Iceland in the Arctic Circle?" Iceland Unlimited, January 2017, accessed May 19, 2025, at https://icelandunlimited.is/blog/is-iceland-in-the-arctic-circle/.

[21] Source for figure of fewer than 70,000: CRS analysis of data presented at Alaska Department of Labor and Workforce Development, "Alaska Population Estimates," updated January 7, 2025, accessed May 19, 2025, at https://live.laborstats.alaska.gov/data-pages/alaska-population-estimates. Figures presented there for Alaska's 2023 population estimates by borough, census area, and economic region show that of Alaska's estimated population of 741,147 as of 2024, fewer than 70,000 were in areas wholly or partially north of the boundary of the Arctic area of Alaska that is shown in **Figure 1**.

[22] Zachary D. Hamilla, *The Arctic in U.S. National Identity (2019)*, Arctic Studio, March 6, 2020, p. 1. See also Rodger Baker, "Remapping the American Arctic," *Stratfor*, July 28, 2020. See also Lawrence Hamilton, Jochen Wirsing, Jessica Brunacini, and Stephanie Pfirman, "Arctic Knowledge of the U.S. Public," Arctic Research Consortium of the United States (ARCUS), undated, but with an internet address (https://www.arcus.org/witness-the-arctic/2017/5/highlight/2) and endnotes suggesting a date of 2017.

U.S. Arctic Research

Arctic Research and Policy Act (ARPA) of 1984, As Amended

The Arctic Research and Policy Act (ARPA) of 1984 (Title I of P.L. 98-373 of July 31, 1984;[23] (15 U.S.C. 4101 et seq.) "provide[s] for a comprehensive national policy dealing with national research needs and objectives in the Arctic."[24] The act, among other things

- made a series of findings concerning the importance of the Arctic and Arctic research;
- established the U.S. Arctic Research Commission (USARC) to promote Arctic research and recommend Arctic research policy;[25]
- designated the National Science Foundation (NSF) as the lead federal agency for implementing Arctic research policy;
- established the Interagency Arctic Research Policy Committee (IARPC) to develop a national Arctic research policy and a five-year plan to implement that policy, and designated the NSF representative on the IARPC as its chairperson;[26] and
- defined the term "Arctic" for purposes of the act.

The Arctic Research and Policy Act of 1984 was amended by P.L. 101-609 of November 16, 1990. In the 118th Congress, S. 5081, the Arctic Research and Policy Amendments Act of 2024, introduced in the Senate on September 18, 2024, would further amend the Arctic Research and Policy Act of 1984.[27]

FY2026 NSF Budget Request for Arctic Research

NSF, which is the lead federal agency for implementing Arctic research policy, carries out Arctic and Antarctic research activities through its Office of Polar Programs (OPP). NSF states that "OPP is the primary U.S. supporter of fundamental research in the polar regions. In the Arctic, NSF facilitates coordination of research planning as directed by the Arctic Research Policy Act of 1984, and the NSF Director chairs the Interagency Arctic Research Policy Committee (IARPC) created for this purpose."[28] **Table 1** shows NSF's FY2026 funding request for OPP and compares it to NSF's current plan for FY2024 funding.

[23] Title II of P.L. 98-373 is the National Critical Materials Act of 1984.

[24] These words are taken from the official title of P.L. 98-373. (Arctic Research and Policy Act of 1984 is the short title of Title I of P.L. 98-373.) The remainder of P.L. 98-373's official title relates to Title II of the act, the short title of which is the National Critical Materials Act of 1984.

[25] USARC publishes a biennial report to the White House and Congress outlining goals and objectives for Arctic research; the 2023-2024 edition is United States Arctic Research Commission, *Report on the Goals and Objectives for Arctic Research 2023-2024 for the US Arctic Research Program Plan*, January 2023, accessed May 19, 2025, https://www.arctic.gov/goals-and-objectives/.

[26] The IARPC currently includes more than a dozen federal agencies, departments, and offices. Additional information on the IARPC is available at https://www.nsf.gov/geo/opp/arctic/iarpc/start.jsp.

[27] See https://www.congress.gov/bill/118th-congress/senate-bill/5081. See also "Senator Murkowski Introduces Arctic Research and Policy Amendments Act of 2024," press release dated September 23, 2024.

[28] National Science Foundation, *FY 2025 Budget Request to Congress*, May 30, 2025, p. R&RA-11 (PDF page 117 of 222).

Table 1. Funding for OPP

Dollar amounts in millions

	FY2024 Current Plan	FY2025	FY2026 request	FY2026 Request Change from FY2024 Current Plan	
				Amount	Percentage
Research	86.00	TBD	25.00	-61.00	-70.9%
Education	3.92	TBD	0	-3.92	-100.0%
Infrastructure	469.84	TBD	472.22	2.38	0.5%
Total	**559.76**	**TBD**	**497.22**	**-62.54**	**-11.2%**

Source: National Science Foundation, *FY 2025 Budget Request to Congress*, May 30, 2025, p. R&RA-11 (PDF page 117 of 222). TBD means to be determined.

March 2024 Report on Federal Agency Funding for Arctic Research

A March 2024 report from the National Science and Technology Council—the FY2025 edition of a congressionally mandated annual report—presents a compilation of budgetary information reported by federal agencies and departments engaged in Arctic research. The report states

> The federal government spent over $550 million on Arctic research in fiscal year (FY) 2023…. The National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), and the Department of Defense (DoD)—agencies with the three largest Arctic budgets—account for over 80% of the FY 2023 total. Based on agency summaries, NSF invests primarily in basic research, DoD invests primarily in applied research, and NASA invests primarily in research infrastructure.[29]

Figure 3 presents the report's summary table of Arctic research funding by agency.

[29] Interagency Arctic Research Policy Committee of the National Science and Technology Council, *Arctic Research Crosscut Budget Report FY 2022-2024*, March 2024, p. 4. The reported is mandated by Section 5912 of the FY2023 National Defense Authorization Act (NDAA) (H.R. 7776/P.L. 117-263 of December 23, 2022).

Figure 3. Arctic Research Funding by Agency, FY2022-FY2024

Table from March 2024 Arctic Research Crosscut Budget Report for FY2022-FY2024

TABLE 1. ARCTIC RESEARCH CROSSCUT BY AGENCY. Funding amounts are shown in millions of dollars. Agencies reported estimated program funding to the nearest $100,000 and excluded programs, projects, or activities that receive less than $100,000 annually. Agency submissions include estimated labor costs and exclude development activities.

AGENCY	FY 2022 ACTUAL	FY 2022 WITH SUPPLEMENTAL	FY 2023 ENACTED	FY 2023 WITH SUPPLEMENTAL	FY 2024 PRESIDENT'S BUDGET[1]
Arctic Research Commission	1.7	1.7	1.7	1.7	1.8
Denali Commission	0.3	0.3	0.3	0.3	0.5
Department of Agriculture	1.3	1.3	0.3	0.3	1.8
Department of Commerce	20.7	21.0	14.7	16.2	19.7
Department of Defense	70.1	71.4	120.9	125.9	28.5
Department of Energy	34.2	34.2	27.9	27.9	30.0
Department of Health and Human Services	30.9	30.9	32.7	33.2	33.4
Department of Homeland Security	21.0	21.0	8.0	8.0	0.0
Department of Housing and Urban Development	0.0	0.0	0.6	0.6	0.0
Department of the Interior	24.3	24.3	25.3	25.3	22.7
National Aeronautics and Space Administration	154.7	154.7	177.2	177.2	181.0
National Science Foundation	151.2	151.2	142.4	154.1	124.3
Smithsonian Institution	2.3	2.3	2.2	2.2	2.3
Total	**512.5**	**514.2**	**554.2**	**573.0**	**446.0**

[1] These amounts represent the President's annual budget request to Congress. Actual spending for FY 2024 will likely be different.

Source: Interagency Arctic Research Policy Committee of the National Science and Technology Council, *Arctic Research Crosscut Budget Report FY 2022-2024*, March 2024, p. 4.

Major U.S. Policy Documents Relating to the Arctic

The executive branch has issued a number of policy documents concerning the Arctic, including those mentioned below.

January 2009 Arctic Policy Directive (NSPD 66/HSPD 25)

On January 12, 2009 (i.e., eight days before its final day in office), the George W. Bush Administration released a presidential directive establishing a new U.S. policy for the Arctic region. The directive, dated January 9, 2009, was issued as National Security Presidential Directive 66/Homeland Security Presidential Directive 25 (NSPD 66/HSPD 25).[30] The directive was the result of an interagency review, and it superseded for the Arctic (but not the Antarctic) a 1994 presidential directive on Arctic and Antarctic policy. The directive, among other things

- states that the United States is an Arctic nation, with varied and compelling interests in the region;

[30] The text of NSPD 66/HSPD 25 is posted at the Homeland Security Digital Library at https://www.hsdl.org/?abstract&did=750476.

- sets forth a six-element overall U.S. policy for the region;
- describes U.S. national security and homeland security interests in the Arctic; and
- discusses a number of issues as they relate to the Arctic, including international governance; the extended continental shelf and boundary issues; promotion of international scientific cooperation; maritime transportation; economic issues, including energy; and environmental protection and conservation of natural resources.

May 2013 National Strategy for Arctic Region

On May 10, 2013, the Obama Administration released a document entitled *National Strategy for the Arctic Region*.[31] The document appears to supplement rather than supersede the January 2009 Arctic policy directive (NSPD 66/HSPD 25) discussed above.[32] The document states that the strategy is built on three lines of effort:

- advancing U.S. security interests,
- pursuing responsible Arctic region stewardship, and
- strengthening international cooperation.

Actions taken under the strategy, the document states, will be informed by four guiding principles:

- safeguarding peace and stability,
- making decisions using the best available information,
- pursuing innovative arrangements, and
- consulting and coordinating with Alaska natives.

On January 30, 2014, the Obama Administration released an implementation plan for the May 2013 national strategy for the Arctic region.[33] The implementation plan outlines about 36 specific initiatives.

January 2015 Executive Order on Enhancing Coordination of Arctic Efforts

On January 21, 2015, then-President Obama issued Executive Order 13689, entitled "Enhancing Coordination of National Efforts in the Arctic." The order established an Arctic Executive Steering Committee is to "provide guidance to executive departments and agencies and enhance coordination of Federal Arctic policies across agencies and offices, and, where applicable, with State, local, and Alaska Native tribal governments and similar Alaska Native organizations, academic and research institutions, and the private and nonprofit sectors."

[31] *National Strategy for the Arctic Region*, May 2013, 11 pp.

[32] *National Strategy for the Arctic Region* states on page 6 that the "lines of effort" it describes are to be undertaken "[t]o meet the challenges and opportunities in the Arctic region, and in furtherance of established Arctic Region Policy," at which point there is a footnote referencing the January 2009 Arctic policy directive.

[33] *Implementation Plan for The National Strategy for the Arctic Region*, January 2014, 32 pp. The news release announcing the implementation plan is posted at https://obamawhitehouse.archives.gov/blog/2014/01/30/white-house-releases-implementation-plan-national-strategy-arctic-region. The document itself is posted at https://obamawhitehouse.archives.gov/sites/default/files/docs/implementation_plan_for_the_national_strategy_for_the_arctic_region_-_fi....pdf.

October 2022 National Security Strategy Document

A national security strategy document released by the Biden Administration in October 2022 includes a section on the Arctic, entitled "Maintain a Peaceful Arctic," which states

> The United States seeks an Arctic region that is peaceful, stable, prosperous, and cooperative. Climate change is making the Arctic more accessible than ever, threatening Arctic communities and vital ecosystems, creating new potential economic opportunities. and intensifying competition to shape the region's future. Russia has invested significantly in its presence in the Arctic over the last decade, modernizing its military infrastructure and increasing the pace of exercises and training operations. Its aggressive behavior has raised geopolitical tensions in the Arctic, creating new risks of unintended conflict and hindering cooperation. The PRC has also sought to increase its influence in the Arctic by rapidly increased its Arctic investments, pursuing new scientific activities, and using these scientific engagements to conduct dual-use research with intelligence or military applications.
>
> We will uphold U.S. security in the region by improving our maritime domain awareness, communications, disaster response capabilities, and icebreaking capacity to prepare for increased international activity in the region. We will exercise U.S. Government presence in the region as required, while reducing risk and preventing unnecessary escalation. Arctic nations have the primary responsibility for addressing regional challenges, and we will deepen our cooperation with our Arctic allies and partners and work with them to sustain the Arctic Council and other Arctic institutions despite the challenges to Arctic cooperation posed by Russia's war in Ukraine. We will continue to protect freedom of navigation and determine the U.S. extended continental shelf in accordance with international rules. We must build resilience to and mitigate climate change in the region, including through agreements to reduce emissions and more cross-Arctic research collaboration. As economic activity in the Arctic increases, we will invest in infrastructure, improve livelihoods, and encourage responsible private sector investment by the United States, our allies, and our partners, including in critical minerals, and improve investment screening for national security purposes. Across these efforts, we will uphold our commitment to honor Tribal sovereignty and self-governance through regular, meaningful, and robust consultation and collaboration with Alaska Native communities.[34]

October 2022 National Strategy for the Arctic Region

A national strategy for the Arctic region that was also released by the Biden Administration in October 2022, and which states that it is an update of the above-noted May 2013 national strategy for the Arctic region, states the following in its executive summary:

> The United States seeks an Arctic region that is peaceful, stable, prosperous, and cooperative. The National Strategy for the Arctic Region articulates an affirmative U.S. agenda over the next ten years, from 2022 to 2032, to realize this vision. This strategy, an update of its 2013 predecessor, addresses the climate crisis with greater urgency and directs new investments in sustainable development to improve livelihoods for Arctic residents, while conserving the environment. It also acknowledges increasing strategic competition in the Arctic since 2013, exacerbated by Russia's unprovoked war in Ukraine, and seeks to position the United States to both effectively compete and manage tensions.
>
> Realizing our vision during this dynamic and challenging period will require U.S. leadership at home and abroad. We will advance U.S. interests across four mutually reinforcing pillars spanning both domestic and international issues.

[34] White House, *National Security Strategy*, October 2022, pp. 44-45.

- **Pillar 1—Security**: We will deter threats to the U.S. homeland and our allies by enhancing the capabilities required to defend our interests in the Arctic, while coordinating shared approaches with allies and partners and mitigating risks of unintended escalation. We will exercise U.S. government presence in the Arctic region as required to protect the American people and defend our sovereign territory.

- **Pillar 2—Climate Change and Environmental Protection**: The U.S. government will partner with Alaskan communities and the State of Alaska to build resilience to the impacts of climate change, while working to reduce emissions from the Arctic as part of broader global mitigation efforts, to improve scientific understanding, and to conserve Arctic ecosystems.

- **Pillar 3—Sustainable Economic Development**: We will pursue sustainable development and improve livelihoods in Alaska, including for Alaska Native communities, by investing in infrastructure, improving access to services, and supporting growing economic sectors. We will also work with allies and partners to expand high-standard investment and sustainable development across the Arctic region.

- **Pillar 4—International Cooperation and Governance**: Despite the challenges to Arctic cooperation resulting from Russia's aggression in Ukraine, the United States will work to sustain institutions for Arctic cooperation, including the Arctic Council, and position these institutions to manage the impacts of increasing activity in the region. We also seek to uphold international law, rules, norms, and standards in the Arctic.

This strategy is intended to serve as a framework to guide the U.S. government's approach to tackling emerging challenges and opportunities in the Arctic. Our work will be guided by five principles that will be applied across all four pillars.

- **Consult, Coordinate, and Co-Manage with Alaska Native Tribes and Communities**: The United States is committed to regular, meaningful, and robust consultation, coordination, and co-management with Alaska Native Tribes, communities, corporations, and other organizations and to ensuring equitable inclusion of Indigenous Peoples and their knowledge.

- **Deepen Relationships with Allies and Partners**: We will deepen our cooperation with Arctic Allies and partners: Canada, the Kingdom of Denmark (including Greenland), Finland, Iceland, Norway, and Sweden. We will also expand Arctic cooperation with other countries that uphold international law, rules, norms, and standards in the region.

- **Plan for Long-Lead Time Investments**: Many of the investments prioritized in this strategy will require long lead times. We will be proactive, anticipating changes coming to the Arctic over the next several decades and making new investments now to be prepared.

- **Cultivate Cross-Sectoral Coalitions and Innovative Ideas**: The challenges and opportunities in the Arctic cannot be solved by national governments alone. The United States will strengthen and build on coalitions of private sector; academia; civil society; and state, local, and Tribal actors to encourage and harness innovative ideas to tackle these challenges.

- **Commit to a Whole of Government, Evidence-Based Approach**: The Arctic extends beyond the responsibility of any single region or government agency. U.S. Federal departments and agencies will work together to implement this strategy. We will deploy evidence-based decision-making and carry out our work in close

> partnership with the State of Alaska; Alaska Native Tribes, communities, corporations, and other organizations; and local communities, as well as with the U.S. Congress.[35]

In October 2023, the Biden Administration released an implementation plan for its October 2022 national strategy for the Arctic region.[36] The implementation plan includes 13 strategic objectives in support of the October 2022 document's four pillars.[37]

Ambassador at Large for Arctic Affairs

On July 16, 2014, then-Secretary of State John Kerry announced the appointment of retired Coast Guard Admiral Robert J. Papp Jr., who served as Commandant of the Coast Guard from May 2010 to May 2014, as the first U.S. Special Representative for the Arctic.[38] Papp served as the U.S. Special Representative until January 20, 2017, the final day of the Obama Administration and the first day of the Trump Administration.

The position of U.S. Special Representative for the Arctic remained unfilled from January 20, 2017, through July 29, 2020, when it was effectively replaced by the newly created position of the U.S. coordinator for the Arctic region. On July 29, 2020, the Trump Administration announced that career diplomat James (Jim) DeHart would be the first U.S. coordinator for the Arctic region; DeHart began his work in the position that day.[39]

In the 117th Congress, H.R. 3361, the United States Ambassador at Large for Arctic Affairs Act of 2021, H.R. 3433, the Arctic Diplomacy Act of 2021, and H.R. 9112, the United States Ambassador at Large for Arctic Affairs Act of 2022, each would have established a position of United States Ambassador at Large for Arctic Affairs, while S. 2967, the Arctic Diplomacy Act of 2021, would have established the position of Assistant Secretary of State for Arctic Affairs. In the 118th Congress, S. 821 would establish an Ambassador-at-Large for the Arctic Region.

On August 26, 2022, the Biden Administration announced that it was planning to appoint an Ambassador-at-Large for the Arctic Region.[40] On February 13, 2023, the Biden Administration announced that it was nominating Mike Sfraga, chair of the U.S. Arctic Research Commission

[35] White House, *National Strategy for the Arctic Region*, October 2022, pp. 3-4.

[36] White House, *Implementation Plan for the 2022 National Strategy for the Arctic Region*, October 18, 2023, 58 pp.

[37] The 13 strategic objectives are improve our understanding of the Arctic operating environment; exercise presence to support priority goals; maximize unity of effort with allies and partners; advance community adaptation and climate resilience; pursue international initiatives to mitigate emissions in the Arctic; expand research to better understand climate change and inform policy decisions; conserve and protect Arctic ecosystems, including through Indigenous co-production and co-management; invest in infrastructure; improve access to services and protect subsistence lifestyles and cultural traditions; develop emerging economic sectors in Alaska; work with allies and partners to increase responsible Arctic investment, including in critical minerals; sustain the Arctic Council and other arctic institutions and agreements; and protect freedom of navigation and continental shelf limits.

[38] See "Retired Admiral Robert Papp to Serve as U.S. Special Representative for the Arctic," Press Statement, John Kerry, Secretary of State, Washington, DC, July 16, 2014.

[39] See Department of State, "Appointment of U.S. Coordinator for the Arctic Region," Media Note, Office of the Spokesperson, July 29, 2020. See also Matthew Lee, "US Names New Arctic Envoy in Push to Expand Reach in Region," *Associated Press*, July 29, 2020; Timothy Gardner, "U.S. Appoints Coordinator for Arctic Policy As Mineral Race Heats Up," *Reuters*, July 29, 2020; Courtney McBride, "New Cold War: U.S. Names Arctic Policy Czar to Keep Tabs on China, Russia," *Wall Street Journal*, July 29, 2020; Melody Schreiber, "The Trump Administration Appoints a New State Department Arctic Coordinator," *ArcticToday*, July 29, 2020; Levon Sevunts (Radio Canada International), "Appointment of U.S. Arctic Co-ordinator May Signal More Muscular American Policy," *CBC*, July 31, 2020.

[40] Department of State, "Establishing an Ambassador-at-Large for the Arctic Region," press statement, August 26, 2022. See also Melody Schreiber, "US to Create New Arctic Ambassador Position," *ArcticToday*, August 26, 2022.

(USARC), for the position of Ambassador at Large for Arctic Affairs.[41] The nomination was received in the Senate on February 16, 2023. On January 3, 2024, the nomination was returned to the President under the provisions of Senate Rule XXXI, paragraph 6 of the Standing Rules of the Senate.[42] The Biden Administration subsequently renominated Sfraga for the position; the nomination was received in the Senate on January 11, 2024, and the Senate confirmed Sfraga for the position on September 24, 2024.[43] Sfraga served in the position until January 20, 2025. The position as of June 18, 2025, is vacant.[44]

In the 119th Congress, H.R. 3328, introduced in the House on May 13, 2025, and S. 1000, introduced in the Senate on March 12, 2025, would amend Title I of the State Department Basic Authorities Act of 1956 (22 U.S.C. 2651a et seq.) to establish an Ambassador-at-Large for Arctic Affairs as a permanent position.

Arctic Executive Steering Committee (AESC)

On September 24, 2021, the Biden Administration announced that it was "[r]eactivating the Arctic Executive Steering Committee (AESC), a mechanism to advance U.S. Arctic interests and coordinate Federal actions in the Arctic. The AESC will also facilitate the implementation of the Northern Bering Sea Climate Resilience Area, including by standing up the Northern Bering Sea Task Force and Tribal Advisory Council. These structures reinforce collaborative partnerships—particularly with Alaska Native communities—and harness science and Indigenous Knowledge to inform management and policy."[45] The AESC was initially established by the above-mentioned January 2015 Executive Order 13689 on enhancing coordination of Arctic efforts.[46]

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[41] White House, "President Biden Announces Key Nominees," February 13, 2023. See also https://www.congress.gov/nomination/118th-congress/358; Melody Schreiber, "Sfraga Named New Arctic Ambassador," *ArcticToday*, February 13, 2023; Riley Rogerson, "Biden Nominates Alaskan as 1st Arctic Ambassador," *Anchorage Daily News*, February 14, 2023.

[42] See the Congress.gov entry for the nomination at https://www.congress.gov/nomination/118th-congress/358. Senate Rule XXXI, paragraph 6 of the Standing Rules of the Senate states

> Nominations neither confirmed nor rejected during the session at which they are made shall not be acted upon at any succeeding session without being again made to the Senate by the President; and if the Senate shall adjourn or take a recess for more than thirty days, all nominations pending and not finally acted upon at the time of taking such adjournment or recess shall be returned by the Secretary to the President, and shall not again be considered unless they shall again be made to the Senate by the President.
>
> ("Rules of the Senate," accessed May 19, 2025, at https://www.rules.senate.gov/rules-of-the-senate.)

[43] See "PN1342—Michael Sfraga—Department of State" at https://www.congress.gov/nomination/118th-congress/1342. See also Leland Schwartz, "Dr. Mike Sfraga confirmed as US Ambassador-at-Large for Arctic Affairs," *ArcticToday*, September 25, 2024; Yereth Rosen, "Alaska Scientist Mike Sfraga Confirmed as U.S. Arctic Ambassador-at-Large," *Alaska Beacon*, September 24, 2024.

[44] For an opinion piece concerning the vacancy, see Nathaniel Herz (Northern Journal), "As Trump Eyes Greenland and Arctic Resources, America's Ambassadorship for the Region Goes Unfilled," *ArcticToday*, April 24, 2025.

[45] White House, "Biden-Harris Administration Brings Arctic Policy to the Forefront with Reactivated Steering Committee & New Slate of Research Commissioners," press release, September 24, 2021.

[46] A September 24, 2021, press report stated: "The steering committee had been moribund for the past four years, not meeting at a high level, said David Balton, appointed to direct it. He said 'it will step up and do more in the Arctic.' The revamped committee will try to figure out what 'needs to be done to get a better handle on addressing the changes in the Arctic,' Balton said." (Seth Borenstein, "White House Steps Up Work on What to Do About Thawing Arctic," *Associated Press*, September 24, 2021. See also Melody Schreiber, "Biden Appoints New U.S. Arctic Research, Leadership Officials in Science-Based approach," *ArcticToday*, September 24, 2021.)

Arctic Council

The Arctic Council, created in 1996, is the leading international forum for addressing issues relating to the Arctic. Its founding document is the Ottawa Declaration of September 19, 1996, a joint declaration (not a treaty) signed by representatives of the eight Arctic states. The State Department described the council as "the preeminent intergovernmental forum for addressing issues related to the Arctic Region. …The Arctic Council is not a treaty-based international organization but rather an international forum that operates on the basis of consensus, echoing the peaceful and cooperative nature of the Arctic Region."[47]

The Arctic Council's membership consists of the eight Arctic states. All decisions of the Arctic Council and its subsidiary bodies are by consensus of the eight Arctic states. In addition to the eight member states, six organizations representing Arctic Indigenous peoples have status as Permanent Participants. Thirteen non-Arctic states, 13 intergovernmental and interparliamentary organizations, and 12 nongovernmental organizations have been approved as observers, making for a total of 38 observer states and organizations.[48]

The council has a two-year chairmanship that rotates among the eight member states. The United States held the chairmanship from April 24, 2015, to May 11, 2017, and is scheduled to next hold it in 2031-2033. On May 12, 2025, the chairmanship was transferred from Norway to Greenland on behalf of the Kingdom of Denmark.[49]

Thematic areas of work addressed by the council include environment and climate, biodiversity, oceans, Arctic peoples, and agreements on Arctic scientific cooperation, cooperation on marine oil pollution preparedness and response in the Arctic, and cooperation on aeronautical and maritime search and rescue (SAR) in the Arctic. The Ottawa Declaration states explicitly that "The Arctic Council should not deal with matters related to military security."

The eight Arctic states have signed three legally binding agreements negotiated under the auspices of the Arctic Council: a May 2011 agreement on cooperation on aeronautical and maritime SAR in the Arctic, a May 2013 agreement on cooperation on marine oil pollution preparedness and response in the Arctic, and a May 2017 agreement on enhancing international Arctic scientific cooperation.[50]

In the 119th Congress, H.Res. 431, introduced in the House on May 20, 2025, and S.Res. 167, introduced in the Senate on April 9, 2025, would recognize the importance of the Arctic Council and reaffirm the commitment of the United States to the Arctic Council.

[47] "Arctic Region," U.S. Department of State, accessed May 19, 2025, at https://2021-2025.state.gov/key-topics-office-of-ocean-and-polar-affairs/arctic/.

[48] For list of the 38 observers and when they were approved for observer status, see "Who We Are" in Arctic Council, "Arctic Council," accessed May 19, 2025, at https://arctic-council.org/en/. For a discussion of the non-Arctic observer states, see Evan T. Bloom, "The Rising Importance of Non-Arctic States in the Arctic," *Wilson Quarterly*, Winter 2022.

[49] See, for example, Elías Thorsson, "Greenland Assumes Arctic Council Chairmanship During Challenging Times," *ArcticToday*, May 12, 2025.

[50] For brief summaries of these three agreements and links to the texts of these agreements, see "Arctic Region," U.S. Department of State, accessed May 19, 2025, at https://2021-2025.state.gov/key-topics-office-of-ocean-and-polar-affairs/arctic/. For additional information on the Arctic Council's organization and operations, see the Arctic Council's website at https://arctic-council.org/.

Arctic and UN Convention on Law of the Sea (UNCLOS)

The United Nations Convention on the Law of the Sea (UNCLOS) "lays down a comprehensive regime of law and order in the world's oceans and seas[,] establishing rules governing all uses of the oceans and their resources."[51] UNCLOS was adopted in 1982, and modified in 1994 by an agreement relating to the implementation of Part XI of the treaty, which relates to the seabed and ocean floor and subsoil thereof that are beyond the limits of national jurisdiction. UNCLOS entered into force in November 1994. As of July 23, 2024, 170 parties (169 states and the European Union) were party to the treaty.[52]

The United States is not a party to UNCLOS.[53] The 1982 treaty and the 1994 agreement were transmitted to the Senate on October 6, 1994, during the 103rd Congress, becoming Treaty Document 103-39. The full Senate to date has not voted on the question of whether to give its advice and consent to ratification of Treaty Document 103-39. Some Members of Congress, citing the Arctic, have introduced resolutions in favor of the United States becoming a party to UNCLOS.[54] Although the United States is not a party to UNCLOS, the United States accepts and acts in accordance with the non-seabed mining provisions of the treaty, such as those relating to navigation and overflight, which the United States views as reflecting customary international law of the sea.[55]

Part VI of UNCLOS (consisting of Articles 76 through 85), which covers the continental shelf, and Annex II to the treaty, which established a Commission on the Limits of the Continental Shelf, are particularly pertinent to the Arctic, because Article 77 states that "The coastal State exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources," and that these natural resources include, among other things, "mineral and other nonliving resources of the seabed and subsoil," including oil and gas deposits.[56]

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[51] United Nations, "United Nations Convention on the Law of the Sea of 10 December 1982, Overview and full text," updated July 13, 2022, accessed May 19, 2025, at https://www.un.org/depts/los/convention_agreements/convention_overview_convention.htm.

[52] Chronological lists of ratifications of, accessions and successions to the Convention and the related Agreements as of July 23, 2-24, accessed May 19, 2025, at http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm. The list shows that most recent state to become a party to the treaty is San Marino, which became a party on July 19, 2024.

[53] The United States is not a signatory to the treaty. On July 29, 1994, the United States became a signatory to the 1994 agreement relating to the implementation of Part XI of the treaty. The United States has not ratified either the treaty or the 1994 agreement.

[54] In the 118th Cong., see, for example, S.Res. 466, a resolution calling upon the United States Senate to give its advice and consent to the ratification of UNCLOS, which was introduced in the Senate on November 15, 2023. For a press report about S.Res. 466, see Yereth Rosen, "Alaska's Sen. Murkowski and Colleagues Make Another Attempt to Win Ratification of Oceans Treaty," *Alaska Beacon*, November 17, 2023. For additional discussion of the question of whether the United States should become a party to UNCLOS, including arguments both for and against, see CRS Report R42784, *U.S.-China Strategic Competition in South and East China Seas: Background and Issues for Congress*, by Ronald O'Rourke.

[55] In a March 10, 1983, statement on U.S. oceans policy, President Reagan stated that "the United States is prepared to accept and act in accordance with the [treaty's] balance of interests relating to traditional uses of the oceans—such as navigation and overflight. In this respect, the United States will recognize the rights of other states in the waters off their coasts, as reflected in the Convention, so long as the rights and freedoms of the United States and others under international law are recognized by such coastal states." (Statement on United States Oceans Policy, March 10, 1983, accessed May 19, 2025, at https://www.reaganlibrary.gov/archives/speech/statement-united-states-oceans-policy, and https://2009-2017.state.gov/documents/organization/143224.pdf.)

[56] Other parts of UNCLOS relevant to the Arctic include those relating to navigation and high-seas freedoms, fisheries, and exclusive economic zones.

Article 76 states that "the coastal State shall establish the outer edge of the continental margin wherever the margin extends beyond 200 nautical miles," and that "Information on the limits of the continental shelf beyond 200 nautical miles ... shall be submitted by the coastal State to the Commission on the Limits of the Continental Shelf set up under Annex II.... The Commission shall make recommendations to coastal States on matters related to the establishment of the outer limits of their continental shelf. The limits of the shelf established by a coastal State on the basis of these recommendations shall be final and binding."

House and Senate Arctic Member Organizations

In the House, a Congressional Arctic Working Group was listed as a Congressional Member Organization (CMO) from the 114th Congress through the 118th Congress. As of June 18, 2025, such a group was not listed as a CMO in the 119th Congress.[57]

In the Senate, Senator Lisa Murkowski and Senator Angus King announced on March 4 and 5, 2015, the formation of a Senate Arctic Caucus.[58]

Issues for Congress

Climate Change, with Biophysical and Economic Impacts[59]

An array of climate changes in the Arctic is now documented by observing systems, with more expected with future greenhouse gas-driven climate change. Observed physical changes in the Arctic include warming ocean, soil, and air temperatures; melting permafrost; shifting vegetation and animal abundances; and altered characteristics of Arctic cyclones. These changes continue to affect traditional livelihoods and cultures in the region, infrastructure, and the economy, as well as the distribution and health of animal populations and vegetation. The changes raise risks of pollution, food supply, safety, cultural losses, and national security. The state government of Alaska concluded that observed climate changes "have resulted in a reduction of subsistence

[57] Committee on House Administration, "Congressional Member And Staff Organizations," Congressional Member Organizations (CMOs) for 107th through 119th Congresses, accessed June 18, 2025, at https://cha.house.gov/congressional-member-and-staff-organizations. The publication for the 119th Congress that was accessed on May 19, 2025, was updated on May 9, 2025. In the 116th Cong., the group was listed as the Arctic Working Group Caucus; in the 117th Cong., it was listed as the Arctic Working Group.

[58] Press release from the office of Sen. Angus King, "King, Murkowski Announce U.S. Senate Arctic Caucus," March 4, 2015, accessed May 19, 2025, at http://www.king.senate.gov/newsroom/press-releases/king-murkowski-announce-us-senate-arctic-caucus. See also press release from the office of Sen. Lisa Murkowski, "Senators Murkowski, King Announce U.S. Senate Arctic Caucus," March 5, 2015, accessed May 19, 2025, at http://www.murkowski.senate.gov/public/index.cfm/pressreleases?ID=1ce5edcb-540d-4c43-b264-56bdbb570755, which includes a similar phrase.

Sen. Murkowski states "In April 2015, Senator Murkowski and Senator Angus King of Maine joined forces to establish the Senate Arctic Caucus. The Arctic Caucus is the first entity in Congress to bring attention to the laws and policies at stake in the Far North. The purpose of the Caucus is to convene members of Congress, subject matter experts, federal agency heads, and the public to confront policy questions and advance a coordinated investment in arenas such as national security, scientific research, commerce, global trade, the environment, maritime affairs, and other relevant issues impacting the Arctic region." (Sen. Lisa Murkowski, "Arctic," accessed May 19, 2025, at https://www.murkowski.senate.gov/issues/issues-and-priorities/arctic.)

[59] This section was prepared by Jane Leggett, who was a Specialist in Energy and Environmental Policy, Resources, Science, and Industry Division until her retirement from CRS on July 15, 2023.

harvests, an increase in flooding and erosion, concerns about water and food safety and major impacts to infrastructure: including damage to buildings, roads and airports."[60]

A monitoring report of the Arctic Council concluded in 2019 that

> the Arctic biophysical system is now clearly trending away from its previous state [in the 20th century] and into a period of unprecedented change, with implications not only within but also beyond the Arctic.[61]

A few broad points raise particular concerns about changes in the Arctic:

- Long lag times between cause and full effects: Changes once set in motion prompt further and often slow effects in different components of the Arctic system, such as the influence of rising atmospheric temperatures on ocean and permafrost temperatures. Scientists expect the full effects of near-term climate changes to play out over a period of decades to many centuries.
- Feedbacks that mostly further increase warming: Greenhouse gas-induced warming leads to positive (enhancing) and some negative (dampening) feedbacks within the Arctic system, which scientists expect in net to amplify warming and pursuant effects. For example, temperature-driven melting sea ice reduces reflection of incoming solar energy, leading to absorption by the Arctic Ocean and further warming of the ocean and the planet.
- Abrupt change risks: The freezing point for water, including permafrost, is one example of thresholds that certain Arctic systems may cross, leading to rapid state changes.
- Risks of irreversibilities: Some Arctic climate impacts, such as loss of sea ice and glaciers, may lead to system changes that scientists expect would be irreversible on a human timescale, even if temperatures stabilize (at a higher level than today).

Understanding remains incomplete regarding future Arctic climate changes and their implications for human and natural systems. With current knowledge, projections point to growing risks, as well as some opportunities.

The Arctic is interconnected to the rest of the globe through circulation of water, energy (e.g., heat), and carbon, including through the atmosphere and oceans. It is also connected through human systems of transport, energy and mineral production, tourism, and security. Consequently, Arctic changes are of import to both Arctic and non-Arctic regions of United States and the rest of the globe.

This section summarizes a variety of observed and projected climate changes in the Arctic and identifies some of their impacts on human and ecological systems.[62] Other sections in this report provide further discussion of implications for, for example, national security and energy production.

[60] Department of Commerce, Community, and Economic Development, "Climate Change in Alaska." The Great State of Alaska. Accessed May 19, 2025, at https://www.commerce.alaska.gov/web/dcra/ClimateChange.aspx.

[61] Jason E Box et al., "Key Indicators of Arctic Climate Change: 1971–2017," *Environmental Research Letters* 14, no. 4, April 2019.

[62] Although much of Greenland is above the Arctic Circle, and many of the changes and implications apply also to Greenland, this section emphasizes other parts of the Arctic and does not attempt to summarize the often large and complex change in Greenland.

Warming Temperatures and a More Intense Water Cycle

The Arctic warmed at approximately three times the global average rate from 1971 to 2019, with the region's surface temperature increasing by more than 3°C (5.5°F).[63] Summers have warmed more than winters. In tandem are trends of fewer cold days, cold nights, frost days, and ice days in the North American Arctic.[64] Researchers found that warming trends as well as climate cycles, including the North Atlantic Oscillation and the Arctic Oscillation, influence observed extreme temperatures, ice distribution, and other facets of the Arctic system.[65] In addition, positive feedbacks from the loss of summer sea ice and spring snow cover on land have amplified warming in the Arctic.[66]

With warming, the water cycle has become more intense. The Arctic has experienced increasing precipitation and an increasing share of precipitation falling as rain. The first recorded rainfall at Greenland's 10,500-foot Summit Station was on August 14, 2021.[67]

Warming and increasing rainfall have led to permafrost thaw, glacier melt, and sea ice decline, leading to greater flows of organic matter and nutrients to Arctic near-coastal zones, with implications for algae, ecosystems, fisheries and other systems.

[63] T.J. Ballinger et al., "Surface Air Temperature," Arctic Program, Arctic Report Card 2021.

[64] Alvaro Avila-Diaz et al., "Climate Extremes across the North American Arctic in Modern Reanalyses," *Journal of Climate* 34, no. 7, April 1, 2021.

[65] Ibid.

[66] Intergovernmental Panel on Climate Change, "Summary for Policymakers," *Special Report on the Ocean and Cryosphere in a Changing Climate*, 2019, https://www.ipcc.ch/srocc/chapter/summary-for-policymakers/. (Hereinafter, SROCC SPM 2019.)

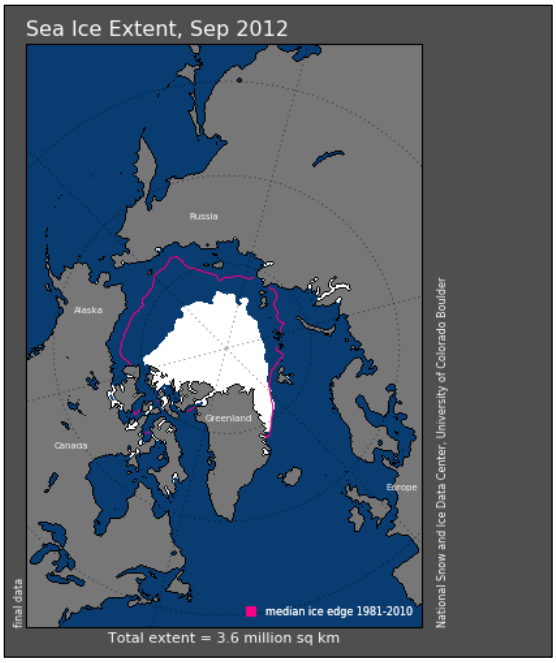
[67] National Snow and Ice Data Center, "Rain at the Summit of Greenland," August 18, 2021.

Sea Ice Decline and Mobility

Arctic sea ice has declined in extent, area, and thickness over recent decades; it has become more mobile and its spatial distribution has shifted. The record low extents of Arctic sea ice in 2012 and 2007 (**Figure 4** and **Figure 5**), as recorded by U.S. National Snow and Ice Data Center, increased scientific and policy attention on climate changes in the high north, and on the implications of projected ice-free[68] seasons in the Arctic Ocean within decades. Recent late summer minima may be unprecedented over the past 1,000 years.[69] (Some implications are discussed in sections of this report on Commercial Sea Transportation; Oil, Gas, and Mineral Exploration; and others.) The 2021 Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) concluded that "human influence is *very likely* the main driver of ... the decrease in Arctic sea ice area between 1979–1988 and 2010–2019 (about 40% in September and about 10% in March)."[70]

Figure 4. 2012 Record-Low Sea Ice Extent

(Compared with long-term median)



Source: National Snow and Ice Data Center, Sea Ice Index, accessed February 28, 2022.

Simulations under a wide range of future climate change scenarios indicate that the Arctic could be ice-free in late summers in the second half of this century in model simulations of low to very high greenhouse gas scenarios (**Figure 5**).[71] The first instances of an ice-free Arctic in late summers could occur by mid-century in all scenarios, although model simulations provide a wide range of results.[72] The mean results of model simulations reach ice-free seasons in the 2070s in the highest and low warming scenarios, and later in the very low scenarios. In an analysis of the most recent modeling, a selection of those models that "reasonably" simulate historical sea ice extent indicated that practically ice-free conditions may occur at global temperature increases of 1.3°C to 2.9°C above preindustrial

[68] In scientific analyses, "ice-free" does not necessarily mean "no ice." The definition of "ice-free" or sea ice "extent" or "area" varies across studies. Sea ice "extent" is one common measure, equal to the sum of the area of grid cells that have ice concentration of less than a set percentage—frequently 15%. For more information, see the National Snow and Ice Data Center, http://nsidc.org/seaice/data/terminology.html.

[69] SROCC SPM 2019.

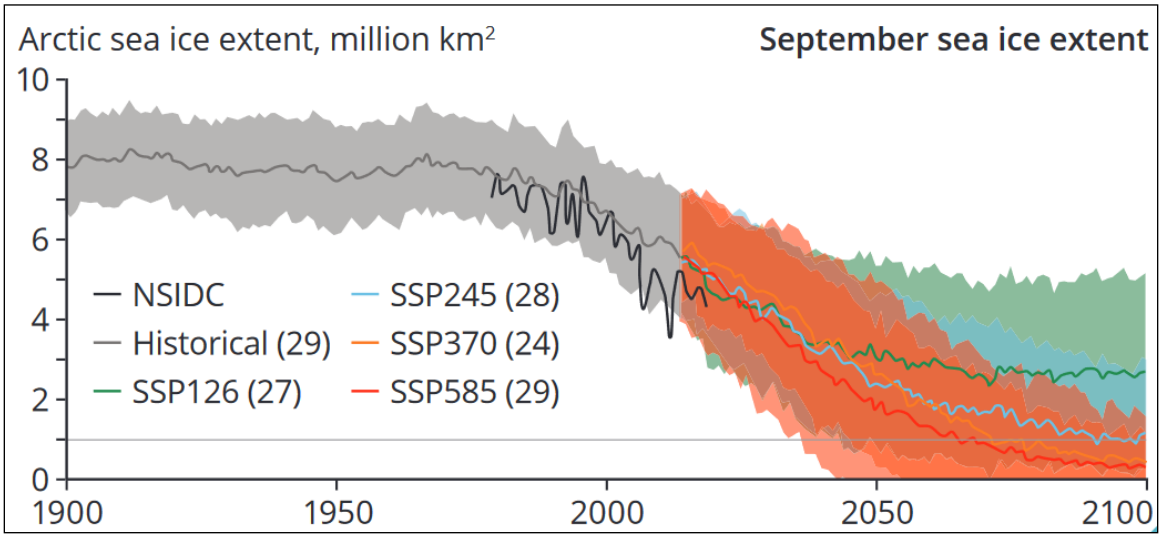
[70] Intergovernmental Panel on Climate Change, "AR6 Climate Change 2021: The Physical Science Basis - Summary for Policy Makers," August 9, 2021. https://www.ipcc.ch/report/ar6/wg1/.

[71] Arctic Monitoring and Assessment Programme (AMAP), "Arctic Climate Change Update 2021: Key Trends and Impacts. Summary for Policy-Makers," Arctic Council, May 21, 2021; Marika Holland, Cecilia M. Bitz, and Bruno Tremblay, "Future abrupt reductions in the summer Arctic sea ice," *Geophysical Research Letters* 33, no. L23503 (2006). But see also Julien Boé, Alex Hall, and Xin Qu, "Sources of spread in simulations of Arctic sea ice loss over the twenty-first century," *Climatic Change* 99, no. 3 (April 1, 2010): 637-645; I. Eisenman and J. S. Wettlaufer, "Nonlinear threshold behavior during the loss of Arctic sea ice," *Proceedings of the National Academy of Sciences* 106, no. 1 (January 6, 2009): 28-32; Dirk Notz, "The Future of Ice Sheets and Sea Ice: Between Reversible Retreat and Unstoppable Loss," *Proceedings of the National Academy of Sciences* 106, no. 49 (December 8, 2009): 20590-20595.

[72] Global climate models do not, in general, simulate past sea ice change realistically and tend to produce less decline in sea ice extent than the latest 15-year trend.

levels.[73] Although sea ice would remain variable in extent and distribution, modeling of future sea ice conditions indicate opportunities for transport through the Northwest Passage and the Northern Sea Route, extraction of potential oil and gas resources, and expanded fishing and tourism, though also increasing competition and potential security risks and of oil spills and maritime accidents.

Figure 5. Estimated Historical, Observed, and Projected September Arctic Sea Ice Extent



Source: Arctic Monitoring and Assessment Programme (AMAP), "Arctic Climate Change Update 2021: Key Trends and Impacts. Summary for Policy-Makers," Arctic Council, May 21, 2021.

Notes: NSIDC is the U.S. National Snow and Ice Data Center, the source that synthesized the satellite observation data (the bold black line) in this figure. The "historical" values result from model simulations, showing the modeled mean and the ranges. The projections (in colors) are for a range of greenhouse gas scenarios and associated climate changes, with the means of results represented by lines. SSP means "Shared Socioeconomic Pathway" scenarios produced in support of the International Panel on Climate Change depicting high (SSP585), medium high (SSP30), low (SSP245) and very low (SSP126) scenarios. The shaded areas represent the ranges of numerical model estimates (number), either historical and projected. The horizontal line represents sea-ice areal extent of 1 million square kilometers, below which scientists consider the Arctic to be practically ice-free.

The U.S. Arctic Report Card 2021 noted, in addition, the importance of melting of Arctic land-based ice to experienced sea level rise globally:

> In the 47-year period (1971–2017), the Arctic was the largest global source of sea-level rise contribution, 48% of the global land ice contribution 2003–2010 and 30% of the total sea-level rise since 1992. Temperature effects are dominant in land ice mass balance.

A special report of the IPCC stated that "for Arctic glaciers, different regional studies consistently indicate that in many places glaciers are now smaller than they have been in millennia."[74]

The Arctic Ocean has been undergoing additional changes: It has been acidifying—with some parts acidifying more rapidly than the Atlantic or Pacific Oceans.[75] Some scientists estimate that

[73] The current temperature increase above the 1850-1900 average is about 1.1°C.

[74] SROCC SPM 2019.

[75] Di Qi et al., "Increase in Acidifying Water in the Western Arctic Ocean," *Nature Climate Change* 7, no. 3, March 2017.

acidification of the Arctic Ocean may increase enough by the 2030s to significantly influence coastal ecosystems.[76] Primary production in the ocean has increased, due to decreases in sea ice and increases in nutrient supply.

Land-Based Changes

Climate changes in the Arctic have important implications for human and natural land-based systems, through permafrost thawing, erosion, instability, and ecosystem shifts.

The U.S. Geological Survey (USGS) concluded that an increase in coastal erosion on the North Slope of Alaska was "likely the result of several changing Arctic conditions, including declining sea-ice extent, increasing summertime sea-surface temperature, rising sea level, and possible increases in storm power and corresponding wave action."[77] The USGS found that erosion has been occurring at an average rate of 1.4 meters annually and that, while some areas are accreting, others are eroding at rates as high as 20 meters per year. Coastal erosion poses risks for native communities, oil and gas infrastructure, and wildlife; adaptations to mitigate and manage adverse impacts can be costly and risky.

Warming temperatures have increased thawing of near-surface permafrost. "The majority of Arctic infrastructure is located in regions where permafrost thaw is projected to intensify by mid-century," according to the IPCC special report on the cryosphere.[78] Existing infrastructure was not generally placed or engineered for the instability, posing risks to human safety and property, and potentially disruption. The IPCC report assessed that "about 20% of Arctic land permafrost is vulnerable to *abrupt* permafrost thaw and ground subsidence,"[79] increasing risks of sudden failures. According to one study, 30%–50% of critical circumpolar infrastructure may be at high risk by 2050. "Accordingly, permafrost degradation-related infrastructure costs could rise to tens of billions of U.S. dollars by the second half of the century."[80] Other costs could be incurred for relocation of infrastructure and villages, and to manage habitat for subsistence wildlife and endangered and threatened species.

Impacts of climate change on species have been positive and negative. Longer growing seasons have resulted in vegetation growth around the Arctic with overall "greening," though also some "browning" in some regions in some years. Woody shrubs and trees are projected to expand to cover 24%–52% of Arctic tundra by 2050.[81] Vegetation changes can provide amplifying feedbacks that increase temperature and permafrost instability. In particular, scientists have assessed significant methane emissions from some thawing peat bogs.

Potential area burned by wildfire could increase by 25% to 53% by 2100. This could affect, for example, forage for caribou and shifting competition between caribou and moose, with likely detriments to subsistence users of caribou.[82]

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[76] U.S. Global Change Research Program, "Climate Science Special Report," Fourth National Climate Assessment, vol. 1, October 2017, https://science2017.globalchange.gov/.

[77] Pacific Coastal and Marine Science Center, "Climate Impacts to Arctic Coasts," U.S. Geological Survey, October 15, 2021.

[78] SROCC SPM 2019.

[79] SROCC SPM 2019.

[80] Hjort, Jan, Dmitry Streletskiy, Guy Doré, Qingbai Wu, Kevin Bjella, and Miska Luoto, "Impacts of Permafrost Degradation on Infrastructure," *Nature Reviews Earth & Environment* 3, no. 1 (January 2022): 24–38, https://doi.org/10.1038/s43017-021-00247-8.

[81] SROCC SPM 2019.

[82] SROCC SPM 2019.

The IPCC special report on the cryosphere also found that

> On Arctic land, a loss of globally unique biodiversity is projected as limited refugia exist for some High-Arctic species and hence they are outcompeted by more temperate species (medium confidence).[83]

It identified negative impacts also on food and water security in the Arctic, "disrupt[ing] access to, and food availability within, herding, hunting, fishing, and gathering areas, harming the livelihoods and cultural identity of Arctic residents including Indigenous populations."[84] More broadly, warming and ecosystem shifts have "increased risk of food- and waterborne diseases, malnutrition, injury, and mental health challenges especially among Indigenous peoples."[85]

Few studies have investigated the potential economic effects of the array of physical impacts. A report for the state of Alaska on the economic effects of climate change

> estimated that five relatively certain, large effects that could be readily quantified would impose an annual net cost of $340–$700 million, or 0.6%–1.3% of Alaska's GDP. This significant, but relatively modest, net economic effect for Alaska as a whole obscures large regional disparities, as rural communities face large projected costs while more southerly urban residents experience net gains.[86]

The research did not consider "nonuse" impacts, such as on culture, subsistence harvests, or other nonmarket values, as well as additional sectors, such as military installations, housing, and others.

Another study estimating the effects of climate change on Alaskan infrastructure found "cumulative estimated expenses from climate-related damage to infrastructure without adaptation measures (hereinafter damages) from 2015 to 2099 totaled $5.5 billion (2015 dollars, 3% discount) for RCP8.5 [a high climate scenario] and $4.2 billion for RCP4.5 [a moderate climate scenario], suggesting that reducing greenhouse gas emissions could lessen damages by $1.3 billion this century."[87] Costs were mostly due to road flooding and permafrost instability, and mostly in the interior and southcentral Alaska. It also concluded that adaptation measures could mostly reduce or entirely avoid the estimated economic losses for this land-based infrastructure.

[83] SROCC SPM 2019.

[84] SROCC SPM 2019.

[85] SROCC SPM 2019.

[86] Berman, Matthew, and Jennifer I. Schmidt, "Economic Effects of Climate Change in Alaska." *Weather, Climate, and Society* 11, no. 2 (April 1, 2019): 245–58, https://doi.org/10.1175/WCAS-D-18-0056.1. The five effects evaluated were change in value added in Alaska (value of shipments less cost of inputs purchased from outside Alaska) for specific industries; change in household cost of living; change in purchased input costs for businesses and governments; change in nonwage benefit flows to households, including subsistence benefits; and change in value of buildings and infrastructure.

[87] Melvin, April M., Peter Larsen, Brent Boehlert, James E. Neumann, Paul Chinowsky, Xavier Espinet, Jeremy Martinich et al., "Climate Change Damages to Alaska Public Infrastructure and the Economics of Proactive Adaptation," *Proceedings of the National Academy of Sciences* 114, no. 2 (January 10, 2017): E122–31, https://doi.org/10.1073/pnas.1611056113.

Geopolitical Environment[88]

Overview

Developments Since End of Cold War

Following the end of the Cold War in the late 1980s and early 1990s, and particularly after the founding of the Arctic Council in 1996, the Arctic states sought to maintain the Arctic as a region of cooperation, low tension, peaceful resolution of disputes, and respect for international law—an approach sometimes referred to as the "Arctic spirit" or "High North, low tension." The Nordic countries in particular were committed to this approach.

Over the past 10 to 15 years, the emergence of great power competition (also called strategic competition) between the United States, Russia, and China has introduced elements of competition and tension into the Arctic's geopolitical environment. Russia's increased military presence and operations in the Arctic—and responding actions by other Arctic states—are one source of competition and tension. China's increased activities in the Arctic are another.

Some observers view the Arctic as having become an arena for geopolitical competition among the United States, Russia, and China,[89] or argue that the diminishment of Arctic ice and potentially increased maritime access to the region's resources has prompted or could prompt a race for Arctic resources (or words to that effect) among Russia, China, the United States, and other countries.[90] Other observers argue that competitive aspects of the region's geopolitical environment and the notion of a race for Arctic resources are sometimes overstated.[91]

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[88] This section was prepared by Ronald O'Rourke, Specialist in Naval Affairs, Foreign Affairs, Defense, and Trade Division. It incorporates material prepared by Kristin Archick, Specialist in European Affairs, Foreign Affairs, Defense, and Trade Division, and Derek E. Mix, Analyst in European Affairs, Foreign Affairs, Defense, and Trade Division.

[89] See, for example, Heather A. Conley, "The Arctic Great Game, And Why America Risks Losing It," *Foreign Affairs*, June 24, 2025; Katya Adler, "Tensions Rise as Superpowers Scrap for a Piece of the Arctic," *BBC*, May 23 2025; Rasmus Gjedssø Bertelsen, "Divided Arctic in a Divided World Order," *Strategic Analysis*, vol. 48, 2024, Issue 6 (posed online March 4, 2025); Vivienne Machi, "Melting Ice Is Spurring Strategic Competition in the Arctic," *Aviation Week*, December 18, 2024; Mathieu Boulègue with Minna Ålander, Charlotta Collén, Edward Lucas, Catherine Sendak, and Krista Viksnins, *Up North, Confronting Arctic Insecurity Implications for the United States and NATO*, Center for European Policy Analysis (CEPA), 2024 (posted online December 5, 2024), 44 pp.; Elizabeth Buchanan, "How America Lost the Arctic," *National Interest*, November 13, 2024; Ryan Chan, "US-Russia Rivalry Heats Up in Arctic Arena," *Newsweek*, September 18, 2024; Chloe Hadavas, "Inside the Battle for the Arctic, What to Know as Great-Power Politics Heat Up in the High North," *Foreign Policy*, September 8, 2024.

[90] See, for example, Economist, "The Arctic: Climate Change's Great Economic Opportunity," *Economist*, January 23, 2025; Joanna Rozpedowski, "Resource Wars: How Climate Change Is Fueling Militarization of the Arctic," *RealClearDefense*, August 7, 2024; The Week Staff, "Under the Melting Ice: The Race for the Arctic's Riches," *The Week*, May 11, 2023; Margaret Sutherlin, "Who Owns the North Pole? A Race Is Underway to Decide," *Bloomberg*, May 5, 2023; Elizabeth Buchanan, "Russia's Gains in the Great Arctic Race," *War on the Rocks*, May 4, 2023; Lisa Desjardins, Andrew Corkery, and Azhar Merchant, "Tensions Rise as Nations Race for Valuable Resources in the Arctic," *PBS*, April 23, 2023; "Arctic Resources Race," *Wikipedia*, updated April 8, 2023.

[91] See, for example, Rebecca Pincus, "Small Ocean, Big Hype: Arctic Myths and Realities," *War on the Rocks*, May 3, 2024; Anna Valberg, "War in the Arctic? Researchers Debunk Three Myths about the High North," ScienceNorway.no, January 26, 2024; Jo Inge Bekkevold and Paal Sigurd Hilde, "Europe's Northern Flank Is More Stable Than You Think," *Foreign Policy*, July 28, 2023; P. Whitney Lackenbauer, Adam Lajeunesse, and Ryan Dean, "Why China Is Not a Peer Competitor in the Arctic," *Journal of Indo-Pacific Affairs*, October 3, 2022; Øystein Tunsjø, "The Great Hype: False Visions of Conflict and Opportunity in the Arctic," *Survival*, 2020 (published online September 23, 2020); Thomas Graham and Amy Myers Jaffe, "There Is No Scramble for the Arctic," *Foreign Affairs*, July 27, 2020; Jeremy Tasch, "Why the Talk of an 'Artic Cold War' Is Exaggeration," Valdai Discussion Club, July 7, 2020; Danita Catherine Burke, "Why the New Arctic 'Cold War' is a Dangerous Myth," *The Conversation*, December 13, 2018.

Arctic Governance

Prior to the Russia-Ukraine war, great power competition and increased human activities in the Arctic resulting from the diminishment of Arctic ice put a spotlight on the issue of Arctic governance and the limits of the Arctic Council as a governing body.[92] The Russia-Ukraine war (see discussion below) prompted new or heightened questions about the future of the Arctic Council and Arctic governance.

Regarding the limits of the Arctic Council as a governing body, the council states that it "does not and cannot implement or enforce its guidelines, assessments or recommendations. That responsibility belongs to individual Arctic States or international bodies. The Arctic Council's mandate, as articulated in the Ottawa Declaration, explicitly excludes military security."[93] Arctic security issues currently can be addressed, to some degree at least, through other existing mechanisms, such as the Arctic Security Forces Roundtable (ASFR) and the Arctic Chiefs of Defense (ACHOD) Forum.

Prior to the Russia-Ukraine war, China raised questions as to whether the Arctic Council as currently constituted and the current broader legal framework for the Arctic should continue to be the principal means for addressing issues relating to the Arctic, and had begun to use other approaches for influencing Arctic governance.[94]

Arctic in U.S. Policymaking

In light of great power competition and increased human activities in the Arctic resulting from the diminishment of Arctic ice, some observers argue that there is a need to devote more U.S. attention and resources to the region.[95] On the other hand, great power competition is also being expressed in Europe, the Middle East, the Indo-Pacific, Africa, and Latin America. In a situation of finite U.S. policymaker attention and resources, the Arctic competes with these other regions for attention and resources. Some observers argue that the United States is not allocating

[92] See, for example, Benjamin J. Sacks et al., *Exploring Gaps in Arctic Governance, Identifying Potential Sources of Conflict and Mitigating Measures*, RAND, 2021, 29 pp. (report RRA1007.1); Joshua Tallis, "The Phantom of Arctic Misgovernance," *War on the Rocks*, June 11, 2021; Ebru Caymaz, "Rethinking Governance in Time of Pandemics in the Arctic," Arctic Institute, January 14, 2021; Ian Birdwell, "Arctic Governance: Keeping The Arctic Council On Target," Center for International Maritime Security (CIMSEC), July 29, 2020; Benjamin Chiacchia, "The Case for an Arctic Treaty," *U.S. Naval Institute Proceedings*, May 2020; Rashmi Ramesh, "Changing Geopolitics of the Arctic: Challenges for Governance," *IndraStra*, April 9, 2020; Angus Parker, "Looking North: How Should the Arctic Be Governed?" *Geographical (UK)*, March 17, 2020; Kevin McGwin, "An Arctic Treaty Has Been Rejected by the Region's Leaders. Again; Academics Will Tell You the Idea of an Arctic Treaty Sounds Terribly Exciting. Diplomats Think It Is Just Terrible," *ArcticToday*, February 12, 2020; Marc Lanteigne, "So You Want to Write an Arctic Treaty?" *Over the Circle*, February 10, 2020; Heather Exner-Pirot et al., "Form and Function: The Future of the Arctic Council," *Arctic Institute*, February 5, 2019.

[93] Arctic Council, "About the Arctic Council," accessed May 19, 2025, at https://arctic-council.org/en/about/.

[94] See, for example, Pan Yixuan, "Global Governance Needed for Arctic Affairs," *China Daily*, May 10, 2019; Zhang Yao, "Ice Silk Road Framework Welcomed by Countries, Sets New Direction for Arctic Cooperation," *Global Times*, April 7, 2019; Liu Caiyu, "China's Role in Arctic Governance 'Cannot Be Ignored,'" *Global Times*, November 22, 2018; Harriet Moynihan, "China Expands Its Global Governance Ambitions in the Arctic," Chatham House, October 15, 2018; Sydney J. Freedberg Jr., "China & Russia In The Arctic: Axis Of Ambivalence," *Breaking Defense*, July 6, 2018; Nengye Liu and Michelle Lim, "How Arctic Governance Could Become a Testing Ground for Sino-US Relations," *The Conversation*, March 29, 2017.

[95] See, for example, Kenneth R. Rosen, "A Battle for the Arctic Is Underway. And the U.S. Is Already Behind," *Politico*, December 17 (updated December 18), 2022; Daniel Kochis and Johnathan Little, "As Russia Invests in Arctic, America Falls Behind," Heritage Foundation, November 3, 2021; Heather A. Conley and Matthew Melino, *The Implications of U.S. Policy Stagnation toward the Arctic Region*, Center for Strategic and International Studies (CSIS), May 2019, 5 pp.

sufficient attention or resources to defend and promote its interests in the Arctic.[96] A September 2023 Government Accountability Office (GAO) report stated,

> Management roles for advancing U.S. Arctic priorities span the federal government…. While many federal entities engage with foreign partners on Arctic issues, the Department of State serves as the lead for Arctic diplomacy efforts….
>
> Stakeholders identified five factors that facilitated and five factors that hindered the federal government's management of U.S. Arctic priorities. For example, stakeholders identified U.S. Arctic expertise and engagement as factors that facilitated its influence in the Arctic Council. However, some stakeholders said that the Arctic Executive Steering Committee and the broader federal government face various challenges related to interagency coordination that hinder implementation of U.S. Arctic priorities outlined in the [October] 2022 [Arctic] strategy.
>
> Stakeholders identified three factors pertaining to State's structures that facilitated and two factors that hindered State's management of U.S. Arctic priorities. For example, stakeholders identified continuity within the Senior Arctic Official position and supporting office as a factor that has deepened institutional knowledge for Arctic Council work, facilitating efforts to promote U.S. priorities. However, some stakeholders identified gaps in leadership and limited convening authority as factors that had hindered management. Many stakeholders viewed the announcement of the Ambassador-at-Large for the Arctic Region position positively but identified elements State and the new Ambassador should consider to manage U.S. Arctic priorities successfully going forward. These elements include consistency in position and title, a formalized office structure, clarity of Ambassador's role within the department, and greater authority to coordinate with all the relevant bureaus across the department.[97]

U.S. Interest in Greenland

President Trump on multiple occasions has expressed an interest in having the United States annex Greenland. (As noted earlier, Greenland is a self-governing part of the Kingdom of Denmark.)[98] For example, in his address to a joint session of Congress on March 4, 2025, President Trump stated:

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[96] See, for example, Kenneth R. Rosen, "A Battle for the Arctic Is Underway. And the U.S. Is Already Behind," *Politico*, December 17 (updated December 18), 2022; Mir Sadat, "The US Is Unprepared to Face the Challenge in the Arctic. Here's What It Should Do," Atlantic Council, January 31, 2022; Tyler Olson, "Biden Admin Faces Lack of Icebreakers, Increasing Russian and Chinese Threats in Arctic," *Fox News*, May 9, 2021; Rockford Weitz, "Competition Heats Up in the Melting Arctic, and the US Isn't Prepared to Counter Russia," *The Conversation*, April 19 (updated June 11), 2021; John Rossomando, "Will Joe Biden Lose the Arctic to Russia or China?" *National Interest*, April 18, 2021.

[97] Government Accountability Office, *Arctic Region: Factors That Facilitate and Hinder the Advancement of U.S. Priorities*, GAO-23-106002, September 2023, highlights page.

[98] The CIA *World Factbook* states that

> Danish colonization [of Greenland] began in the 18th century, and Greenland became part of the Kingdom of Denmark in 1953. It joined the European Community (now the EU) with Denmark in 1973 but withdrew in 1985 over a dispute centered on stringent fishing quotas. Greenland remains a member of the EU's Overseas Countries and Territories Association. The Danish parliament granted Greenland home rule in 1979; the law went into effect the following year. Greenland voted in favor of self-government in 2008 and acquired greater responsibility for internal affairs when the Act on Greenland Self-Government was signed into law in 2009. The Kingdom of Denmark, however, continues to exercise control over several policy areas on behalf of Greenland, including foreign affairs, security, and financial policy, in consultation with Greenland's Self-Rule Government.
>
> (CIA, "Greenland," World Factbook.)

> And I also have a message tonight for the incredible people of Greenland. We strongly support your right to determine your own future, and if you choose, we welcome you into the United States of America.
>
> We need Greenland for national security and even international security. And we're working with everybody involved to try and get it. But we need it really for international world security. And I think we're going to get it. One way or the other, we're going to get it.
>
> We will keep you safe. We will make you rich. And together we will take Greenland to heights like you have never thought possible before.
>
> It's a very small population, but very, very large piece of land and very, very important for military security.[99]

In August 2019, President Trump similarly expressed an interest in the idea of buying Greenland from Denmark.[100] Denmark rejected the idea, stating that Greenland was not for sale.[101] Prior instances of U.S. interest in acquiring Greenland occurred in 1868, 1910, and 1946.[102]

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[99] Source: Associated Press transcript of address, as printed in "Read the Full Text of Trump's Speech to a Joint Session of Congress," *PBS*, March 4, 2025. The text of the address is also available at "Address Before a Joint Session of the Congress," *American Presidency Project*, March 04, 2025. See also, for example, Francesca Chambers and Zac Anderson, "Trump Says US Will Acquire Greenland 'One Way or the Other' in Presidential Address," *USA Today*, March 4 (updated March 5), 2025; Annie Nova, "Trump Says the U.S. Will Take Control of Greenland 'One Way or the Other,'" *CNBC*, March 4 (updated March 5), 2025.

For additional discussion of President Trump's interest in annexing Greenland as U.S. territory, see, for example, Isaac B. Kardon and Alexander Gabuev, "Trump's Greenland Obsession Will Not Secure America," *Foreign Policy*, May 26, 2025; Michael Crowley and Maggie Haberman, "Inside Trump's Plan to 'Get' Greenland: Persuasion, Not Invasion," *New York Times*, April 10, 2025; Lisa Rein, Michael Birnbaum, Natalie Allison, and Jeff Stein, "White House Studying Cost of Greenland Takeover, Long in Trump's Sights," *Washington Post*, April 1, 2025; Anders Hagstrom, "Trump Says 'We Need Greenland for International Safety and Security' Ahead of Vance Trip," *Fox News*, March 27, 2025; Danny Nguyen, "'We Have to Have It': Trump Ups the Pressure on Greenland," *Politico*, March 26, 2025; Agence France-Presse, "Trump Reiterates US Need to 'Have' Greenland Ahead of Vance Visit," *Agence France-Presse*, March 26, 2025; Steve Holland, "Trump Tells NATO Chief the US Needs Greenland," *Reuters*, March 13, 2025; Ishaan Tharoor, "The Curious Momentum behind Trump's Quest for Greenland," Washington Post, January 29, 2025; Ian Aikman, "Trump Says He Believes US Will 'Get Greenland,'" *BBC*, January 25, 2025.

[100] See, for example, Marc Lanteigne and Mingming Shi, "'No Sale': How Talk of a US Purchase of Greenland Reflected Arctic Anxieties," *Over the Circle*, September 17, 2020; Stuart Lau, "Did China's Growing Presence in Arctic Prompt Donald Trump's Offer to Buy Greenland?" *South China Morning Post*, September 1, 2019; Nadia Schadlow, "Why Greenland Is Really About China," *The Hill*, August 28, 2019; Daniel Lippman, "Trump's Greenland Gambit Finds Allies Inside Government," *Politico*, August 24, 2019; Seth Borenstein (Associated Press), "Icy Arctic Becomes Hot Property for Rival Powers," *Navy Times*, August 22, 2019; Ragnhild Grønning, "Why Trump Is Looking to Buy Greenland—Even If It's Not for Sale," *High North News*, August 19, 2019. See also Caitlin Hu and Stephen Collinson, "Why Exactly Is the US So Interested in Greenland?" *CNN*, July 23, 2020. See also Tarisai Ngangura, "Ex-Staffer: Trump Wanted to Trade 'Dirty' Puerto Rico for Greenland," *Vanity Fair*, August 19, 2020; Jacob Gronholt-Pedersen, "As the Arctic's Attractions Mount, Greenland is a Security Black Hole," *Reuters*, October 20, 2020; Gordon Lubold, "U.S. Holds Talks Over Economic, Security Arrangements With Greenland," *Wall Street Journal*, October 28, 2020. See also Peter Baker, "Cosmetics Billionaire Convinced Trump That the U.S. Should Buy Greenland," *New York Times*, September 14, 2022.

[101] See, for example, Sophie Lewis, "'Not for Sale': Danish Officials Unanimously Reject Trump's Interest in Buying Greenland," *CBS News*, August 16, 2019; Jacob Gronholt-Pedersenwith additional reporting by Sarah N. Lynch, "Danish PM Says Trump's Idea of Selling Greenland to U.S. Is Absurd," *Reuters*, August 18, 2019.

[102] Sources: Steven Press, "Buying Greenland Isn't a New Idea," *Wall Street Journal*, January 1, 2025; Elías Thorsson and Marybeth Sandell, "Trump's Greenland Purchase Plan Has Been a US Ambition Since 1868," *ArcticToday*, January 6, 2025; Jamie Dettmer, "Trump Joins History's Long Line of Suitors Coveting Greenland," Politico, January 11, 2025; Dave Roos, "America's Long History of Trying to Acquire Greenland," *History.com*, February 5 (updated May 27), 2025. Another source ("Proposed United States Acquisition of Greenland," *Wikipedia*, update June 10, 2025, accessed June 11, 2025) cites an additional instance in 1955.

U.S. annexation of Greenland would substantially expand U.S. Arctic territory: the total land area of Greenland is about 836,330 square miles,[103] which is about 43% greater than the total land area of Alaska,[104] and while most of Alaska's land area is south of the Arctic Circle,[105] most of Greenland's land area is north of the Arctic Circle.[106] Current U.S. Arctic territory (i.e., the Arctic part of Alaska) is on the Pacific-facing side of the Arctic, to the west of Canada; the addition of Greenland to U.S. territory would result in the United States also having Arctic territory on the Atlantic-facing side of the Arctic, to the east of Canada. The addition of Greenland to U.S. territory could increase requirements for U.S. polar icebreakers and would significantly expand the U.S. area of responsibility for search and rescue (SAR) under the 2011 Arctic Council agreement on cooperation on aeronautical and maritime SAR in the Arctic. (See the section of this report entitled "Search and Rescue (SAR)"including **Figure 6.)** The annexation of Greenland would expand the U.S. population in the Arctic: the estimated population of Greenland in 2024 was about 57,750,[107] of which a portion live north of the Arctic Circle. (Greenland's population centers south of the Arctic Circle include the capital city of Nuuk, which accounts for about one-third of Greenland's population.)[108]

The U.S. military presence in Greenland dates to World War II and continues under a 1951 U.S.-Denmark agreement that was amended and supplemented in 2004.[109] The current U.S. military presence in Greenland is primarily at Pituffik (pronounced bee-doo-FEEK) Space Base (previously called Thule Air Base), which is located near the west coast of Greenland, toward the top of Baffin Bay.

In June 2025, it was reported that the Department of Defense intends to transfer operational responsibility for Greenland from U.S. European Command (USEUCOM, the U.S. unified combatant command for Europe and Russia) to U.S. Northern Command (USNORTHCOM, the U.S. unified combatant command for the continental United States, Alaska, Canada, Mexico, and portions of the Caribbean region, including the Bahamas, Puerto Rico, and the U.S. Virgin Islands).[110]

[103] See, for example, CIA, "Greenland," *World Factbook,* which states that the land area of Greenland is 2,166,086 square kilometers, which equates to 836,330.5 square miles.

[104] The land area of Alaska is 586,412 square miles. (Source: State of Alaska, "Geography of Alaska.")

[105] As stated earlier in this report, the Arctic Circle definition of the Arctic includes the northernmost part of Alaska—more than one-quarter of the state's land area. (Source: Lawrence Hamilton, Jochen Wirsing, Jessica Brunacini, and Stephanie Pfirman, "Arctic Knowledge of the U.S. Public," Arctic Research Consortium of the United States [ARCUS], undated, but with an internet address [https://www.arcus.org/witness-the-arctic/2017/5/highlight/2] and endnotes suggesting a date of 2017, which states: "More than a quarter of Alaska's land area lies north of the Arctic Circle.")

[106] Some sources state that two-thirds of Greenland is north of the Arctic Circle. (See, for example, "Greenland," *Britannica,* undated, and Aaron Sidder, "Greenland," *National Geographic,* undated. Another source states that more than 80% of Greenland is north of the Arctic Circle. ("Greenland," *Wikipedia,* updated May 28, 2025.)

[107] CIA, "Greenland," *World Factbook,* which states that the estimated population in 2024 was 57,751.

[108] For a list of Greenland's most populous cities and towns, see "List of Cities and Towns in Greenland," *Wikipedia,* updated April 26, 2025, accessed June 11, 2025.

[109] U.S. Department of State, Treaties and Other International Acts Series 04-806, *Agreement between the United States of America and Denmark Amending and Supplementing the Agreement of April 27, 1951, Signed at Igaliku, August 6, 2004, with Joint Declarations*.

[110] See, for example, Corey Dickstein, "Pentagon Moves Control of Greenland from Europe to Northern Command," *Stars and Stripes,* June 17, 2025; Noah Robertson, "Pentagon Shifts Greenland to US Northern Command in Shakeup," *Defense News,* June 17, 2025.

Some observers view the Trump Administration's interest in annexing Greenland as reflecting a desire to gain U.S. possession of Greenland's mineral deposits and a desire to gain a direct U.S. ability to

- deny China and Russia access to Greenland's mineral deposits,
- deny China and Russia the use of Greenland as a potential location for establishing military or other facilities, and
- preclude China and Russia from otherwise increasing their presence and influence in Greenland.[111]

A May 27, 2025, press report stated:

> US and European mining companies need to hurry up and invest in Greenland, otherwise it will have to look elsewhere for help exploiting its minerals, including from China, a minister for the vast Arctic territory has warned.
>
> "We want to develop our business sector and diversify it, and that requires investments from outside," Naaja Nathanielsen, Greenland's minister for business and mineral resources, told the Financial Times.
>
> When asked about turning to China, she replied: "We do want to partner up with European and American partners. But if they don't show up I think we need to look elsewhere."[112]

Some observers view the Trump Administration's interest in annexing Greenland as additionally forming part of a broader Administration strategy to enhance U.S. influence or control over the

[111] See, for example, Karoun Demirjian, "Why Does Trump Want Greenland? Here's What to Know," *New York Times*, March 28, 2025. See also Tom Little, Leonhard Foeger, and Nandita Bose, "Vance Accuses Denmark of Not Keeping Greenland Safe from Russia, China," *Reuters*, March 29, 2025; Natalie Andrews, Sune Engel Rasmussen, and Alexander Ward, "In Greenland, Vance Criticizes Denmark's Stewardship of the Island," *Wall Street Journal*, March 28, 2025; Karoun Demirjian, "Why Does Trump Want Greenland? Here's What to Know," *New York Times*, March 28, 2025; Luke McGee, "Europe Wonders if Trump Can Be Bought Off With Arctic Concessions," *Foreign Policy*, March 26, 2025; James Jay Carafano, "Greenland and Trump's Strategy to Deal with China and Russia," *Real Clear Defense*, Geopolitical Intelligence Services (GIS), February 26, 2025; Christina Lu, "Trump's Chaotic Agenda Has a Critical Through Line, What Do Greenland, Canada, and Ukraine Have in Common? Critical Minerals," *Foreign Policy*, February 26, 2025; Sandra Erwin, "Trump's Interest in Greenland Highlights Space Race in the High North," *Space News*, February 13, 2025; Ryan. P. Burke, "Trump's Greenland Gambit Is a Masterclass in Statecraft," *Real Clear Defense*, February 12, 2025; Guy Laron, "What Trump actually wants in the Middle East," *The Hill*, February 6, 2025 (includes discussion of Greenland); Steven W. Mosher, "From Panama to Greenland — All of Trump's Problems Lead to China," *New York Post*, February 1, 2025; Amanda Friedman, "'This Is Not a Joke': Rubio Says Trump Is Serious About Buying Greenland," *Politico*, January 30, 2025; Matthew Lee, "Rubio Says Trump's Interest in Greenland and Panama Canal Is Legit and Driven by China Concerns," *Associated Press*, January 30, 2025; Iain Marlow, "Rubio Says Trump Greenland Bid 'Not a Joke,' Citing China Risks," *Bloomberg*, January 30 (updated January 31), 2025; Daphne Psaledakis, "Trump Interest in Buying Greenland 'Not a Joke,' Rubio Says," *Reuters*, January 30, 2025; Filip Timotija, "Rubio on Buying Greenland: 'This Is Not a Joke,'" *The Hill*, January 30, 2025; Seong Hyeon Choi, "China, Russia's Growing Arctic Presence Underpins Trump's Greenland Musings," *South China Morning Post*, January 22, 2025; Regin Winther Poulsen, "What Does Trump Want in Greenland?" *Foreign Policy*, January 17, 2025; Evan Dyer (CBC News), "Why Acquiring Greenland Is More than Just a Whim of Trump," *Eye on the Arctic (Radio Canada International)*, January 16, 2025; James Stavridis, "Trump Is Right: Greenland Is Vital to US National Security," *Bloomberg*, January 10, 2025; Georgi Kantchev, "What Trump Wants With Greenland," *Wall Street Journal*, January 8, 2025; John Vandiver, "Why Greenland and the Broader Arctic Have Had the Pentagon's Growing Attention for Years," *Stars and Stripes*, January 8, 2025; Janet Levy, "Trump's Arctic Policy Is No Folly," *American Thinker*, January 7, 2025; Ken Moriyasu, "Greenland Crucial to Arctic Race vs. Russia, China: ex-Trump Aide," *Nikkei Asia*, December 30, 2024; Kelsey Baker and Mikhail Klimentov, "Who Controls Greenland, and Why Does Trump Want to Buy It?" *Washington Post*, December 26, 2024. See also Aaron Brady, "Greenland's Military Possibilities for the United States," *War on the Rocks*, April 4, 2025. For an alternate view, see Andreas Østhagen, "Trump Has Misunderstood the Importance of Greenland," Arctic Institute, March 29, 2025.

[112] Richard Milne and Leslie Hook, "Greenland Says It Will Turn to China If US and EU Shun Its Mining Sector," *Financial Times*, May 27, 2025.

Western Hemisphere—a goal some observers refer to as a Monroe Doctrine 2.0—perhaps in preparation for a so-called spheres-of-influence world featuring three primary spheres of influence led by the United States, Russia, and China, with the U.S. sphere being centered on (but not necessarily limited to) the Western Hemisphere.[113]

An April 1, 2025, press report stated: "The White House is preparing an estimate of what it would cost the federal government to control Greenland as a territory, according to three people with knowledge of the matter, the most concrete effort yet to turn President Donald Trump's desire to acquire the Danish island into actionable policy."[114]

A May 6, 2025 press report stated

> The U.S. is stepping up its intelligence-gathering efforts regarding Greenland, drawing America's spying apparatus into President Trump's campaign to take over the island, according to two people familiar with the effort.
>
> Several high-ranking officials under Director of National Intelligence Tulsi Gabbard issued a "collection emphasis message" to intelligence-agency heads last week. They were directed to learn more about Greenland's independence movement and attitudes on American resource extraction on the island."[115]

[113] See, for example, Howard LaFranchi and Whitney Eulich, "As China's Influence Grows in the Americas, Trump Hints at a Monroe Doctrine 2.0," *Christian Science Monitor*, May 30, 2025; Francis P. Sempa, "Trump's Reinvigoration of the Monroe Doctrine Informs His Turn to Greenland," *American Spectator*, May 19, 2025; Stacie E. Goddard, "The Rise and Fall of Great-Power Competition, Trump's New Spheres of Influence," *Foreign Affairs*, May/June 2025 (published online April 22, 2025); Chuck DeVore, "Why Trump Is Right to Revitalize the Monroe Doctrine," *Fox News*, April 18, 2025; Brahma Chellaney, "Trump Is Taking the Monroe Doctrine Global," *The Hill*, April 9, 2025; Max Boot, "Trump's Emerging Foreign Policy Is a Disturbing 19th-Century Throwback," *Washington Post*, April 7, 2025; Hal Brands, "The US Is Losing the Contest to Divide the World," *Bloomberg*, March 31, 2025; Karen DeYoung, "Trump Revives Monroe Doctrine in U.S. Relations with Western Hemisphere," *Washington Post*, February 28, 2025; Robert D. Kaplan, "Trump's New Map," *Foreign Policy*, February 25, 2025; Scott Neuman, "What Does Trump Mean When He Invokes America's 'Manifest Destiny'?" *NPR*, February 7, 2025; John Yoo and Robert J. Delahunty, "Return to the Monroe Doctrine," American Enterprise Institute (AEI), February 5, 2025; James Holmes, "The Trump Corollary to the Monroe Doctrine," *National Interest*, January 21, 2025; Jeremiah Poff, "Trump Is Making the Monroe Doctrine Great Again," *Washington Examiner*, January 18, 2025; Alexander B. Gray, "Trump Will End U.S. Passivity in the Western Hemisphere," *Foreign Policy*, January 13, 2025; Edward Luce, "Trump, Greenland and the Rebirth of the Monroe Doctrine," *Financial Times*, January 10, 2025; Tim Hains, "Trump National Security Advisor Mike Waltz on Greenland, Panama Canal: 'Call It Monroe Doctrine 2.0,'" *Real Clear Politics*, January 9, 2025; Stephen Collinson, "Trump's Threats to Greenland, Canada and Panama Explain Everything about America First," *CNN*, January 8, 2025; Stewart Patrick, "Trump's Greenland and Panama Canal Threats Are a Throwback to an Old, Misguided Foreign Policy," Carnegie Endowment for International Peace, January 7, 2025; Karen DeYoung, "Trump's Panama Canal Threats Designed to Scuttle China Influence," *Washington Post*, December 24, 2024.

[114] Lisa Rein, Michael Birnbaum, Natalie Allison, and Jeff Stein, "White House Studying Cost of Greenland Takeover, Long in Trump's Sights," *Washington Post*, April 1, 2025.

[115] Katherine Long and Alexander Ward, "U.S. Orders Intelligence Agencies to Step Up Spying on Greenland," *Wall Street Journal*, May 6, 2025. See also Julian E. Barnes and Maggie Haberman, "Intelligence Agencies Increase Focus on Greenland, U.S. Officials Say," *New York Times*, May 8, 2025.

The Trump Administration's interest in annexing Greenland has affected U.S.-Danish relations[116] and U.S. relations with other European countries.[117] A May 8, 2025, press report stated:

> The Danish government summoned the American ambassador to express its displeasure after a report that the Trump administration was escalating its spying on Greenland.
>
> … A representative from Greenland's government was also at the meeting.
>
> Lars Lokke Rasmussen, the Danish foreign minister, said the purpose was to make "absolutely clear" that Denmark was unhappy, and he emphasized that any efforts to "drive

[116] See, for example, Terje Solsvik, "Denmark Won't Bend to Trump's Pressure over Greenland, Prime Minister Says," *Reuters*, June 5, 2025; Csongor Körömi, "Denmark's Defense Boss Not 'Able to Imagine' a US Takeover of Greenland," *Politico*, May 13, 2025; Jan Cienski, "Hands off Greenland, ex-NATO Chief Defies Trump," *Politico*, May 12, 2025 (quoting remarks by former Danish Prime Minister and NATO Secretary-General Anders Fogh Rasmussen); Elías Thorsson, "No Good Options as Denmark Seeks to Counter U.S. Threats to Greenland," *ArcticToday*, May 8, 2025; Jacob Gronholt-Pedersen and Louise Rasmussen, "Greenland, Denmark Affirm Alliance amid Trump's Interest in US Control," *Reuter*s, April 27, 2025; Associated Press, "Danish Leader Tells the US 'You Cannot Annex Another Country' as She Visits Greenland," *Associated Press*, April 4, 2025; Associated Press, "Danish Prime Minister Visits Greenland as Trump Seeks Control of the Arctic Territory," *Associated Press*, April 3, 2025; Tom Little and Louise Rasmussen, "Danish PM Pledges to Support Greenland Against Trump Pressure," *Reuters*, April 2, 2025; Jacob Gronholt-Pedersen and Louise Rasmussen, "Denmark Condemns What It Calls Trump's Escalated Rhetoric on Greenland," *Reuters*, March 27, 2025; Joseph Curl, "'One Way or the Other': Trump's Vow To 'Get' Greenland Sparks International Tension and Local Outrage," *New York Sun*, March 5, 2025; Sudip Kar-Gupta and Charlotte Van Campenhout, "Denmark PM Repeats that Greenland Is Not for Sale," *Reuters*, February 3, 2025; Jacob Gronholt-Pedersen, "Denmark Stands Firm on Greenland after Rubio Says Trump's Interest Is No Joke," *Reuter*s, January 31, 2025; Jacob Gronholt-Pedersen, "Denmark Has Full European Backing to Maintain Respect of Borders, Danish Prime Minister Says," *Reuters*, January 28, 2025; Elías Thorsson, "Danish PM Seeks to Counter Trump with One-Day European Charm Offensive," *ArcticToday*, January 28, 2025; Associated Press, "Danish Leader on European Tour as Copenhagen Moves to Strengthen Presence Around Greenland," *Associated Press*, January 28, 2025; Elías Thorsson, "Danish Experts Baffled: What More Does Trump Want?" *ArcticToday*, January 27, 2025; Steven Erlanger and Jeanna Smialek, "Trump Alarms Denmark in an Icy Exchange Over Greenland," *New York Times*, January 26 (updated January 28), 2025; Richard Milne, "Donald Trump Ridicules Denmark and Insists US Will Take Greenland," *Financial Times*, January 26, 2025; Richard Milne, Gideon Rachman, and James Politi, "Donald Trump in Fiery Call with Denmark's Prime Minister over Greenland," *Financial Times*, January 24, 2025; Stine Jacobsen, "Danish PM Tells Trump It Is Up to Greenland to Decide on Independence," *Reuters*, January 15, 2025; Seb Starcevic and Jakob Weizman, "'Greenland Belongs to the Greenlanders,' Says Danish PM as Donald Trump Jr. Arrives," *Politico*, January 7, 2025.

[117] See, for example, Joseph Ataman, "French President Touches Down in Greenland, in Solidarity with Territory Eyed by Trump," *CNN*, June 15, 2025; William Booth, "Macron Visits Greenland in Show of Support for Territory Coveted by Trump," *Washington Pos*t, June 15, 2025; Ania Nussbaum, "Macron Offers Aid For Greenland Security Amid Trump Threats," *Bloomberg*, June 15, 2025; Ellis Quinn, "EU Reaffirms Greenland's Right to Decide Its Future amid Rising Arctic Tensions," *Eye on the Arctic (Radio Canada International)*, May 8, 2025; Elías Thorsson, "Icelandic Support for EU Membership Increases as Alliances Become Unreliable," *ArcticToday*, April 9, 2025; Luke McGee, "Europe Wonders if Trump Can Be Bought Off With Arctic Concessions," *Foreign Policy*, March 26 2025; Reuters/Deutsche Presse-Agentur, "Germany Backs Denmark amid Trump's Claims to Greenland, says Merz," *ArcticToday*, June 12, 2025; Andrew Gray, "Greenland Should Make Own Decisions Free of Interference, EU's Kallas Says," *Reuters*, May 6, 2025; Eilís Quinn, "EU Reaffirms Greenland's Right to Decide Its Future amid Rising Arctic Tensions," *Eye on the Arctic (Radio Canada International)*, May 6, 2025; Sophia Besch and Jeremy Shapiro, "The New American Imperialism: How Europe Can Deal With Trump's Threat to Greenland," *Lawfare*, March 2, 2025; Julia Payne, "Denmark's Sovereignty Is 'Essential Issue' for the EU, European Council President Says," *Reuters*, January 29, 2025; Clea Caulcutt, "France Floated Sending Troops to Greenland, Foreign Minister Says," *Politico*, January 28, 2025; Steven Erlanger and Lynsey Chutel, "Confronted by Trump, Denmark Looks to Its European Neighbors for Support," *New York Times*, January 28, 2025; Tim Ross, Clea Caulcutt, Nicholas Vinocur, Aitor Hernández-Morales, Jakob Weizman, and Hans von der Burchard, "Europe's Leaders Plot to Stop Trump from Taking Greenland," *Politico*, January 28, 2025; Sarah Fortinsky, "EU Official: Europe 'Not Negotiating' on Greenland," *The Hill*, January 27, 2025; Andrew Gray and Makini Brice, "EU's Kallas Says EU Is 'Not Negotiating' on Greenland," *Reuters*, January 27, 2025; Leonie Cater, "Putting EU Troops in Greenland Makes Sense, Bloc's Top Military Official Says," *Politico*, January 26, 2025.

> wedges into the unity of the kingdom" would not be tolerated. He declined to discuss the substance of the conversation at the meeting….
>
> Both Greenlandic and Danish officials have warned that they could close the American Consulate in Nuuk, Greenland's capital.[118]
>
> "The future and the destiny of Greenland can only be decided by the Greenland people. They should be able to make their choices free from outside pressure or external interference," Kallas said.[119]

As President-elect on January 7, 2025,[120] and as president on March 29, 2025,[121] and May 4, 2025,[122] President Trump reportedly declined to rule out the use of military force to seize Greenland. At a June 12, 2025, hearing before the House Armed Services Committee on the FY2026 Department of Defense budget, Secretary of Defense Pete Hegseth declined to state that the United States has no plans to invade or militarily take over Greenland.[123] A June 27, 2025, press report stated: "The head of Denmark's Arctic command said the prospect of a U.S. takeover of Greenland was not keeping him up at night after talks with a senior U.S. general last week but that more must be done to deter any Russian attack on the Arctic island."[124]

Russia-Ukraine War

The Russia-Ukraine war substantially affected the Arctic's geopolitical environment in a number of ways, including but not necessarily limited to the following, some of which have added to tensions in the region:[125]

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[118] Jeffrey Gettleman and Maya Tekeli, "Denmark Outraged by Report of Increased Spying in Greenland," *New York Times*, May 8, 2025. See also Gwladys Fouche with additional reporting by Daphne Psaledakis and Steve Holland, "Denmark Plans to Call in US Ambassador over Greenland Spying Report," *Reuters*, May 7, 2025.

[119] Andrew Gray, "Greenland Should Make Own Decisions Free of Interference, EU's Kallas Says," *Reuters*, May 6, 2025.

[120] See for example, Minho Kim, "At a News Conference, President Refuses to Rule Out Using Force to Take Greenland," *New York Times*, January 7, 2025.

[121] See, for example, Philip Crowther, Kirsten Grieshaber, and Aamer Madhani, "Trump Says Military Force Not Off the Table for Greenland after Danish FM Scolds His Administration," *Associated Press*, March 29, 2025; Ellie Cook, "Trump Doesn't Rule Out Military Force to Take Greenland," *Newsweek*, March 30, 2025.

[122] See, for example, "Trump Won't Rule Out Military Force on Greenland," *NBC News*, May 4, 2025 (video); Edward Helmore, "Trump Says He 'Doesn't Rule Out' Using Military Force to Control Greenland," *Guardian*, May 4 2025; Gregory Svirnovskiy, "Trump Still Would Like to Add Canada and Greenland but Says Attack on Canada 'Highly Unlikely,'" *Politico*, May 4, 2025; Jessie Yeung and Piper Hudspeth Blackburn, "Trump Renews Threat of Military Force to Annex Greenland," *CNN*, May 4, 2025.

[123] Source: CQ transcript of hearing. See also Lolita C. Baldor and Tara Copp, "Hegseth Says the Pentagon Has Contingency Plans to Invade Greenland if Necessary," *Associated Press*, June 12, 2025; Leo Shane III and Noah Robertson, "Hegseth Won't Rule out Military Actions against Greenland, Panama," *Defense News*, June 12, 2025; Elías Thorsson, "US Secretary of Defense Hegseth Refuses to Rule Out Plans to Seize Greenland by Force," *ArcticToday*, June 12, 2025.

[124] Jacob Gronholt-Pedersen, "Danish General Says He Is Not Losing Sleep over US Plans for Greenland," *Reuters*, June 27, 2025.

[125] For general discussions of how the Russia-Ukraine war, has affected the Arctic's geopolitical environment, see, for example, Karen van Loon and Dick Zandee, *Shifts in Arctic security, Ripples of Russia's War against Ukraine*, Clingendael (Netherlands Institute of International Relations), December 2024, 8 pp.; Florian Vidal, *Russia in the Arctic, The End of Illusions and the Emergence of Strategic Realignments*, French Institute of International Relations (IFRI), 2024 (posted online July 31, 2024), 27 pp.; Iselin Németh Winther and Andreas Østhagen, editors, *The Big Picture of Arctic Geopolitics: An Actor-Oriented Analysis*," Fridtjof Nansen Institute, FNI Report 1/2024, 22 pp.; Gry Thomasen, Chiara Cervasio, and Mhairi McClafferty, *Arctic Diplomacy at a Crossroads, Addressing Present and Future Geopolitical and Strategic Risk*, British American Security Information Council (BASIC), December 2023, 31 pp.

- **Operations of Arctic Council substantially affected.** The war substantially affected the operations of the Arctic Council, prompting new or heightened questions about the future of the Arctic Council, Arctic governance, and cooperation in general among the eight Arctic states.[126] Specific reported developments include the following:
  - On March 3, 2022, in response to Russia's invasion, the A7 states announced that they would be "temporarily pausing participation in all meetings of the [Arctic] Council and its subsidiary bodies."[127]
  - The Nordic Council of Ministers similarly stated that it was suspending its cooperation with Russia and Belarus,[128] and Finland, Denmark, Iceland, Norway, Sweden, and the EU suspended activities involving Russia within the Barents Euro-Arctic Council (BEAC), which was established in 1993 for collaboration primarily between Russia, Norway, Finland, and Sweden to promote stability and sustainable development in the Barents region.[129] In September 2023, Russia announced that it would withdraw from BEAC, citing what it said was a failure by Finland to confirm the transfer of the BEAC presidency from Finland to Russia as scheduled in October 2023.[130]

[126] See, for example, Jennifer Spence, "The Future of Arctic Council Innovation: Charting a Course for Working-Level Cooperation," Harvard Kennedy School Belfer Center for Science and International Affairs, February 20, 2024; Emilie Canova and Pauline Pic, "The Arctic Council in Transition: Challenges and Perspectives for the New Norwegian Chairship," Arctic Institute, June 13, 2023; Brett Simpson, "The Rise and Sudden Fall of the Arctic Council," *Foreign Policy*, May 31, 2023; Abbie Tingstad and Stephanie Pezard, "What Is Next for the Arctic Council in the Wake of Russian Rule?" *The Hill*, May 14, 2023; Humeyra Pamuk, Gloria Dickie, and Gwladys Fouche, "Fears mount for the Arctic as cooperation with Russia stalls," *Reuters*, May 9, 2023; Atle Staalesen, "'Barents and Arctic Cooperation Can Continue without Russia,'" *Barents Observer*, March 7, 2023, Nong Hong, "As War in Ukraine Freezes the Arctic Council, How Will Asia Break the Ice?" *South China Morning Post*, February 25, 2023; Malte Humpert, "Cooperation with Russia in the Arctic is Virtually Impossible Says US Official," *High North News*, February 16, 2023; Kai Kornhuber et al., *The Disruption of Arctic Exceptionalism, Managing Environmental Change in Light of Russian Aggression*, German Council on Foreign Relations (DGAP), February 2023, 18 pp.; Trine Jonassen, "Arctic Council Chairmanship: 'Norway Knows How to Do It,'" *High North News*, January 31 (updated February 3), 2023; Benjamin J. Sacks, Marigold Black, and Peter Dortmans, "Arctic Governance Is in Trouble. The Antarctic Could Be Next," *RAND Blog*, December 7, 2023; Karsten Friis, Elana Wilson Rowe, Mike Sfraga, and Ulf Sverdrup, editors, *Navigating Breakup: Security Realities of Freezing Politics and Thawing Landscapes in the Arctic*, Norwegian Institute of International Affairs, January 2023, 63 pp.; Nima Khorrami and Andreas Raspotnik, "Forced to Look East? Russia, China, India, and the Future of Arctic Governance," *Georgetown Journal of International Affairs*, September 16, 2022. See also Rob Huebert, "Can the Arctic Council Survive the Trump Administration? Probably Not. Here's Why," *ArcticToday*, March 3, 2025.

[127] U.S. Department of State, "Joint Statement on Arctic Council Cooperation Following Russia's Invasion of Ukraine," March 3, 2022.

[128] See, for example, Niina Aagaard, "Nordic Council of Ministers Suspends All Co-operation with Russia," *Nordic Co-operation*, March 3, 2022; Atle Staalesen, "Nordic Countries Halt All Regional Cooperation with Russia," *Barents Observer*, March 6, 2022. For a press report on separate developments, see David Lochead, "Russian Invasion of Ukraine Creates Strain for Arctic Organization," *Nunatsiaq News*, March 1, 2022; Eilís Quinn, "Sweden, Finland Pull Out of Arctic360 Conference in Toronto Where Russian Diplomats Scheduled to Attend," *Eye on the Arctic (Radio Canada International)*, February 25, 2022. See also Eye on the Arctic, "Russia High on Agenda at Nordic Council Meeting," *Eye on the Arctic (Radio Canada International)*, November 1, 2022.

[129] In November 2024, Finland announced that it would leave BEAC after 2025. (See Eye on the Arctic, "Finland leaving Barents Euro-Arctic Council after 2025," *Eye on the Arctic (Radio Canada International)*, November 21, 2024.)

[130] Astri Edvardsen, "Russia Withdraws from the Barents Cooperation," *High North News*, September 19, 2023 (updated September 29); "Russia withdraws from Barents Euro-Arctic Council," *Arctic Portal.org*, September 19, 2023; Thomas Nilsen, "Lavrov Formally Withdraws Russia from Barents Cooperation," *Barents Observer*, September 18, 2023. See also Hannah Thule and Thomas Nilsen, "Finland Mulls an End to Barents Cooperation," *Barents Observer*, July 25, 2024.

- In October 2022, China's special envoy to the Arctic reportedly stated that China would not recognize the legitimacy of an Arctic Council that does not include Russia. He also reportedly stated that China would continue to cooperate in the Arctic with both the A7 states and Russia.[131]
- On February 21, 2023, Russia published amendments to its Arctic policy statement that removed mentions of the Arctic Council.[132]
- In May and June 2023, it was reported that while all cooperation with Russia would remain suspended, other activities of the Council and its working groups would resume in mid-June 2023.[133] The suspension of Arctic Council meetings did not prevent the chairmanship of the council from being transferred from Russia to Norway on May 11, 2023.
- A June 2023 press report stated: "At the end of his tenure as chair of the Arctic Council's senior officials committee in May, Russia's Nikolai Korchunov said Moscow could withdraw from the organisation if it was not invited to participate in events during the Norwegian presidency."[134]
- A September 2023 press report stated that an August 29, 2023, meeting of all eight Arctic Council member states and the six Arctic Indigenous groups that are permanent participants had decided on guidelines for restarting the council's working groups.[135]
- In early February 2024, Russia's ambassador-at-large for the Arctic reportedly stated that Russia would withdraw from the Arctic Council if the council's activities council "do not correspond to Russia's interests."[136]

[131] Melody Schreiber, "China Will Not Recognize an Arctic Council Without Russia, Envoy Says," *ArcticToday*, October 17, 2022; Trine Jonassen, "China: 'Will Not Acknowledge Arctic Council Without Russia,'" *High North News*, October 15 (updated October 18), 2022. See also Astri Edvardsen, "China Wants to Support Norway in Restoring the Arctic Council," *High North News*, April 28, 2023.

[132] See, for example, Malte Humpert, "Russia Amends Arctic Policy Prioritizing 'National Interest' and Removing Cooperation Within Arctic Council," *High North News*, February 23, 2023. See also Astri Edvardsen, "The Arctic Council With New Decisive Step Forward," *High North News*, February 29, 2024; Ellis Quinn, "Arctic Council Resumes Working Group Meetings, Held Virtually," *Eye on the Arctic (Radio Canada International)*, March 1, 2024.

[133] Trine Jonassen, "The Arctic Council Resumes Some Activities in Mid-June," *High North News*, May 16 (updated May 19), 2023; Eilís Quinn, "Seven Western Countries on Arctic Council to Resume Limited Work in Forum," *Eye on the Arctic*, June 8, 2022; Melody Schreiber, "Arctic Council Nations to Resume Limited Cooperation—Without Russia," *ArcticToday*, June 8, 2022. Nikolaj Skydsgaard, "Arctic Council Countries to Resume Limited Work Excluding Russia," *Reuters*, June 8, 2022.

[134] Richard Milne, "Arctic Chill: Western Nations Fear China and Russia Will Exploit Regional Tensions," *Financial Times*, June 5, 2023. See also Astri Edvardsen, "Lavrov: 'The Arctic Council's Future Depends on Whether a Civilized Dialogue Can Continue,'" *High North News*, May 15, 2023; Astri Edvardsen, "Russia: 'The Risk of Weakening the Arctic Council Should Not Be Underestimated,'" *High North News*, May 12, 2023; Trine Jonassen, "'Russia Will Stay in The Arctic Council as Long as it Serves Our Interests,'" *High North News*, May 11 (updated May 12), 2023; Astri Edvardsen, "Russia's Top Arctic Diplomat: Long-Term Cooperation in the Arctic Requires Conditions Now Lost," *High North News*, May 3, 2023.

[135] Astri Edvardsen, "Light at the End of the Tunnel for the Arctic Council," *High North News*, September 12 (updated November 21), 2023; Eilís Quinn, "Arctic Council Charting Way Forward to Resume Work Says Norwegian SAO," *Barents Observer*, September 6, 2023. See also "Arctic Council Continues Steps Towards Resuming Expert Group Work," *Eye on the Arctic (Radio Canada International)*, October 11, 2023; Trine Jonassen, "Arctic Council After Russia's Handover: 'We Are Still Here,'" *High North News*, October 23, 2023. See also Gwladys Fouche and Gloria Dickie, "West, Russia Manage Limited Cooperation in Arctic Despite Chill in Ties," *Reuters*, May 14, 2024.

[136] Trine Jonassen (translation by Birgitte Annie Molid Martinussen), "Russia Threatens to Withdraw From the Arctic Council," *High North News*, February 7 (updated February 15), 2024; Daniel Cusick, "Russia Threatens to Quit Arctic Council," *Politico Pro*, February 9, 2024.

- On February 14, 2024, it was reported that Russia had suspended annual payments to the Arctic Council until "real work" resumes at the Council with the participation of all member states.[137]
- On February 28, 2024, the Arctic Council stated that "consensus was reached for the gradual resumption of official Working Group meetings in a virtual format, enabling project-level work to further advance. In February [2024], the eight Arctic States, in consultation with the Indigenous Permanent Participant organizations, reached consensus to gradually resume official Working Group meetings in a virtual format. Prior to this update, Working Groups advanced project work and decision-making only via written procedures after consensus was reached in August 2023."[138]

- **Concerns about Russia's Arctic military activities heightened.** For the A7 states, the war heightened concerns about the purpose behind Russia's military modernization in the Arctic, and reinforced cooperative security links among the seven countries.[139] Russia reportedly has withdrawn military personnel and equipment from its Arctic bases to help provide reinforcements for its war in Ukraine, and some of these forces reportedly have been destroyed in combat operations there.[140] Other press reports state that, while Russia's Arctic military forces have been degraded as a result of the war, Russia's military modernization in the Arctic has nevertheless continued.[141]

[137] Lidia Kelly, "Russia Suspends Annual Payments to Arctic Council, RIA Agency Reports," *Reuters*, February 14, 2024. See also Thomas Nilsen, "'We Should Not Close Those Doors and Throw the Keys Away,' Says Norway PM on Arctic Council Cooperation with Russia," *Barents Observer*, February 14, 2024; Jennifer Spence, "Russia Suspends Funding for the Arctic Council: Wake up Call Not Death Knell," *High North News*, February 15 (updated February 17), 2024.

[138] "Arctic Council Advances Resumption of Project-Level Work," Arctic Council, February 28, 2024.

[139] See, for example, Astri Edvardsen (translation by Birgitte Annie Molid Martinussen), "NATO's Military Leader: "We Must Be Prepared for Military Conflicts Arising in the Arctic," *High North News*, October 30 (updated November 1), 2023; Barry Gardiner, "As the Ice Melts, a Perilous Russian Threat Is Emerging in the Arctic," *Guardian*, June 13, 2023.

[140] See, for example, Atle Staalesen, "Counting of Killed Komi Warriors Reaches 400," *Barents Observer*, January 17, 2024; Atle Staalesen, "Deputy Commander of Russian Arctic Brigades Is Killed in Ukraine," *Barents Observer*, November 30, 2023; Danielle Wallace, "Russian Troops Withdraw from Norway Border in Drop Since Start of Ukraine War: Official," *Fox News*, September 17, 2023; Atle Staalesen, "More Indigenous Men from Russian Arctic Are Killed in Moscow's War of Aggression," *Barents Observer*, September 7, 2023; Atle Staalesen, "Anniversary Celebrations in Arctic Spetsnaz Base Sputnik as Number of Marines Killed in Ukraine Rises," *Barents Observer*, May 5, 2023; Atle Staalesen, "Russia's Arctic Brigade in Alakurtti Is Counting Its Many Dead," *Barents Observer*, February 22, 2023; Malte Humpert, "Ukraine War Taking Toll on Arctic Material and Personnel," *High North News*, February 17, 2023; Thomas Nilsen, "Land Forces at Kola Reduced to One-Fifth, Norwegian Intelligence Says," *Barents Observer*, February 13, 2023; David Axe, "Russia Built A Dozen Air-Defense Vehicles For War In The Arctic. Then Sent Them To Ukraine To Get Blown Up." *Forbes*, February 4, 2023. See also Mathieu Boulègue, "Russia's Arctic Military Posture in the Context of the War against Ukraine," *Arctic Institute*, October 31, 2024; Colin Wall and Njord Wegge, *The Russian Arctic Threat, Consequences of the Ukraine War*, Center for Strategic and International Studies (CSIS), January 2023, 16 pp.

[141] See, for example, Mathieu Boulègue, *The Impact of the War Against Ukraine on Russia's Arctic Posture: Hard Power on Vulnerable Ice*, Wilson Center, June 2024, 42 pp.; Astri Edvardsen (translation by Birgitte Annie Molid Martinussen), "Russia's Forces in the High North: Weakened by the War, Yet Still A Multidomain Threat," *High North News*, January 12 (updated January 16), 2023; Holly Williams and Analisa Novak, "Russia Ramps Up Its Military Presence in the Arctic Nearly 2 Years into the Ukraine War," *CBS News*, December 18, 2023; Mika Mäkeläinen, "Satellite Images: New Buildings Appear at Russian Military Bases Near Finnish Border," *Yle*, September 10, 2023 (updated September 13); Justin Katz, " Admiral Sounds Alarm amid Rising Russian, Chinese Movement in High North," *Breaking Defense*, September 5, 2023; Nick Paton Walsh and Sarah Dean, "Russia's Militarization of the (continued...)

- **Finland and Sweden become members of NATO.** The war prompted Finland and Sweden to apply for NATO membership.[142]
  - On April 4, 2023, Finland became a member of NATO,[143] which converted Finland's 833-mile border with Russia[144] into a NATO-Russia frontier. More than 300 miles of this border (i.e., more than 36% of the border's length) is north of the Arctic Circle.[145] (By way of comparison, Norway's border with Russia, all of which is above the Arctic Circle, is about 123 miles in length.[146]) Almost one-third of Finland's territory is north of the Arctic Circle.[147] In these ways, Finland becoming a member of NATO has increased the Arctic as an area of focus for NATO.[148]
  - On March 7, 2024, Sweden became a member of NATO, which further increased the Arctic as an area of focus for NATO,[149] given that about 15% of Sweden's land area is north of the Arctic Circle.[150]

Arctic Shows No Sign of Slowing Down," *CNN*, December 22, 2022. See also Heather A. Conley, Sophie Arts, Kristine Berzina, and Mathieu Boulègue, *Defending America's Northern Border and Its Arctic Approaches Through Cooperation With Allies and Partners*, German Marshall Fund of the United States (GMF), August 2023, 31 pp.

[142] See, for example, Trine Jonassen (translation by Birgitte Annie Molid Martinussen), "Sanna Marin: 'Everything Changed Overnight,'" *High North News*, January 11, 2024.

[143] For additional discussion, see CRS Insight IN11949, *NATO: Finland Joins as Sweden's Accession Faces Delay*, by Kristin Archick, Paul Belkin, and Andrew S. Bowen.

[144] Finland's border with Russia is usually said to have a length of 1,340 kilometers, or 832.6 miles. (See, for example, U.K Parliament, House of Lords, European Union Committee, 9th Report of Session 2007–08, *FRONTEX: the EU External Borders Agency, Report with Evidence*, Ordered to be printed 26 February 2008 and published 5 March 2008, Tables 1, 2, and 3 [pages 13 and 14]); Salla Korpela, "A Border That Once Divided Now Unites," *This Is Finland*, June 2008; Henry Ridgwell, "Will Finland's 1,300-Kilometer Border Become NATO-Russia Frontier?" *Voice of America*, May 12, 2022; James Frater and Xiaofei Xu, "Finland Plans to Start Building a Fence on Russian Border Next Year," *CNN*, November 18, 2022; Jari Tanner, "Finland to Start Building Fence on Russian Border Next Year," *Associated Press*, November 18, 2022.

[145] Source: CRS measurement, February 27, 2023.

[146] Source: Norway's border with Russia, which was previously said to have a length of 195.7 kilometers, was resurveyed and in 2018 was determined to have a length of 197.7 kilometers (or about 122.8 miles), with the difference attributed to changes in the flow of a river and improvements in measuring devices. (See Thomas Nilsen, "Russia Just Got a "Longer" Border to Norway," *Barents Observer*, September 26, 2018. See also, for example, Nina Berglund, "Norway Tightens Russian Border Control," *NewsinEnglish.no*, October 2, 2022; Astri Edvardsen, "Norway To Strengthen Control on the Border With Russia–And Is Ready to Close It At Short Notice," *High North News*, October 3 [updated October 4], 2022.)

[147] See, for example, "Finland," Arctic Council, undated, accessed May 19, 2025, at https://arctic-council.org/about/states/finland/; "Finland," Arctic Institute, updated on August 1, 2022; "Finland," *Britannica*, updated February 21, 2023.

[148] See, for example, Heather A. Conley and Sophie Arts, *NATO's Policy and Posture in the Arctic: Revisiting Allied Capabilities and Command Plans*, German Marshall Fund of the United States (GMF), July 5, 2023, 6 pp.; Anne Kauranen and Johan Ahlander, "In NATO's New North, Fresh Chances to Contain Moscow," *Reuters*, July 3, 2023; Ruby Mellen and Dylan Moriarty, "Four Maps Explain How Finland Could Alter NATO's Security," *Washington Post*, May 19, 2022 (updated April 3, 2023); Janne Kuusela, "As a New Arctic Ally, Finland Contributes to Arctic Security and Defence," Wilson Center, March 1, 2024.

[149] See, for example, Anna Wieslander, *How Sweden and Finland's Membership in NATO Affects the High North*, Atlantic Council, October 2024, 9 pp.; Henrik Breitenbauch and Benjamin Jensen, "A New Nordic NATO?" Center for Strategic and International Studies (CSIS), July 10, 2024; Rachael Gosnell and Benjamin Jensen, "NATO and the Arctic," Center for Strategic and International Studies, July 10, 2024; Sophie Arts, "The NATO Washington Summit and the Arctic," German Marshall Fund of the United States (GMF), July 2, 2024; James Stavridis, "Sweden and Finland Give NATO an Arctic Opportunity," *Bloomberg*, July 13, 2023.

[150] Source for 15% figure: "Climate of Sweden," *Britannica*, undated, accessed May 19, 2025, at
(continued...)

  - Russia's defense minister reportedly stated in December 2022 that in response to Finland and Sweden seeking to join NATO, Russia would reorganize some of its military forces near the Nordic countries.[151]
- **Increased Russian cooperation in Arctic with China.** Russia's diplomatic isolation from the A7 states in the Arctic led to increased Russian cooperation in the Arctic with non-A7 countries, particularly China[152]—a development that could strengthen China's presence and activities in the region and affect views among observers in the A7 states and elsewhere regarding China's motivations and goals for its Arctic activities and China's ability to work with the A7 states on matters relating to the Arctic.[153]

https://www.britannica.com/place/Sweden/Climate. Another source states "The two northernmost counties [of Sweden], Västerbotten and Norrbotten, are defined as Sweden's Arctic territory. This region represents about one-third of Sweden's territory, but is populated with just over half of a million inhabitants—more sparsely populated than the southern parts of the country." (Sweden, Arctic Council, undated, accessed May 19, 2025, at https://arctic-council.org/about/states/sweden/.) See also Alina Bykova, "NATO Has Always Been an Arctic Alliance (Part I)," Arctic Institute, May 28, 2024; Alina Bykova, "NATO Has Always Been an Arctic Alliance (Part II)," Arctic Institute, June 11, 2024.

[151] See Thomas Nilsen, "Shoigu Vows More Troops Near Nordic Countries," *Barents Observer*, December 21, 2022.

[152] See, for example, Georgi Kantchev, "Russia and China Defy the West Deep in the Arctic, The Svalbard Archipelago Has Become a Critical Steppingstone for Projecting Power across One of the World's Most Sensitive Regions," *Wall Street Journal*, September 28, 2024; Seong Hyeon Choi, "'Arctic ambition': 3 Chinese icebreakers forge polar presence and unity with Russia, Recent Agreements, Including between Xi and Putin, Seek China-Russia Collaboration on Shipping Routes, Research and Tech in the Region," *South China Morning Post*, September 5, 2024; Didi Kirsten Tatlow, "China and Russia to Expand Scientific Cooperation in Arctic: Report," *Newsweek*, August 30, 2024; Heather A. Conley, Sophie Arts, Bonnie S. Glaser, Kristine Berzina, and Jaine Archambeau, *A New Era of Arctic Geopolitics: Russia-PRC Strategic Alignment Is Driving Unprecedented Regional Collaboration*, German Marshall Fund of the United States (GMF), May 2024 (posted online July 18, 2024), 10 pp.; Luke Coffey, "Where The Ice Is Melting Between Beijing And Moscow – Analysis," *Eurasia Review*, July 6, 2024; "China and Russia Have Chilling Plans for the Arctic," *Economist*, June 19, 2024; Alexander Dalziel, *Eurasian North – The geopolitics of Russia and China in the Arctic*, Macdonald-Laurier Institute (MIL), 2024 (posted online June 13, 2024), 40 pp.; Jay Heisler, "China's Shrinking Arctic Ambitions Are Seen as Confined Largely to Russia," *VOA*, May 17, 2024; Aaron Mc Nicholas, "Breaking the Ice, Russia and China's Shifting Relations Are Helping to Encourage a Flood of Chinese Companies into the Arctic," *Wire China*, February 25, 2024; Ken Dilanian, "Russia's Isolation Is Forcing It to Look to China for Support in the Arctic, Raising U.S. Concerns," *NBC News*, February 7, 2024; *Shifting Ice, Russia's Increasing Reliance on the Private Sector and the PRC in the Arctic*, Strider Technologies, undated, posted online February 7, 2024, 17 pp.; Daniel Cusick, "Russia-China Partnership Prompts New US Arctic Strategy," *Politico Pro*, January 3, 2024 (a similar article was published as Daniel Cusick and E&E News, "Are Russia and China Teaming Up to Control the Arctic?" *Scientific American*, January 3, 2024).

[153] See, for example, Greg Hadley, "DOD: Russian Weakness Fuels China's Rise in the Arctic," *Air & Space Forces Magazine*, December 5, 2024; Jacob Judah, "Russia's Warming Arctic Is a Climate Threat. War Has Shut Scientists Out of It," *New York Times*, October 22 (updated October 23), 2024; Austin Ramzy, "China Is Gaining Long-Coveted Role in Arctic, as Russia Yields," *Wall Street Journal*, October 2, 2023; Paul Goble, "China Strengthening Its Position in Northern Russia and the Arctic Sea," *Eurasia Daily Monitor*, September 28, 2023; Faustine Ngila, "China Is Cementing Its Position as an Arctic Superpower through Russia," *Quartz*, April 20, 2023; Matthew P. Funaiole, Brian Hart, Joseph S. Bermudez Jr., and Aidan Powers-Riggs, "Frozen Frontiers, China's Great Power Ambitions in the Polar Regions," Center for Strategic and International Studies (CSIS), April 18, 2023; Paul Goble, "Amid Russia's Problems, China Assumes a Larger Role in the Arctic," *Eurasia Daily Monitor*, March 28, 2023; Matti Puranen and Sanna Kopra, "Finland and the Demise of China's Polar Silk Road," *China Brief*, December 30, 2022; Marc Lanteigne, "China and the 'Two Arctics,'" *Diplomat*, October 18, 2022; Danielle Bochove, "NATO-China Tension Over Ukraine Flares at Conference in Iceland," *Bloomberg*, October 15, 2022; Kristin Huang, "Warm Russian Ties Are Key to China's Arctic Aspirations: Report," *South China Morning Post*, October 2, 2022.

- **Arctic scientific research projects disrupted.** Actions taken by governments in response to the war substantially disrupted international scientific research projects in the Arctic that involved Russian participation.[154]
- **Russian Arctic oil and gas operations and exports impacted.** Western economic sanctions imposed against Russia have reportedly impeded Russian energy projects in the Arctic.[155] In September 2023, the United States announced further sanctions against Russia's Arctic energy activities amid reports that previous Western sanctions were having only limited impact.[156] At the same time, exports of Russian oil to India and China reportedly have increased, with some of the exports to China using the Northern Sea Route (NSR), an Arctic sea route that runs along Russia's northern coastline.[157]

[154] See, for example, Megan Gannon, "War In Ukraine Causes Disruption To Arctic Research," *Nome Nugget*, February 22, 2024; Malte Humpert, "Lack of Russian Data Reduces Understanding of Climate Change in the Arctic," *High North News*, February 2, 2024; Martin Breum, "The Lack of Data from Russia May Render Arctic Climate Forecasting Meaningless," *Arctic Business Journal*, January 23, 2024; Rebecca Hersher, "Why the War in Ukraine is Bad for Climate Science," *NPR*, January 22, 2024; Efrén López-Blanco et al., "Towards an Increasingly Biased View on Arctic Change," *Nature*, February 2024 (published online January 22, 2024): 152-155; Agence France-Presse (AFP), "Russia's Isolation Takes Toll on Arctic Climate Science," *France 24*, December 17, 2023; Saleem H. Ali, "Arctic Science Diplomacy With Russia," *Forbes*, August 31, 2023; Warren Cornwall, "'We are cut off.' Tensions with Russia Are Hobbling Arctic Research," *Science*, May 3, 2023; Dino Grandoni, "Why Russia's War in Ukraine Is Bad News for Polar Bears, Too," *Washington Post*, April 15, 2023; Karen van Loon, "The Like-Minded, The Willing... and The Belgians: Arctic Scientific Cooperation after February 24 2022," Arctic Institute, March 21, 2023; Ed Struzik, "How Tensions With Russia Are Jeopardizing Key Arctic Research," Yale Environment 360, February 7, 2023; Lori Valigra, "Arctic Researchers Forced to Modify Projects amid Geopolitical Tensions with Russia," *Science Business*, November 21, 2022; Gastautor, "Political Tensions Lead to 'Gaps' in Scientific Data in the Arctic Region, *Polar Journal*," September 10, 2022.

[155] See, for example, Atle Staalesen, "Paralysis Looms over Russia's Arctic Oil," *Barents Observer*, January 13, 2025; Malte Humpert, "U.S. Cracks Down on Russian 'LNG Shadow Fleet' and Arctic LNG Project in Latest Sanctions," *gCaptain*, October 30, 2024; Brendan Cole, "Russia's Arctic Gas Project Faces Uncertainty as Production Crashes," *Newsweek*, July 17, 2024; Malte Humpert, "U.S. Targets Future Russian Energy Projects in Arctic in New Round of Sanctions," *High North News*, June 13, 2024; Vladimir Milov, "Oil, Gas, and War: The Effect of Sanctions on the Russian Energy Industry," Atlantic Council, May 23, 2024; Elizaveta Vereykina, "Shipments of Liquefied Gas from the Russian Arctic Could Be Stopped This Summer," *Barents Observer*, May 15, 2024; Stephen Stapczynski, "How Western Sanctions Are Strangling Putin's Arctic Gas Ambitions," Blomberg, May 4, 2024; Malte Humpert, "New U.S. Sanctions Target Arctic LNG 2 Blocking Red Box Shipping Company," *High North News*, May 2, 2024; Atle Staalesen, "New U.S Sanctions Take Aim at Russian Arctic Shipping," *Barents Observer*, May 2, 2024; Anna Hirtenstein and Georgi Kantchev, "The U.S. Is Trying to Cripple Russia's Vast Arctic LNG Project," *Wall Street Journal*, April 14, 2024; Atle Staalesen, "Sanctions Are About to Wreck Moscow's Grand Arctic Projects," *Barents Observer*, April 8, 2024; Jocelyn Trainer, Nicholas Lokker, Kristen Taylor, and Uliana Certan, "Sanctions by The Numbers: The Russian Energy Sector," Center for a New American Security (CNAS), April 4, 2024; Malte Humpert, "Arctic: The War's Impact on Russia's Northern Energy Ambitions," *High North News*, March 18, 2024; Malte Humpert, "Delivery of Final Modules for Russia's Arctic LNG 2 Project Highlights Challenge of Designing Effective Sanctions," *High North News*, March 4, 2024; Malte Humpert, "No Shipments from Russia's Arctic LNG 2 Until March as Sanctions Block Delivery of LNG Carriers," *High North News*, February 9 (updated February 14), 2024; Sergey Sukhankin, "US Sanctions Hamper Russia's LNG Strategy in the Arctic," *Eurasia Daily Monitor*, January 9, 2024.

[156] Department of State, "Imposing Further Sanctions in Response to Russia's Illegal War Against Ukraine," fact sheet, September 14, 2023; Malte Humpert, "US Further Tightens Sanctions Screw Targeting Russian Arctic Gas Projects," *High North News*, September 20 (updated September 21), 2023; Atle Staalesen, "Americans Attack Russian Arctic: New Sanctions Take Aim at LNG and Mining," *Barents Observer*, September 15, 2023; Malte Humpert, "Transport of LNG Modules to Russia Continues, Calling Effectiveness of EU Sanctions Into Question," *High North News*, September 11, 2023. See also Elizaveta Vereykina, "More Sanctions Imposed on Russia's Arctic LNG Entities," *Barents Observer*, September 6, 2024.

[157] See, for example, Patsy Widakuswara, "Russia Shipping More Oil to Chinese Ports via Arctic Route," *VOA*, October 4, 2023; Malte Humpert, "Dangerous Waters: Ukraine War Could Divert Oil Shipments from Black Sea to (continued...)

NATO and European Union

NATO

As mentioned earlier, the A7 states are all members of NATO, and the expansion of NATO to include Finland and Sweden following the start of the Russia-Ukraine war has increased the Arctic as an area of focus for NATO.

During the Cold War (i.e., before Sweden and Finland joined NATO), U.S. and allied political and military officials viewed NATO member Norway and its adjacent sea areas as the northern flank of NATO's defensive line against potential aggression by the Soviet-led Warsaw Pact alliance. With the end of the Cold War, NATO planning efforts shifted away from defending against potential aggression by Russia against NATO countries, including NATO countries in the Arctic. With the emergence of great power competition, NATO began to once again focus more on the question of how to deter potential Russian aggression against NATO countries, including NATO countries in in the Arctic. The Russia-Ukraine war has strengthened NATO's focus on this question.[158]

European Union

Three of the eight Arctic states—Denmark, Finland, and Sweden—are members of the European Union (EU), and two other Arctic states—Iceland and Norway—have close ties to the EU as members of the European Economic Area. The EU is showing increased interest in the Arctic.[159] The European Parliament—the EU's only directly elected institution—supports an active EU role in the Arctic. In 2016, the European Commission (the EU's executive) and the EU's High

Arctic Ocean," *High North News*, August 15 (updated August 21), 2023; Malte Humpert, "Russian Crude Oil Now Flowing To China Via Arctic Ocean," *High North News*, August 3 (updated August 4), 2023; Dmitry Zhdannikov and Nidhi Verma, "Obscure Traders Ship Half Russia's Oil Exports to India, China after Sanctions," *Reuters*, July 27, 2023; Lazaro Gamio, Leanne Abraham, Ana Swanson, and Alex Travelli, "How India Profits From Its Neutrality in the Ukraine War," *New York Times*, June 22, 2023; Grant W. Turner, "Russia's Arctic Crude Exports to China and India Increase," *Eurasia Daily Monitor*, February 21, 2023; Malte Humpert, "Russia Reroutes Arctic Oil To China and India as Result of EU Sanctions," *High North News*, January 16, 2023. See also Sergey Sukhankin, "Russo-Indian Economic Ties During Wartime: Oil, Currency and the Arctic," *Eurasian Daily Monitor*, January 31, 2023; Florence Tan and Nidhi Verma, "Russia Sends More Arctic Oil To China, India after Sanctions," *Reuters*, January 5, 2023. See also Pier Paolo Raimondi, *The Role of the Arctic in Russia's Energy Strategy: Features, Objectives and Perspectives following Russia's War in Ukraine*, Istituto Affari Internazionali (IAI), 2024 (posted online February 14, 2024), 45 pp.; Stephen Stapczynski, Rakesh Sharma, and Christopher Udemans, "The Indian Apartment Behind Russian Efforts to Break US Gas Sanctions, A Network Stretching from Dubai to China Is Involved in a Multi-Billion Dollar Effort to Ship Gas from Russia's Arctic LNG Facility," *Bloomberg*, September 18, 2024.

[158] For an additional short overview, see Elley Donnelly, "NATO in the Arctic: 75 years of Security, Cooperation, and Adaptation," Wilson Center, April 3, 2024.

[159] See, for example, Andreas Raspotnik, Erdem Lamazhapov, Iselin Stensdal, and Gørild Heggelund, "Critical Raw Materials: Interests of China and the European Union in the Arctic," *Strategic Analysis*, vol. 48, 2024, Issue 6 (posted online March 4, 2025); Andreas Raspotnika and Adam Stępień, "The European Union's Polar Ambitions: Regional Geo-policies Yet Limited Geo-strategic Vision," *Journal of European Integration*, vol. 45, no. 8, 2023 (published online December 6, 2023): 1181–1197; Emilie Canova, "The European Union and its Member States in the Arctic: Official Complementarity but Underlying Rivalry?" Arctic Institute, August 8, 2023; Andreas Raspotnik and Adam Stępień, "The Arctic Institute's 2023 Series on the European Union's Arctic Policy—From a Stakeholder Perspective," Arctic Institute, August 1, 2023; Lena Debanck, "The EU as an Actor in the Arctic," *Arctic Institute*, April 25, 2023; Gabriella Gricius and Andreas Raspotnik, "The European Union's 'Never Again' Arctic Narrative," *Journal of Contemporary European Studies*, published online March 20, 2023; Luke Laframboise, "Brussels Looks North: The European Union's Latest Arctic Policy and the Potential for 'Green' Colonialism," *Arctic Institute*, September 20, 2022; Iris Thatcher, "The EU and the Future of Arctic Cooperation in the Northern Dimension," *Polar Points (Wilson Center Polar Institute)*, September 7, 2022.

Representative for Foreign Affairs and Security Policy issued a joint communication (i.e., policy paper) on the EU's Arctic strategy.[160] In 2017, the EU appointed its first Ambassador-at-Large for the Arctic, and in October 2019, the EU held its first-ever Arctic Forum, a high-level conference in northern Sweden focused on promoting EU efforts in the Arctic. The EU is also a major financial contributor to Arctic research. In May 2025, six EU parliamentarians visited Kirkenes—a town in Norway's Arctic region that is near Norway's border with Russia—to better understand the security situation in the area.[161]

Russia

Overview[162]

In considering Russia's role in the Arctic's geopolitical environment, points that can be noted include but are not limited to the following:

- Geographically, Russia is the most prominent of the eight Arctic states. According to one assessment, Russia "has at least half of the Arctic in terms of area, coastline, population and probably mineral wealth."[163] By one measure, Russia's Arctic zone accounts for about 35% of the country's territory.[164] A September 2024 report found that Russia accounts for 50% to 60% of all investments in the Arctic in 2017-2022, with the A7 countries combined accounting for the remaining 40% to 50%.[165] About 20% of Russia's land mass is north of the Arctic Circle,[166] and Russia has numerous cities and towns there. As of 2019-2020, 80% of Russia's natural gas and 17% per cent of its oil production took place in its Arctic.[167]
- Russia has identified the Arctic as a high-priority region critical to the country's prosperity and security. Starting in 2008, the Russian government has adopted a

[160] European Commission and High Representative of the Union for Foreign Affairs and Security Policy, Joint Communication to the European Parliament and the Council, *An Integrated European Union Policy for the Arctic*, April 27, 2016, p. 2.

[161] Astri Edvardsen (translation by Birgitte Annie Hansen), "EU Visit to the Norwegian-Russian Border: "'A Threat in This Region Is a Threat to European Security,'" *High North News*, June 10, 2025.

[162] For additional overview discussions, see Erdem Lamazhapov and Arild Moe, "Russia's Geopolitical Position in the Arctic: What's New?" *Strategic Analysis*, vol. 48, 2024, Issue 6 (posted online March 4, 2025).

Michael Paul and Göran Swistek, *Russia in the Arctic: Development Plans, Military Potential, and Conflict Prevention*, Stiftung Wissenschaft und Politik (SWP) (German Institute for International and Security Affairs), SWP Research Paper 3, February 2022, 42 pp.

[163] "The Arctic: Special Report," *The Economist*, June 16, 2012, p. 11. The Arctic Council states that "Russia stretches over 53 percent of the Arctic Ocean coastline. Approximately two and a half million of Russia's inhabitants live in [Russia's] Arctic territory, accounting for nearly half of the population living in the Arctic worldwide." ("The Russian Federation," Arctic Council, accessed May 19, 2025, at https://arctic-council.org/en/about/states/russian-federation/.)

[164] Erdem Lamazhapov and Arild Moe, "Russia's Geopolitical Position in the Arctic: What's New?" *Strategic Analysis*, vol. 48, 2024, Issue 6 (posted online March 4, 2025).

[165] Business Index North, *Overview of Russia's Arctic Investments in 2017-2022*, September 2024, p. 2.

[166] Testimony of Admiral Charles W. Ray, Coast Guard Vice Commandant, on "Expanding Opportunities, Challenges, and Threats in the Arctic: a Focus on the U.S. Coast Guard Arctic Strategic Outlook" before the Senate Commerce, Science, & Transportation Security Subcommittee, December 12, 2019, p. 3.

[167] Ian Anthony, Ekaterina Klimenko, and Fei Su, *A Strategic Triangle in the Arctic? Implications of China–Russia–United States Power Dynamics for Regional Security*, SIPRI Insights on Peace and Security, no. 2021/3, March 2021, p. 3, which cites the following as its source [brackets as in the citation]: "President of Russia, [The strategy for the development of the Arctic Zone of the Russian Federation and national security until 2035], 26 Oct. 2020 (in Russian); and Novyye Izvestiya, [Russia invests 86 billion USD into the Arctic], 28 Mar. 2019 (in Russian)."

series of strategy documents outlining plans to bolster the country's Arctic military capabilities, strengthen territorial sovereignty, and develop the region's resources and infrastructure. Russia is keen to capitalize on natural resource development in the region, both onshore and offshore.

- Over the past 10 to 15 years, Russia has invested in the construction of Arctic ports and search-and-rescue facilities, some of which are referred to as dual-use (civilian-military) facilities. Russia also has reactivated and modernized Arctic military bases that fell into disuse following the end of the Cold War, assigned upgraded forces to those bases, and increased military exercises and training operations in the Arctic.
- Russia uses its coastal Arctic waters as a maritime highway for supporting its Arctic communities. As noted later in this report (see "Commercial Sea Transportation"), the NSR that runs along Russia's Arctic coast accounts for the vast majority of large cargo ship transits in the Arctic. Russia is promoting the NSR for use by others seeking to transport goods between Europe and Asia.[168]
- In light of the above points, of all the Arctic states, Russia might have the most at stake in the Arctic in absolute terms.[169]

U.S. and Other A7 Relations with Russia

Some observers view the Trump Administration as being interested in, or taking steps to facilitate, a less antagonistic and more cooperative U.S. relationship with Russia,[170] perhaps as part of a U.S. strategy for drawing Russia away from with China and reducing Russia-China strategic cooperation (a strategy that some observers have referred to as a "reverse Kissinger" or "reverse Nixon").[171] Increased U.S.-Russian cooperation in the Arctic could reflect and/or contribute to a

[168] See also Gonzalo Vázquez, "2022 Russian Maritime Doctrine: Implications for NATO & the Future of Great Power Competition in the Arctic," Arctic Institute, April 11, 2023; Atle Staalesen, "Assertive Moscow outlines push into central Arctic Ocean," *Barents Observer*, August 17, 2022; Malte Humpert, "Control Over Arctic Ocean Top Priority Of New Russian Naval Doctrine," *High North News*, August 4, 2022.

[169] For additional discussion, see CRS Report R46761, *Russia: Foreign Policy and U.S. Relations*, by Andrew S. Bowen and Cory Welt. See also Heather A. Conley et al., *Russia's Climate Gamble, The Pursuit and Contradiction of Its Arctic Ambitions*, Center for Strategic and International Studies (CSIS), September 2021, 58 pp.

[170] See, for example, Peter Baker, "Trump's Pivot Toward Putin's Russia Upends Generations of U.S. Policy," *New York Times*, February 18, 2025; Mike Brest, "US Stresses Improving Relationship with Russia in Negotiations to End Ukraine War," *Washington Examiner*, February 18, 2025; Matthew Lee and Dasha Litvinova, "Russia and US Agree to Work toward Ending Ukraine War in a Remarkable Diplomatic Shift," *Associated Press*, February 18, 2025; Joshua Kurlantzick, "Trump's Abrupt Turn to Russia—and Whether a U.S.-Russia Team Could Gain Any Sway in South and Southeast Asia," Council on Foreign Relations, February 19, 2025; Peter Baker, "Under Trump, America's New Friends: Russia, North Korea and Belarus," *New York Times*, February 25, 2025; Daniel Arkin, "Trump Turns Toward Russia, Breaking with Decades of U.S. Policy," *NBC News*, March 3, 2025; Dave Lawler, "Trump's Stunning String of Putin-Friendly Moves," *Axios*, March 4, 2025; Léonie Chao-Fong, "How Trump Is Driving US Towards Russia—A Timeline of the President's Moves," *Guardian*, March 9, 2025; Robyn Dixon, Mary Ilyushina, and Lizzie Johnson, "For Russia, Trump-Putin Call Marks Moscow's Return to the World Stage," *Washington Post*, March 19, 2025; Steven Pifer, "Trump Craves Better Relations with Russia—Why?" *The Hill*, March 21, 2025; Robyn Dixon, "How Trump's Policies Have Helped Russia and Furthered Putin's Goals," *Washington Post*, March 26, 2025; Nathaniel Reynolds, "Russia Is Playing Along With Trump's Hopes for a Rapprochement," *Emissary* (Carnegie Endowment for International Peace); April 15, 2025; Peter Baker, "How Trump Plays Into Putin's Hands, From Ukraine to Slashing U.S. Institutions," *New York Times*, April 26, 2025; Erica L. Green and Zolan Kanno-Youngs, "Trump Renews Embrace of Putin Amid Rift With Allies," *New York Times*, June 16 (updated June 17), 2025.

[171] See, for example, Junhua Zhang, "Will Trump's Plan to Split Russia and China Succeed?" Geopolitical Intelligence Services (GIS), June 27, 2025; Michael Schuman, "What Is a 'Reverse Nixon,' and Can Trump Pull It Off? Dividing (continued...)

less antagonistic and more cooperative overall U.S.-Russian relationship. A less antagonistic and more cooperative U.S.-Russian relationship could potentially reduce Russia's diplomatic isolation from the United States in the Arctic, potentially impact U.S.-relations with the other A7 states (or non-A7 European states),[172] and potentially impact Russia-China cooperation in the Arctic.[173] A February 18, 2025, press report stated that "Russia and the United States discussed possible cooperation on energy projects in the Arctic at a meeting in Saudi Arabia Tuesday [February 18], a top Russian negotiator told Politico."[174]

Prior to the Russia-Ukraine war, the A7 states cooperated with Russia on a range of issues in the Arctic.[175] One example is cooperation on Arctic Search and Rescue (SAR) under the May 2011 Arctic Council agreement on Arctic SAR that is discussed later in this report. The A7 states also cooperated with Russia through the Arctic Coast Guard Forum (ACGF), an organization intended to "foster safe, secure, and environmentally responsible maritime activity in the Arctic."[176] The United States and Russia in 2018 cooperated in creating a scheme for managing two-way

America's Adversaries Isn't as Easy as All That," Atlantic, May 30, 2025; Hal Brands, "A 'Reverse Kissinger'? Not While Xi and Putin Are Around," *Bloomberg*, May 9, 2025; Clifford D. May, "A 'Reverse Kissinger' Would Be a Fool's Errand for Trump," *Washington Times*, April 15, 2025; Prakash Nanda, "Trump Orchestrates "Reverse Kissinger" Policy To Break *China-Russia Alliance; Can U.S. Pull Putin In The American Camp?" Eurasian Times*, April 14, 2025; Michael McFaul and Evan S. Medeiros, "China and Russia Will Not Be Split, The 'Reverse Kissinger' Delusion," *Foreign Affairs*, April 4, 2025; David Ignatius, "Trump Bets on a 'Reverse Kissinger,'" *Washington Post*, April 3, 2025; Greg R. Lawson, "The Reverse Nixon/Kissinger… Finally," *Real Clear World*, March 24, 2025; David Brostoff, "The 'Reverse Kissinger' Strategy Is Based on Bad History," *Diplomat*, March 21, 2025; Glenn Chafetz, "The US Dividing Russia from China? Forget About It," *Strategist*, march 12, 2025; China-Russia Report, "Attempting a 'Reverse Kissinger' Will Fail," *China-Russia Report*, February 24, 2025; Yaroslav Trofimov, "Washington's Embrace of Putin Aims to Drive Wedge Between Moscow and Beijing," *Wall Street Journal*, February 21, 2025; Jianli Yang, "The Myth of a 'Reverse Kissinger': Why Aligning With Russia to Counter China Is a Strategic Illusion," *Diplomat*, February 21, 2025; Joshua Kurlantzick, "Trump's Abrupt Turn to Russia—and Whether a U.S.-Russia Team Could Gain Any Sway in South and Southeast Asia," Council on Foreign Relations, February 19, 2025.

Some observers argue that the Trump Administration is not pursuing a reverse Kissinger strategy. See, for example, Bryan Burack, "No, Trump Is Not Attempting a 'Reverse Nixon,'" *National Interest*, March 25, 2025.

The term *reverse Kissinger* (or *reverse Nixon*) is derived from a strategy pursued by President Nixon and his national security advisor, Henry Kissinger, in the early 1970s to implement a historic rapprochement in U.S.-China relations so as to draw China away from strategic cooperation with Russia and thereby present leaders of the Soviet Union—the principal U.S. adversary during the Cold War—with a two-front security challenge in Europe (vis-á-vis the United States and its NATO allies) and Asia (vis-á-vis China). For brief references to this U.S. diplomacy toward China, see CRS In Focus IF12503, *Taiwan: The Origins of the U.S. One-China Policy*, by Susan V. Lawrence, and the archived CRS Report R45898, *U.S.-China Relations*, coordinated by Susan V. Lawrence.

[172] See, for example, Paweł Markiewicz, "Toward A New Arctic Status Quo?" *High North News*, March 14, 2025.

[173] See, for example, Sylvie Zhuang, "Warming US-Russia Ties Could Put China's Arctic Ambitions on Ice, Experts Warn," *South China Morning Post*, March 16, 2025.

[174] Douglas Busvine, "Russia and US Eye Joint Arctic Energy Projects after Saudi Talks," *Politico*, February 18, 2025. See also Mary Ilyushina, "Lure of the North: What Russia's Arctic Can Offer Trump," *Washington Post*, March 31, 2025; Atle Staalesen, "Putin's Dealmaker with Trump Calls for Joint Action in the Arctic," *Barents Observer*, March 12, 2025.

[175] For a review of past U.S.-Russia cooperation in the Arctic, see Pavel Devyatkin, "US-Russia Arctic Cooperation: Strategic Ebbs and Flows," Strategic Analysis, vol. 48, 2024, Issue 6 (posted online March 4, 2025).

[176] The ACGF states at its website (https://www.arcticcoastguardforum.com/about-acgf) that it "is an independent, informal, operationally-driven organization, not bound by treaty, to foster safe, secure, and environmentally responsible maritime activity in the Arctic. All Arctic countries, Canada, Denmark, Finland, Island, Norway, Russia, Sweden and the United States are members of the forum. Chairmanship duties of the ACGF rotate every two years in concert with the Chairmanship of the Arctic Council." The ACGF holds two meetings each year.

The work of the ACGF is headed by the ACGF chair and supported by the Secretariat and Working Groups. The Secretariat is responsible for implementing strategic direction and the smooth operation of the ACGF and its Working Groups. Working Groups are subordinate to the Secretariat. The Secretariat and Working Groups are organized at the direction of the Principals and reflect issues relevant to member countries of the Arctic.

shipping traffic through the Bering Strait and Bering Sea,[177] and in February 2021, the U.S. Coast Guard and Russia's Marine Rescue Service signed an agreement updating a 1989 bilateral joint contingency plan for responding to transboundary maritime pollution incidents.[178] Prior to the Russia-Ukraine war, some observers saw possibilities for further cooperation by the A7 states with Russia in the Arctic.[179] Following the start of the Russia-Ukraine war, those possibilities narrowed considerably, but U.S.-Russian in marine safety-related cooperation in the Bering Strait reportedly continued,[180] and some observers saw some limited possibilities for additional cooperation.[181]

Prior to the Russia-Ukraine war, and as discussed later in this report, the increase in Russian military presence and operations in the Arctic had prompted growing concerns among the A7 states that the Arctic might become a region of military tension and competition, as well as concerns about whether the A7 states are adequately prepared militarily to defend their interests in the region. As discussed later in this report in the section on military operations, the A7 states have responded to Russia's increased military presence and operations in the Arctic by taking steps to increase their own Arctic military capabilities. Russian military exercises in the Arctic are being monitored by the A7 states, and, similar to what happened during the Cold War, Russian military aircraft that periodically fly toward the airspace (including Arctic airspace) of some of the A7 states are being intercepted by military aircraft from those states.

In February 2020, a disagreement arose between Norway and Russia regarding Russia's access to the Norwegian archipelago of Svalbard under the terms of the Svalbard Treaty of 1920. In

[177] See, for example, U.S. Coast Guard, "U.S., Russia Propose Bering Strait Ship Traffic Routing Measures," January 25, 2018; Amy Midgett, "U.S., Russia Jointly Propose Bering Strait Routing Measures," *Coast Guard Maritime Commons*, January 25, 2018; Amy Midgett, "IMO Approves U.S.-Russian Federation Proposal for Bering Strait Routing Measures," *Coast Guard Maritime Commons*, May 25, 2018; Yereth Rosen, "With Marine Traffic Growing, International Shipping Agency Approves US-Russia Plan for Bering Strait Shipping Lanes," *ArcticToday*, May 26, 2018; Associated Press, "Maritime Organization Approves Two-Way Shipping Routes in Bering Strait," *CBC*, May 27, 2018; "U.S., Russia Propose Bering Strait Traffic Routing," *Maritime Executive*, May 27, 2018; Margaret Kriz Hobson, "Amid Ice Melt, New Shipping Lanes Are Drawn Up off Alaska," *E&E News (Scientific American)*, May 29, 2018.

[178] See Melody Schreiber, "U.S. and Russia Sign New Maritime Pollution Agreement, Conduct Joint Bering Sea Patrol," *ArcticToday*, February 10, 2021.

[179] See, for example, Nick Lokker, "Polar Bear in the Room: America Must Talk to Russia About the Arctic," *National Interest*, November 21, 2021; Mark Piesing, "International Competition is Heating Up in the Arctic. These Norwegian Islands Show How It Can Be Managed.," *Barron's*, August 26, 2021; Kari Roberts, "How Canada Should Deal with Russia in the Arctic," *iPolitics*, August 23, 2021; Autumn Gonzales, "Towards a US-Russia Partnership in the Arctic," *Modern Diplomacy*, August 11, 2021; Melody Schreiber and Krestia DeGeorge, "What the Biden-Putin Summit Means—and Doesn't Mean—for Arctic Cooperation," *ArcticToday*, June 18, 2021; Hilde-Gunn Bye, "Plenty of Ground for Cooperation in the Arctic, Putin Says," *High North News*, June 17 (updated June 18), 2021; Malgorzata (Gosia) Smieszek, "US-Russia Cooperation on an Arctic Methane Agreement Could Improve Relations—and Slow Climate Change," *ArcticToday*, June 14, 2021; Paul Arthur Berkman, "Cooperation in the Arctic Offers a Model for US-Russia Cooperation Elsewhere," *ArcticToday*, June 11, 2021; Thomas Rotnem, "The Arctic Council Power Flex that Could Prove Prosperous—for America," *National Interest*, May 31, 2021; Tom Balmforth and Humeyra Pamuk, "Russia, U.S. Tout Cooperation Ahead of Arctic Council Meeting," *Reuters*, May 18, 2021.

[180] Yereth Rosen, "Despite Ukraine war, US and Russia Continue Emergency Cooperation in the Bering Strait," *ArcticToday*, April 11, 2022.

[181] See Stefanie Orphal, "Arctic Cooperation at a Standstill Because of Russia's War in Ukraine: Report," *Phys.org*, March 15, 2024; Serafima Andreeva, Klaus Dodds, Nadja Douglas, Christoph Humrich, and Thomas Nawrath, *New Arctic Realities: Between Conflicting Interests and Avenues for Cooperation*, Centre for East European and International Studies (ZOis), March 2024, 21 pp.; Jennifer Spence, Hannah Chenok, Elana Wilson Rowe, Malgorzata Smieszek-Rice, Margaret Williams, and Fran Ulmer, *Arctic Climate Science: A Way Forward for Cooperation through the Arctic Council and Beyond*, Harvard Kennedy School Belfer Center for Science and International Affairs and UiT The Arctic University of Norway, March 2024, 6 pp.; Yereth Rosen, "Despite Russia's Post-Invasion Isolation, Some Narrow Openings for Arctic Cooperation Remain," *Alaska Beacon*, April 11, 2023.

February 2025, Russia accused Norway of restricting Russia's activities in Svalbard.[182] In March 2025, Russia accused Norway of militarizing Svalbard; Norway denied the accusation.[183]

Russia's government considers certain parts of the NSR to be internal Russian waters and has asserted a right to regulate commercial shipping passing through these waters—a position that creates a source of tension with the U.S. government, which considers those waters to be international waters.[184] The U.S.-Russian dispute over this issue could have implications not only for U.S.-Russian relations and the Arctic, but for other countries and other parts of the world as well, since international law is universal in its application, and a successful challenge to international waters in one part of the world can serve as a precedent for challenging it in other parts of the world.[185]

A March 19, 2024, press report quoted the Chairman of the Russian Parliament Committee for the Development of the Far East and Arctic as stating, "The issue of the possible denunciation [by

[182] Tom Balmforth with additional reporting by Nerijus Adomaitis, "Russia Accuses Norway of Restricting Its Activities on Arctic Islands," *Reuters*, February 4, 2025.

[183] Gwladys Fouche and Essi Lehto, "Norway Denies Russian Accusation of Militarising Svalbard Arctic Islands," *Reuters*, March 14, 2025. For further discussion of Norway-Russia relations regarding Svalbard, see Kari Aga Myklebost and Stian Bones, "Russia on Svalbard: Long-Term Strategic Patterns," *Barents Observer*, June 22, 2025.

[184] See, for example, Katarzyna Zysk and Rebecca Pincus, "Getting Sporty in Russia's Arctic," *War on the Rocks*, October 24, 2023; Cornell Overfield, "Russia's Arctic Claims Are on Thin Ice, Russia Is Making a Freedom of Navigation Operation More Likely," *Foreign Policy*, December 20, 2022; Thomas Nilsen, "Russian Parliament Passes Law Limiting Freedom of Navigation along Northern Sea Route," *Barents Observer*, December 1, 2022; Jan Jakub Solski, "In the Fog of War: Russia Raises Stakes on the Russian Arctic Straits," Arctic Institute, September 22, 2022; Cornell Overfield, "Wrangling Warships: Russia's Proposed Law on Northern Sea Route Navigation," *Lawfare*, October 17, 2022; Peter B. Danilov, "Russia has Advanced Unlawful Maritime Claims in the Arctic, Says Antony Blinken," *High North News*, May 19, 2021; Nikolaj Skydsgaard and Humeyra Pamuk, "Blinken Says Russia Has Advanced Unlawful Maritime Claims in the Arctic," *Reuters*, May 18, 2021.

[185] In that context, it can be noted that the U.S. government views the part of the Northwest Passage that runs through the Canadian archipelago as an international strait, while Canada's government considers it internal Canadian waters. In 1985, the use of the waterway by a U.S. polar icebreaker led to a diplomatic dispute between the United States and Canada. In January 1988, the two countries signed an agreement under which, observers say, the two sides essentially agreed to disagree on the issue. The agreement—formally called Agreement Between the Government of Canada and the Government of the United States of America on Arctic Cooperation—states in part that "the Government of the United States pledges that all navigation by U.S. icebreakers within waters claimed by Canada to be internal will be undertaken with the consent of the Government of Canada," and that "nothing in this agreement of cooperative endeavour between Arctic neighbours and friends nor any practice thereunder affects the respective positions of the Governments of the United States and of Canada on the Law of the Sea in this or other maritime areas or their respective positions regarding third parties." The text of the agreement as posted by the Canadian government is available at https://www.treaty-accord.gc.ca/text-texte.aspx?id=101701.

An August 26, 2021, press report states that

> A U.S. Coast Guard icebreaker embarked Wednesday [August 25, 2021] on a long Arctic mission that includes a rare transit of the Northwest Passage, conducting scientific research and a joint exercise with Canada in Arctic waters. The cutter Healy, one of two operational U.S. Coast Guard icebreakers, departed Wednesday from Seward, Alaska, for the three-week journey to Nuuk, Greenland.... Healy last transited the passage in 2005. In 2017, the U.S. cutter Maple [(WLB-207), a seagoing buoy tender] navigated the Northwest Passage from west to east together with the Canadian icebreaker Terry Fox to conduct research in a joint exercise with Canada.... U.S. vessels may travel through the passage if they are conducting research, according to a 1988 agreement with Canada.... The invocation of the 1988 agreement on Arctic cooperation means Canadian-U.S. relations are "returning back to normality," Rob Huebert, assistant professor at the University of Calgary, told *ArcticToday*.... The Coast Guard first approached Canada to request consent in summer 2020, [Jason Kung, a spokesperson for Global Affairs Canada] said, and Canadian and U.S. agencies have worked together closely on the trip.
>
> (Melody Schreiber, "US Icebreaker Departs on a Voyage that Will Transit the Northwest Passage," *ArcticToday*, August 26, 2021.)

Russia] of the UN Convention on the Law of the Sea in the Arctic is under study," and "We will not continue to be part of it to our detriment." The article also stated: "The Kremlin-controlled Izvestia news website article also clarifies that the statements about the withdrawal are connected to Russia's concern about NATO ships and aviation "conducting intelligence" in, what the Izvestia calls, the "Russian sector of the Arctic, but formally they do not cross the 12-mile zone."[186]

China

China's Activities in the Arctic

China's activities in the Arctic have grown substantially over the past 10 to 15 years and are a matter of focus and concern for policymakers in the A7 countries. Observers have expressed curiosity or concern about China's exact mix of motivations for its activities in the Arctic, and about what China's ultimate goals for the Arctic might be.[187] China's activities in the Arctic may

[186] Elizaveta Vereykina, "Russia Is Considering Withdrawal from the UN Convention on the Law of the Sea in the Arctic," *High North News*, March 19, 2024.

[187] See, for example, Anders Christoffer Edstrøm, Guðbjörg Ríkey Th. Hauksdóttir, and P. Whitney Lackenbauer, *Cutting Through Narratives on Chinese Arctic Investments*, Belfer Center for Science and International Affairs, Harvard Kennedy School, June 2025, 23 pp.; Aleksandra Gadzala Tirziu, "China's Cultural Conquest of the Arctic," Geopolitical Intelligence Services (GIS), April 3, 2025; Michael Paul, "China's Arctic Turn, Reasons, Developments, Perspectives," SWP (German Institute for International and Security Affairs), February 13, 2025; Stephanie Pezard and Abbie Tingstad, "Is the Polar Silk Road a Highway or Is It at an Impasse? China's Arctic Policy Seven Years On," RAND, February 6, 2025; Stephanie Pezard, et al., *China's Economic, Scientific, and Information Activities in the Arctic, Benign Activities or Hidden Agenda?* RAND, RRA-2823-1, 2025 (posted online January 23, 2025), 74 pp.; Didi Kirsten Tatlow, "China's Arctic Presence Worries U.S. Ahead of Trump's Return," *Newsweek*, January 8 (updated February 3), 2025; John Grady, "Chinese Arctic Research Expeditions Inform Military, Economic Goals, Say Experts," *USNI News*, December 12, 2024; Trine Jonassen, "'China's Intentions in The Arctic Are Unclear - And That is a Growing Concern,'" *High North News*, October 20 (updated October 23), 2024; Adam Lajeunesse and P. Whitney Lackenbauer, *Selling the 'Near-Arctic' State, China's Information and Influence Operations in the Arctic*, Wilson Center, August 2024, 180 pp.; Didi Kirsten Tatlow, "China's Expanding Arctic Ambitions Challenge the U.S. and NATO," *Newsweek*, July 21, 2024; Adnan Sami, "China's Polar Play: Unpacking the Dragon's Arctic Ambitions," *Modern Diplomacy*, August 9, 2024; Nicholas Tachias, "Coldest War: 'Near-Arctic' China Joining Power Competition in North," *Federal Times*, July 5, 2024; Mathieu Landriault, "China's Surging Presence Reshapes a Thawing Arctic," *Asia Times*, June 7, 2024; Kartik Bommakanti, *China's 'Three Warfares' Strategy in Action: Implications for the Sino-India Boundary, the Arctic, and Antarctica*, Observer Research Foundation (ORF), February 2024 (posted online February 7, 2024), 35 pp.; Matti Puranen and Sanna Kopra, "China's Arctic Strategy—a Comprehensive Approach in Times of Great Power Rivalry," *Scandinavian Journal of Military Studies*, Vol. 6, Issue 1, 2023 (published online December 26, 2023): 239-253; Erdem Lamazhapov, Iselin Stensdal, and Gørild Heggelund, "China's Polar Silk Road: Long Game or Failed Strategy?" Arctic Institute, November 14, 2023; Maria Milagros, "China's Game in the Arctic: A Tale of Deception?" *Modern Diplomacy*, May 25, 2023; Matthew P. Funaiole, Brian Hart, Joseph S. Bermudez Jr., and Aidan Powers-Riggs, "Frozen Frontiers, China's Great Power Ambitions in the Polar Regions," Center for Strategic and International Studies (CSIS), April 18, 2023; P. Whitney Lackenbauer, Adam Lajeunesse, and Ryan Dean, "Why China Is Not a Peer Competitor in the Arctic," Journal of Indo-Pacific Affairs, published October 3, 2022; Daniel Kochis, "U.S. Policymakers Should Remain Wary of Chinese Ambitions in the Arctic," Heritage Foundation, July 28, 2022; Liisa Kauppila and Sanna Kopra, "China's Rise and the Arctic Region up to 2049–Three Scenarios for Regional Futures in an Era of Climate Change and Power Transition," *Polar Journal*, vol. 12, no. 1, 2022, published online April 7, 2022; Stephanie Pezard et al., *China's Strategy and Activities in the Arctic, Implications for North American and Transatlantic Security*, RAND, 2022, 165 pp.; Rebecca Wolfson, Cornell Overfield, Mark Rosen, Benjamin DeThomas, and Joshua Tallis, Arctic Prospecting: Measuring China's Arctic Economic Footprint, Center for naval Analyses (CNA), January 2022, 124 pp.; Heidi Holz, Andrew Taffer, Anthony Miller, and Benjamin DeThomas, *Exploring the Relationship between China's Investment in the Arctic and Its National Strategy*, Center for Naval Analyses (CNA), January 2022, 70 pp.; Joshua Tallis, Mark Rosen, and Cornell Overfield, *Arctic Economic Security: Recommendations for Safeguarding Arctic Nations against China's Economic Statecraft*, Center for Naval Analyses (CNA), January 2022, 36 pp.; Cornell Overfield, Anthony Miller, Eleanore Douglas, Kasey Stricklin, and Mary Ellen Connell, Foreign Direct Investment Screening in the Arctic, Center for Naval Analyses (CNA), January 2022, 92 pp.

in part reflect a view among China's leaders that China, like other major world powers, should be active in the polar regions for conducting research and other purposes. (Along with its growing activities in the Arctic, China has increased the number of research stations it maintains in the Antarctic.[188])

As mentioned earlier, prior to the Russia-Ukraine war, China raised questions as to whether the Arctic Council as currently constituted and the current broader legal framework for the Arctic should continue to be the principal means for addressing issues relating to the Arctic, and had begun to use other approaches for influencing Arctic governance.

In 2013, China was one of six non-Arctic states that were approved for observer status by the Arctic Council.[189] In January 2018, China released a white paper on China's Arctic policy that refers to China as a "near-Arctic state."[190] (China's northernmost territory, northeast of Mongolia, is at about the same latitude as the Aleutian Islands in Alaska, which, as noted earlier, the United States includes in its definition of the Arctic for purposes of U.S. law.) The white paper refers to trans-Arctic shipping routes as the Polar Silk Road, and identifies these routes as a major

[188] See, for example, Alexander B. Gray, "An America First Policy for the Antarctic," *Foreign Policy*, May 19, 2025; William "Bill" Muntean III, "What Can the United States Do to Counter Growing Chinese and Russian Influence in Antarctica?" Center for Strategic and International Studies (CSIS), April 18, 2025; Jano Gibson, "China Lodges Plans for New Antarctic Station at Marie Byrd Land But Says No 'Geopolitical Motive' Behind Expansion," *ABC News (abc.net.au)*, March 2, 2025; Benjamin J. Sacks and Peter Dortmans, "What Are China's Long-Term Antarctic Ambitions?" *Interpreter*, April 9, 2024; Albee Zhang and Ryan Woo, "China Opens Antarctic Station South of Australia, New Zealand," *Reuters*, February 7, 2024; William Yang, "China's New Antarctic Research Station Renews Concerns About Potential Security Threats," *VOA*, February 16, 2024; Claire Young, "China Has a Fifth Station in Antarctica," *Interpreter*, February 21, 2024. For additional discussion, see CRS Report R46708, *Antarctica: Overview of Geopolitical and Environmental Issues*, by Pervaze A. Sheikh, Bruce Vaughn, and Kezee Procita. See also Alexander B. Gray, "China's Next Geopolitical Goal: Dominate Antarctica," *National Interest*, March 20, 2021.

[189] The other five were India, Italy, Japan, Singapore, and South Korea. For a list of the observer states and when they were approved for observer status, see Arctic Council, "List of Arctic Council Observers," accessed May 19, 2025, at https://www.arctic-council.org/about/observers/.

[190] "Full Text: China's Arctic Policy," *Xinhua*, January 26, 2018. The white paper states that "China is an important stakeholder in Arctic affairs. Geographically, China is a 'Near-Arctic State', one of the continental States that are closest to the Arctic Circle. The natural conditions of the Arctic and their changes have a direct impact on China's climate system and ecological environment, and, in turn, on its economic interests in agriculture, forestry, fishery, marine industry and other sectors. China is also closely involved in the trans-regional and global issues in the Arctic, especially in such areas as climate change, environment, scientific research, utilization of shipping routes, resource exploration and exploitation, security, and global governance. These issues are vital to the existence and development of all countries and humanity, and directly affect the interests of non-Arctic States including China."

Somewhat similarly, France's June 2016 national roadmap for the Arctic refers to France as a "polar nation." (Republique Francaise, Ministere des Affaires Etrangeres et du Developpement International, *The Great Challenge of the Arctic, National Roadmap for the Arctic*, June 2016, 60 pp.) The document states on page 9 that "France has established itself over the last three centuries as a polar nation, with a strong tradition of expeditions and exploration, and permanent research bases at the poles," and on page 17 that "[b]uilding on its long-standing tradition of exploration and expeditions in high latitudes, France has carved out its place as a polar nation over the last three centuries. France has permanent scientific bases in the Arctic and in Antarctica." It can also be noted that the northernmost part of mainland France, next to Belgium and across the Strait of Dover from England, is almost as far north as the more southerly parts of the Aleutian Islands.

Also somewhat similarly, a November 2018 UK parliamentary report refers to the UK as a "near-Arctic neighbour." The report states the following: "While the UK is not an Arctic state, it is a near-Arctic neighbour. The UK's weather system is profoundly affected by changes in the Arctic's climate and sea currents. The UK has been an Observer to the Arctic Council since 1998." (United Kingdom, House of Commons, Environmental Audit Committee, *The Changing Arctic, Twelfth Report of Session 2017-19*, November 29, 2018, p. 3. [Report, together with formal minutes relating to the report, Ordered by the House of Commons to be printed November 6, 2018]. See also pp. 6, 29, and 32.)

See also Eva Dou, "A New Cold War? China Declares Itself a 'Near-Arctic State,' *Wall Street Journal*, January 26, 2018; Grant Newsham, "China As A 'Near Arctic State'—Chutzpah Overcoming Geography," *Asia Times*, January 30, 2018.

transportation corridor for the Belt and Road Initiative (BRI), China's major geopolitical initiative, first announced by China in 2013, to knit Eurasia and other regions together in a China-anchored or China-led infrastructure and economic network.[191] The polar regions (both the Arctic and Antarctic) are included in China's 14th Five-Year Plan, covering the period 2021-2025.[192]

China has expanded its diplomatic activities with the Nordic countries, and increased the size of its diplomatic presence in some of them. China has engaged in economic discussions with Iceland and with Greenland, a self-governing part of the Kingdom of Denmark.[193] China's government reportedly is interested in mining opportunities in the Canadian Arctic[194] and in Greenland.[195] China's leaders may also be interested in Arctic fishing grounds.

Like several other nations, China has established a research station in Norway's Svalbard archipelago.[196] China maintains a second research station in Iceland. In an October 16, 2024, letter to Secretary of State Antony Blinken and Secretary of Defense Lloyd Austin, Representative John Moolenaar and Representative Raja Krishnamoorthi—the Chairman and ranking member, respectively, of the House Select Committee on the Chinese Communist Party (CCP)— "request[ed] that the Department of State and Department of Defense strengthen action to address ongoing instances of problematic People's Republic of China's (PRC) dual-use research in the Arctic territory of the United States' NATO allies."[197]

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[191] See, for example, Maria Shagina and Elizabeth Buchanan, "China Enters the Arctic Digitization Race," *National Interest*, January 17, 2021; Nima Khorrami, "Data Hunting in Subzero Temperatures: The Arctic as a New Frontier in Beijing's Push for Digital Connectivity," Arctic Institute, August 4, 2020; Marc Lanteigne, "The Twists and Turns of the Polar Silk Road," *Over the Circle*, March 15, 2020; Zhang Chun, "China's 'Arctic Silk Road,'" *Maritime Executive*, January 10, 2020; Sabena Siddiqui, "Arctic Ambition: Beijing Eyes the Polar Silk Road," *Asia Times*, October 25, 2018. See also Atle Staalesen, "Chinese Money for Northern Sea Route," *Barents Observer*, June 12, 2018; Lin Boqiang, "China Can Support Arctic Development as Part of B&R," *Global Times*, August 9, 2018. The BRI's other two main corridors, which were announced at the outset of the BRI, are a land corridor that runs east to west across the middle of Eurasia—the "belt" in BRI—and a sea corridor called the Maritime Silk Road that passes through the South China Sea and the Indian Ocean to the Persian Gulf and the Mediterranean Sea—the "road" in BRI. For more on the BRI, also known as the One Belt, One Road (OBOR) initiative, see CRS In Focus IF11735, *China's "One Belt, One Road" Initiative: Economic Issues*, by Karen M. Sutter, Andres B. Schwarzenberg, and Michael D. Sutherland.

[192] See, for example, Trym Eiterjord, "What the 14th Five-Year Plan says about China's Arctic Interests," Arctic Institute, November 23, 2023; Marc Lanteigne, "The Polar Policies in China's New Five-Year Plan," *Diplomat*, March 12, 2021.

[193] See, for example, Yang Jiang, *Chinese Investments in Greenland, Origins, Progress and Actors*, Dansk Institut for Internationale Studier (DIIS), 2021, 34 pp. (posted online November 17, 2021); Marc Lanteigne, "Greenland's Widening World," *Over the Circle*, March 28, 2020; Marco Volpe, "The Tortuous Path of China's Win-Win Strategy in Greenland," Arctic Institute, March 24, 2020; Marc Lanteigne, "Stumbling Block: China-Iceland Oil Exploration Reaches an Impasse," *Over the Circle*, January 24, 2018. "Greenland Plans Office in Beijing to Boost Trade Ties with China," *Reuters*, July 18, 2018.

[194] See, for example, Arty Sarkisian, "China Wants to Tap Nunavut minerals: Ambassador," *Nunatsiaq News*, August 29, 2024.

[195] See, for example, Regin Winther Poulsen, "How Greenland's Mineral Wealth Made It a Geopolitical Battleground," *Foreign Policy*, December 18, 2022.

[196] For further discussion, see Thomas Nilsen, "Svalbard-Research Becomes More Important for China, Professor Says," *Barents Observer*, September 10, 2024; Maritime Executive, "New Interest in Norway's Svalbard from China and Others for Arctic Research," *Maritime Executive*, September 1, 2024; Trine Jonassen (translation by Birgitte Annie Molid Martinussen), "Increased Chinese Interest in Svalbard," *High North News*, August 30, 2024; Astri Edvardsen (translation by Birgitte Annie Molid Martinussen), "Chinese and Turkish Polar Researchers Explore Cooperation With Russia in Svalbard," *High North News*, August 28 (updated September 18), 2024.

[197] Letter dated October 16, 2024, from Rep. John Moolenaar and Rep. Raja Krishnamoorthi to The Honorable Antony Blinken and The Honorable Lloyd Austin, accessed June 12, 2025, at
(continued...)

China has a Ukrainian-built polar-capable icebreaker, *Xue Long* (Snow Dragon), that has made several transits of Arctic waters conducting what China has said were research expeditions. A second polar-capable icebreaker (the first that China has built domestically), named *Xue Long 2*, entered service in 2019, and a third polar-capable icebreaker, *Jidi* (also spelled *Ji Di*) reportedly entered service in June 2024 and began a deployment to the Arctic in August 2024.[198] A fourth ship—an Arctic-capable research ship with icebreaking capability—was delivered in December 2024.[199]

A June 2025 report on China's investments in the Arctic states (emphasis as in original):

> **Chinese interests have invested in the Arctic region and some of these projects are economically significant for their host countries.** Most business investments have been completed in Russia, followed by Norway and Iceland. It would be erroneous to suggest that "nothing" is going on in the region with respect to Chinese investment.
>
> **The scale and scope of actual Chinese investments are often exaggerated in media and public debate, and unsuccessful proposals are often taken into consideration when presenting the total amount of Chinese investment.** The difference between the number of green indicators versus stalled or failed projects is striking. Most investments were concluded several years ago. Recent Chinese investment initiatives have increasingly met with headwinds in Arctic countries except for Russia. Greenland, as part of the Kingdom of Denmark, may be the best example of this. Despite Greenland receiving intensive attention in the debate about Chinese investments and influence in the Arctic, it is apparent that most of this anxiety is about what might be, not what has actually happened.
>
> **Valuable analytical nuance is lost by discussing numbers only.** The number and value of Chinese investments have become talking points for some commentators to prove the risk that China poses to the region, but the economic value and strategic value of a given asset are not always the same. We acknowledge that current debates may benefit from evaluating investments on a case-to-case basis and interrogating the strategic significance of projects through multiple lenses. For example, the amount of money that China invests in Arctic research stations and operating facilities (as shown on the map) is likely disconnected from the potential strategic value of these assets and the associated benefits to the host countries and a wider research community.
>
> **Distinguishing between investments that pose a security risk, and those that are benign and desirable, remains challenging and can be a source of debate and division.** Sometimes Chinese companies may be the only actors with the capital, competence, interest, and willingness to make an economic investment that would otherwise not be

https://selectcommitteeontheccp.house.gov/sites/evo-subsites/selectcommitteeontheccp.house.gov/files/evo-media-document/10.16.24_PRC%20dual%20use%20research%20in%20the%20Arctic__.pdf.

[198] See, for example, John Grady, "Chinese Icebreaker Mission to Arctic 'Clear Signal' of Beijing's Polar Ambitions, Says Expert," *USNI News*, September 3, 2024; Malte Humpert, "China Deploys Three Icebreakers to Arctic as U.S. Presence Suffers After 'Healy' Fire," *gCaptain*, August 20, 2024; Atle Staalesen, "China Commissions New Icebreaker," *Barents Observer*, July 10, 2024; Cyril Ip, "China's Expanding Next-Generation Icebreaker Fleet Welcomes Jidi, Its Newest Member," *South China Morning Post*, June 25, 2024; *Global Times*, "China's New-Generation Ice-Breaking Research Vessel Delivered, Sets to Begin Scientific Operations This Year," *Global Times*, June 24, 2024; "China's Domestically Built Icebreaker Makes Debut," *Global Times*, December 29, 2023. Prior to the reported completion of this ship, the U.S. Coast Guard had counted a total of four operational PRC polar icebreakers; see Table B-1 in CRS Report RL34391, *Coast Guard Polar Security Cutter (Polar Icebreaker) Program: Background and Issues for Congress*, by Ronald O'Rourke.

[199] Christopher McFadden, "China Unveils Monster Explorer Ship with 17,261-Mile-Range, Ice Breaking Power," *Interesting Engineering*, December 30, 2024; Meredith Chen, "China Launches Deep-Sea Icebreaker to Help Forge Path in Research and Arctic Influence," *South China Morning Post*, December 27, 2024; Mike Schuler, "China Delivers Arctic-Capable Research Vessel, Expanding Polar Presence," *gCaptain*, December 27, 2024. See also Trym Eiterjord, "Taking Stock of China's Polar Fleet," *Diplomat*, April 5, 2025.

> realized. Arctic states should continue to balance considerations of national interest connected to potential risk, potential economic benefits, and societal support before deciding to allow, limit, or reject investments.[200]

Russian and PRC military aircraft and vessels have conducted joint operations in Arctic air space and waters. A May 2, 2025, press report stated:

> In October 2024, the US Coast Guard spotted two Chinese maritime enforcement vessels operating alongside a pair of Russian border patrol boats as they transited the Bering Sea, just kilometers from Alaskan waters.
>
> It was the third consecutive year that a joint Russian-Chinese military convoy sailed through the strategic waterway. A year earlier, the two nations staged joint naval exercises in the region with 11 ships—a clear signal of their growing military cooperation near US territory.
>
> The October transit, which China said continued through the Bering Strait into the Arctic Ocean, came less than three months after the first joint flight of Chinese and Russian strategic bombers over the Bering Sea.[201]

In July 2024, Russian and Chinese bombers reportedly operated together in airspace near Alaska.[202]

The high-altitude surveillance balloon from China that flew over parts of the United States and Canada in early 2023 reportedly entered U.S. airspace on January 28, 2023, north of the Aleutian Islands (i.e., in the U.S. Arctic as defined under U.S. law).[203] A March 1, 2023, press report stated that "months before a Chinese spy balloon drifted across Alaska and Canada, the Canadian military discovered and retrieved Chinese spy buoys in the Arctic, a region of long interest to Beijing. The Chinese buoys were monitoring U.S. submarines and the melting of ice sheets."[204] A July 2023 press report stated that "China has completed the field testing and evaluation of an

[200] Anders Christoffer Edstrøm, Guðbjörg Ríkey Th. Hauksdóttir, and P. Whitney Lackenbauer, *Cutting Through Narratives on Chinese Arctic Investments*, Belfer Center for Science and International Affairs, Harvard Kennedy School, June 2025, p. 21. For press reports about the Belfer Center report, see, for example, Elías Thorsson, "China's Arctic Investments Are Exaggerated, Harvard Report Finds," *ArcticToday*, June 24, 2025; Hilde-Gunn Bye, "Report: Most Chinese Investments in the Arctic Have Not Fully Materialized," *High North News*, June 25 (updated June 26), 2025.

[201] Todd Prince, "US Eyes Aleutian Military Revival As Russia, China Expand Operations Near Alaska," *Radio Free Europe/Radio Liberty*, May 2, 2025. See also Svetlana Shkolnikova, "Russia and China Conducting Joint Arctic Operations for First Time, Coast Guard Says," *Stars and Stripes*, November 14, 2024; Gary Warner, "Military Leaders of Arctic NATO Nations Meet on How to Counter Russian and Chinese Threat in Region," *Stars and Stripes*, October 10, 2024; Chen Aizhu, "China's Coast Guard Enters Arctic for the First Time for Patrol with Russia," *Reuters*, October 2, 2024; Josh Xiao, "China's Coasty Guard Joined by Russians on First Partol in Arctic," *Bloomberg*, October 2, 2024; Simone McCarthy, "China's Coast Guard Claims to Have Entered the Arctic Ocean for the First Time as It Ramps Up Security Ties with Russia," *CNN*, October 3, 2024; John Grady, "China Coast Guard Now Operating in the Bering Sea," *USNI News*, October 3, 2024; Seong Hyeon Choi, "What Does China's First Arctic Coastguard Patrol with Russia Reveal About Its Ambitions?" *South China Morning Post*, October 4, 2024.

[202] See for example, Oren Liebermann and Natasha Bertrand, "NORAD Intercepts Russian and Chinese Bombers Operating Together Near Alaska in First Such Flight," *CNN*, July 25, 2024.

[203] Ellen Nakashima, Shane Harris, and Jason Samenow, "U.S. Tracked China Spy Balloon from Launch on Hainan Island along Unusual Path," *Washington Post*, February 14, 2023. See also Liam Denning, "China's 'Climate' Balloon Risks Arctic Peace," *Bloomberg*, February 6, 2023. For further discussion of the balloon, see CRS Insight IN12118, *Monitoring the Sovereign Skies*, by Bart Elias.

[204] Xiaoshan Xue, "Reports: Canada Found, Retrieved Chinese Spy Buoys in Arctic," *Voice of America*, March 1, 2023.

underwater listening device that will be deployed on a large scale in the Arctic Ocean, according to the Polar Research Institute of China."[205]

A7 States' Response

China's activities in the Arctic could pose challenges to the A7 states in terms of defending their own interests in the Arctic. Some observers have also cited potential opportunities for cooperation in the Arctic between China and the A7 states.[206]

China's interest and investments in Greenland are a matter of concern for U.S. policymakers. As mentioned earlier, some observers argue that a desire to preclude China (and Russia) from increasing its presence and influence in Greenland is one of the reasons why President Trump in 2019 and 2025 expressed an interest in acquiring Greenland from Denmark. In February 2019, it was reported that the United States in 2018 had urged Denmark to finance the construction of airports that China had offered to build in Greenland. The Danish government ultimately financed the construction of the airports.[207]

In May 2019, the State Department announced a plan for establishing a permanent diplomatic presence in Greenland,[208] and on June 2020, the State Department formally announced the reopening of the U.S. consulate in Greenland's capital of Nuuk.[209] In April 2020, the U.S. government announced $12.1 million economic aid package for Greenland that the Trump Administration presented as a U.S. action done in a context of PRC and Russian actions aimed at increasing their presence and influence in Greenland.[210]

One specific question for U.S. policymakers could be whether to impose punitive costs on China in the Arctic for unwanted actions that China takes elsewhere. As one potential example, U.S. policymakers could consider moving to suspend China's observer status on the Arctic Council[211]

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[205] Stephen Chen, "China Plans Massive Listening Programme at the North Pole after Declaring Success in Arctic Test of Underwater Device," *South China Morning Post*, July 9, 2023.

[206] See, for example, Yuanyuan Ren, "U.S.-China Arctic Cooperation in a New Era of Great Power Competition: Opportunities and Challenges," *Yearbook of Polar Law Online*, published online February 23, 2023; Nonh Hong, *China and the United States in the Arctic: Exploring the Divergence and Convergence of Interests*, Institute for China-America Studies (ICAS), October 2022, 36 pp.

[207] Drew Hinshaw and Jeremy Page, "How the Pentagon Countered China's Designs on Greenland; Washington Urged Denmark to Finance Airports that Chinese Aimed to Build on North America's Doorstep," *Wall Street Journal*, February 10, 2019. See also Marc Lanteigne, "Greenland's Airport Saga: Enter the US?" *Over the Circle*, September 18, 2018; Marc Lanteigne, "Greenland's Airports: A Balance between China and Denmark?" *Over the Circle*, June 15, 2018; Arne Finne (translation by Elisabeth Bergquist), "Intense Airport Debate in Greenland," *High North News*, May 30, 2018.

[208] U.S. Department of State, "Secretary Pompeo Postpones Travel to Greenland," Press Statement, Morgan Ortagus, Department Spokesperson, May 9, 2019. See also Krestia DeGeorge, "US State Department Announces Plans for a Diplomatic Presence in Greenland," *ArcticToday*, May 9, 2019; Morten Soendergaard Larsen and Robbie Gramer, "Trump Puts Down New Roots in Greenland," *Foreign Policy*, November 8, 2019.

[209] See, for example, Eavan Cull, "Setting Up Shop in Nuuk," *Foreign Service Journal*, May 2021; Lauren Meier and Guy Taylor, "U.S. Reopens Consulate in Greenland Amid Race for Arctic Supremacy," *Washington Times*, June 10, 2020.

[210] See U.S. Department of State, Briefing On the Road to Nuuk: Economic Cooperation, Special Briefing, Michael J. Murphy, Deputy Assistant Secretary, Bureau of European and Eurasian Affairs, Francis R. Fannon, Assistant Secretary, Bureau of Energy Resources, Jonathan Moore, Principal Deputy Assistant Secretary, Bureau of Oceans and International Environmental and Scientific Affairs, Gretchen Birkle, USAID Deputy Assistant Administrator, May 15, 2020; and U.S. Department of State, Briefing on the Administration's Arctic Strategy, Special Briefing, Office of the Spokesperson, April 23, 2020.

[211] Paragraph 37 of the Arctic Council's rules of procedure states the following:

(continued...)

as a punitive cost-imposing measure for unwanted actions by China in the South China Sea.[212] In a May 6, 2019, speech in Finland, then-Secretary of State Pompeo stated (emphasis added)

> The United States is a believer in free markets. We know from experience that free and fair competition, open, by the rule of law, produces the best outcomes.
>
> But all the parties in the marketplace have to play by those same rules. Those who violate those rules should lose their rights to participate in that marketplace. Respect and transparency are the price of admission.
>
> And let's talk about China for a moment. **China has observer status in the Arctic Council, but that status is contingent upon its respect for the sovereign rights of Arctic states.** The U.S. wants China to meet that condition and contribute responsibly in the region. But China's words and actions raise doubts about its intentions.[213]

> Once observer status has been granted, Observers shall be invited to the meetings and other activities of the Arctic Council unless SAOs [Senior Arctic Officials] decide otherwise. Observer status shall continue for such time as consensus exists among Ministers. Any Observer that engages in activities which are at odds with the Council's [Ottawa] Declaration [of September 19, 1996, establishing the Council] or these Rules of Procedure shall have its status as an Observer suspended.

Paragraph 5 of Annex II of the Arctic Council's rules of procedure—an annex regarding the accreditation and review of observers—states the following:

> Every four years, from the date of being granted Observer status, Observers should state affirmatively their continued interest in Observer status. Not later than 120 days before a Ministerial meeting where Observers will be reviewed, the Chairmanship shall circulate to the Arctic States and Permanent Participants a list of all accredited Observers and up-to-date information on their activities relevant to the work of the Arctic Council.
>
> (Arctic Council, *Arctic Council Rules of Procedure*, p. 9. The document was accessed May 19, 2025, at https://oaarchive.arctic-council.org/items/f06e5457-1246-44d3-a8c1-00016dd585db.

Paragraph 4.3 of the Arctic Council's observer manual for subsidiary bodies states in part

> Observer status continues for such time as consensus exists among Ministers. Any Observer that engages in activities which are at odds with the Ottawa Declaration or with the Rules of Procedure will have its status as an Observer suspended.
>
> (Arctic Council. *Observer Manual for Subsidiary Bodies*, p. 5. The document was accessed May 19, 2025, at https://oaarchive.arctic-council.org/items/ead1bb3b-8189-4cab-8eee-a78e01d21789.)

See also Alyson JK Bailes, "Understanding The Arctic Council: A 'Sub-Regional' Perspective," *Journal of Military and Strategic Studies*, Vol. 15, Issue 2, 2013: 48; Brianna Wodiske, "Preventing the Melting of the Arctic Council: China as a Permanent Observer and What It Means for the Council and the Environment," *Loyola of Los Angeles International and Comparative Law Review*, Vol. 315, Issue 2, 2014 (November 1, 2014): 320; Sebastian Knecht, "New Observers Queuing Up: Why the Arctic Council Should Expand—And Expel," Arctic Institute, April 20, 2015; Evan Bloom, "Establishment of the Arctic Council," undated; accessed May 19, 2025, at https://2009-2017.state.gov/e/oes/ocns/opa/arc/ac/establishmentarcticcouncil/index.htm, which states "The following paper was authored by Evan Bloom in July 1999 when serving as an attorney in the Office of the Legal Adviser at the U.S. Department of State. Mr. Bloom is now the Director of the Office of Oceans and Polar Affairs for the Bureau of Oceans and International Environmental and Scientific Affairs at the U.S. Department of State." See also Kevin McGwin, "After 20 years, the Arctic Council Reconsiders the Role of Observers," *ArcticToday*, October 24, 2018.

[212] For more on China's actions in the South China Sea and their potential implications for U.S. interests, see CRS Report R42784, *U.S.-China Strategic Competition in South and East China Seas: Background and Issues for Congress*.

[213] U.S. Department of State, "Looking North: Sharpening America's Arctic Focus, Remarks, Michael R. Pompeo, Secretary of State, Rovaniemi, Finland, May 6, 2019."

Linkages Between Arctic and South China Sea

Observers have sometimes made a linkage between the Arctic and the South China Sea in connection with international law of the sea or international cooperation and competition.[214] One aspect of this linkage relates to whether China's degree of compliance with international law of the sea in the South China Sea has any implications for understanding potential behavior by China regarding its compliance with international law of the sea (and international law generally) in the Arctic. A second aspect, mentioned above, is whether the United States should consider the option of moving to suspend China's observer status on the Arctic Council as a punitive cost-imposing measure for unwanted actions by China in the South China Sea. A third aspect concerns the question of whether the United States should become a party to UNCLOS; discussions of that issue sometimes mention both the Arctic and the situation in the South China Sea.[215]

Russia-China Cooperation

Russia-China cooperation in the Arctic can both reflect and contribute to Russia and China's strategic partnership. A February 4, 2022, joint statement by Russia and China about their strategic partnership stated that the two countries "agreed to continue consistently intensifying practical cooperation for the sustainable development of the Arctic."[216]

As mentioned earlier, Russia's diplomatic isolation from the A7 states in the Arctic has led to increased Russian cooperation in the Arctic with non-A7 countries, particularly China—a development that could strengthen China's presence and activities in the region and affect views among observers in the A7 states and elsewhere regarding China's motivations and goals for its Arctic activities and China's ability to work with the A7 states on matters relating to the Arctic.

On the other hand, Russian officials reportedly are also concerned that China's continued growth in wealth and power might eventually lead to China becoming the dominant power in Eurasia, and to Russia being relegated to a subordinate status in Eurasian affairs.[217] Some observers argue that actual levels of Russia-China cooperation in the Arctic are not as great as PRC or Russian announcements about such cooperation might suggest.[218]

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[214] See, for example, Ali Mammadov, "China, the Arctic, and International Law," *Modern Diplomacy*, April 22, 2022; Nong Hong, "Weighing the Sources of International Law: The Arctic, Antarctica and the South China Sea," Institute for China-America Studies (ICAS), December 11, 2020; Robinson Meyer, "The Next 'South China Sea' Is Covered in Ice," *Atlantic*, May 15, 2019; Justin D. Nankivell, "The Role of History and Law in the South China Sea and Arctic Ocean," *Maritime Awareness Project*, August 7, 2017; Sydney J. Freedberg, "Is The Arctic The next South China Sea? Not Likely," *Breaking Defense*, August 4, 2017; Caroline Houck, "The Arctic Could Be the Next South China Sea, Says Coast guard Commandant," *Defense One*, August 1, 2017; Daniel Thomassen, "Lessons from the Arctic for the South China Sea," Center for International Maritime Security, April 4, 2017. For alternate perspectives, see Calvin Heng, "Perils of the Familiar Past: Explaining the United States' South China Sea Misanalogy," *Arctic Institute*, January 30, 2024; Elizabeth Buchanan and Bec Strating, "Why the Arctic Is Not the 'Next' South China Sea," *War on the Rocks*, November 5, 2020.

[215] For further discussion of this situation, see CRS Report R42784, *U.S.-China Strategic Competition in South and East China Seas: Background and Issues for Congress*. See also Anthony Heron, "Neorealism's Regional Blindspot: The Arctic and South China Sea," *E-International Relations*, March 21 2025.

[216] For the text of the joint statement, see, for example, USC US-China Institute, "Russia-China Joint Statement On International Relations, February 4, 2022," February 4, 2022.

[217] See, for example, Paul Goble, "Moscow Needs Beijing in the Arctic but Worries About China's Expanding Role," *Eurasia Daily Monitor*, February 1, 2022; Jim Townsend and Andrea Kendall-Taylor, *Partners, Competitors, or a Little of Both? Russia and China in the Arctic*, Center for a New American Security (CNAS), March 2021, 17 pp.

[218] See, for example, Anders Christoffer Edstrøm, Guðbjörg Ríkey Th. Hauksdóttir, and P. Whitney Lackenbauer, *Cutting Through Narratives on Chinese Arctic Investments*, Belfer Center for Science and International Affairs, (continued...)

China and Russia hold bilateral meetings on cooperation in the Arctic.[219] China appears interested in cooperating with Russia to use the NSR to shorten commercial shipping times between Europe and China[220] and perhaps also to reduce China's dependence on southern sea routes (including those going to the Persian Gulf) that pass through the Strait of Malacca—a maritime choke point that China appears to regard as vulnerable to being closed off by other parties (such as the United States) in time of crisis or conflict.[221] In July 2024 it was reported that Russia is seeking China's help in developing the NSR.[222] Also in July 2024, it was reported that a radio station in China has begun broadcasting sea ice analyses and forecasts and weather information for the NSR.[223] In October 2024, it was reported that a Russian-Chinese joint venture is planning to build five ice-class container ships to provide year-round shipments on the NSR.[224]

China has made investments in Russia's Arctic oil and gas industry, particularly the Yamal natural gas megaproject located on Russia's Yamal Peninsula in the Arctic.[225] In February 2023, it was reported that a Russian firm had signed an agreement with a PRC firm for the development of a titanium mining project in the Russian Arctic.[226]

Harvard Kennedy School, June 2025, pp. 6-9; Patrik Andersson, "Polar Partners: What Sino-Russian Arctic Cooperation Means for Europe," China Observers in Central and Eastern Europe (CHOICE), February 25, 2025; Andrei Dagaev, "The Arctic Is Testing the Limits of the Sino-Russian Partnership," *Politika* (Carnegie Institute for International Peace), February 18, 2025; Abbie Tingstad, "Arctic Region Shines Spotlight on Russia, China 'Friendship,'" *ArcticToday*, November 12, 2024; Abbie Tingstad, Stephanie Pezard, and Yuliya Shokh, *China-Russia Relations in the Arctic, What Are the Northern Limits of Their Partnership?* RAND, PEA 2823-1, November 2024, 19 pp.; Birgitte Annie Hansen, "The Cooperation Between Russia and China in the Arctic Is Still Limited," *High North News*, September 19 (updated September 20), 2024; Nicolas Jouan, Zdenek Rod, and Martin Ruzicka, "Russia and China in the Arctic: Less Than Meets the Eye," *Diplomat*, September 19, 2024; Marc Lanteigne, "A China-Russia Arctic Alliance? Not So Fast," *Diplomat*, February 21, 2024.

[219] See, for example, Atle Staalesen, "Following Landmark Chinese Visit to Moscow, Foreign Ministries Step Up Bilateral Talks on Arctic," *Barents Observer*, October 2, 2024.

[220] See, for example, Atle Staalesen, "Kremlin: Significant Progress in China-Russia Talks on Arctic Shipping," *Barents Observer*, May 8, 2025; Malte Humpert, "China Drives 10-Fold Increase in Container Shipping at Russian Arctic Port," gCaptain, March 3, 2025; Global Times, "China-Russia Cooperation on Northern Sea Route Will Boost Regional Economy," *Global Times*, September 6, 2024; Kawala Xie, "China, Russia Plot Course for Arctic Cooperation, Shipping Routes to Counter West," *South China Morning Post*, August 22, 2024; Malte Humpert, "China Pushes Northern Sea Route Transit Cargo to New Record," *High North News*, December 18, 2023; Malte Humpert, "Chinese Container Ship Completes First Round Trip Voyage Across Arctic," *High North News*, October 9, 2023.

[221] See, for example, Jonathan Hall, "Arctic Enterprise: The China Dream Goes North," *Journal of Political Risk*, September 2019. See also Andrew Latham, "China Looks to the Arctic to Avoid Another Suez Slowdown," *National Interest*, April 2, 2021.

[222] Laura Zhou, "Russia Seeking China's Help to Develop Arctic Shipping Route – Is It Worth It for Beijing?" *South China Morning Post*, July 2, 2024.

[223] Albee Zhang and Ryan Woo, additional reporting by Aizhu Chen and Emily Chow, "China Starts Regular Sea Ice Forecasts for Northeast Passage off Russian Coast," *Reuters*, July 1, 2024.

[224] Malte Humpert, "China-Russia Announce Plans for Five Ice-Capable Containerships for Year Round Arctic Service," *High North News*, October 15, 2025. See also Leopold Chen, "China and Russia Agree to Deepen Cooperation On Arctic Shipping Route," *South China Morning Post*, November 28, 2024.

[225] See, for example, Malte Humpert (High North News), "China Acquires 20 Percent Stake in Novatek's Arctic LNG 2 Project," *ArcticToday*, April 30, 2019; Ernesto Gallo and Giovanni Biava, "A New Energy Frontier Called 'Polar Silk Road,'" *China Daily*, April 12, 2019. See also Junhua Zhang, "Russia Clears the Path for China in the Arctic," Geopolitical Intelligence Services (GIS), December 9, 2024; Isha Rao and Max Gruenig, "Sanction-Proof? Russia's Arctic Ambitions and the China Factor," Arctic Institute, November 21, 2024; Malte Humpert, "Inside the Elaborate Scheme to Transport a Chinese Power Plant to Russia's Arctic Undetected," *High North News*, October 1 (updated October 4), 2024.

[226] Malte Humpert, "Russian Mining Company Partners With China to Develop Massive Titanium Deposit in Arctic," *High North News*, February 6, 2023; "China to Assist Russia with Titanium Mining in the Arctic," *Jane's*, February 1, 2023.

As mentioned earlier, Russian and PRC military aircraft and vessels have conducted joint operations in Arctic air space and waters. U.S. and allied officials have expressed concern over China-Russia military (and other forms of) cooperation in the Arctic.[227]

U.S. and Allied Military Forces and Operations[228]

Overview

During the Cold War, the Arctic was an arena of military competition between the United States and the Soviet Union, with both countries, for example, operating long-range bombers, tactical combat aircraft, maritime patrol aircraft, nuclear-powered submarines, surface warships, and ground forces in the region. The end of the Cold War and the collapse of most elements of the Russian military establishment following the dissolution of the Soviet Union in December 1991 greatly reduced this competition, leading to a post-Cold War period of reduced emphasis on the Arctic in U.S. military planning, budgeting, and operations.

Over the past 10 to 15 years, the emergence of great power competition and a significant increase in Russian military presence and operations in the Arctic has introduced renewed elements of military tension and competition into the Arctic. In response, the A7 states are placing an increased emphasis on the Arctic in their military planning, budgeting, and operations. As noted in this report's section on the Arctic's geopolitical environment, the Russia-Ukraine war increased concerns among the A7 states about the purpose behind Russia's military modernization in the Arctic. Russian military exercises in the Arctic are being monitored by the A7 states, and, similar to what happened during the Cold War, Russian military aircraft that periodically fly toward the airspace (including Arctic airspace) of some of the A7 states are being intercepted by military aircraft from those states.

Department of Defense (DOD) officials have stated that U.S. military operations in Alaska can play a role in supporting U.S. military operations not only in the Arctic, but in the Indo-Pacific region. In July 2021 remarks at Eielson Air Force Base in Alaska, Secretary of Defense Lloyd J. Austin III stated: "We are an Indo-Pacific nation and we are an Arctic nation. And here in Alaska those two critical regions intersect. This is where we can project power into both regions and where we must be able to defend ourselves from threats coming from both places."[229] Parts of

[227] See, for example, Malte Humpert, "U.S. Department of Defense Sounds Alarm Bells About China's Growing Presence in Arctic," *gCaptain*, January 2, 2025; Kyle Duggan (Canadian Press), "Chinese-Russian Air Co-operation Has Norad's Full Attention," *Winnipeg Free Press*, December 30, 2024; Samuel Hui, "China-Russia Arctic Cooperation a US National Security Concern," *VOA*, December 12, 2024; Dominic Minadeo, "Hybrid Activity 'Hot Spot': Russia and China's Affair in the Arctic Is Cause for Concern, Senior Official Says," *Inside Defense*, December 6, 2024; J.D. Simkins, "China-Russia Cooperation Poses Rising Threat in Arctic, Pentagon Warns," *Defense News*, December 6, 2024; Gwladys Fouche, "US Envoy Sees Some 'Concerning Signals' in Russia-China Military Cooperation in Arctic," *Reuters*, November 1, 2024; Elías Thorsson, "NATO Admiral Rob Bauer Warns of Growing Military Cooperation between Russia and China in the Arctic," ArcticToday, October 19, 2024; Enoch Wong, "We 'All Need to Pay Attention' to China and Russia in Arctic, Says Top US Commander," *South China Morning Post*, October 10, 2024; Heather Mongilio, "Russian, Chinese Cooperation in Arctic A Growing Concern, Says CJCS Brown," *USNI News*, October 9, 2024. For an alternate perspective, see Jo Inge Bekkevold and Paal Sigurd Hilde, "The New U.S. Arctic Strategy Is Wrong to Focus on China, It Emphasizes Limited Chinese Activities Instead of the Much More Potent Russian Threat," *Foreign Policy*, November 11, 2024.

[228] This section was prepared by Ronald O'Rourke, Specialist in Naval Affairs, Foreign Affairs, Defense, and Trade Division.

[229] Department of Defense, "Transcript, Secretary of Defense Lloyd J. Austin III Press Conference at Eielson Air Force Base, Alaska," July 24, 2021. Later in his remarks, Austin stated that Alaska

(continued...)

Alaska (particularly the panhandle, the southern part of mainland Alaska, and the Aleutian Islands) are situated on or near great circle routes (i.e., the shortest possible routes) linking the U.S. West Coast to locations in the Western Pacific that are close to China.

Russia's Arctic Military Modernization

As noted earlier, Russia since 2008 has adopted a series of strategy documents outlining plans that call for, among other things, bolstering the country's Arctic military capabilities. Russia has reactivated and modernized Arctic military bases that fell into disuse with the end of the Cold War, assigned upgraded forces to those bases, and increased military exercises and training operations in the Arctic.[230]

Prior to the Russia-Ukraine war, some observers expressed growing concern at these developments. Other observers noted the cooperative aspects of relations among the Arctic states, including Russia, and argued, that the competitive aspects were overstated.[231] Some observers argued that Russia's military investment in the Arctic were sometimes exaggerated, reflected normal modernization of aging capabilities, or was intended partly for domestic Russian consumption.[232] As noted earlier, the Russia-Ukraine war heightened concerns among the A7 states and other observers about the purpose behind Russia's military modernization in the Arctic.

> is a very critical place on the—on the globe. It is the intersection of the areas of responsibility of a couple of combatant commands, you know, the Indo-Pacific Command, which is really important to us, as well as Northern Command. It truly is a place where we think that as we continue to—to develop our capabilities here, it will certainly help us in our efforts to—to create capacity and capability that allows us to do what we set out to do in increasing the competitive edge with adversaries like—like China and Russia.

See also Hilde-Gunn Bye, "US Secretary of Defense Highlights the Importance of Alaska," *High North News*, August 2 (updated August 3), 2021; Robert Delaney, "Arctic Is Key Region in Countering China's Aggression, US Air Force Officials Say," *South China Morning Post*, July 28, 2021; Carla Babb, "Alaska Seen as Strategic US Military Asset Against China, Russia," *Voice of America*, July 25, 2021.

[230] Regarding Russian military presence and operations in the Arctic, see, for example, Elías Thorsson, "Russia Expanding Military Presence Near Finnish Border, Satellite Imagery Reveals," *ArcticToday*, May 20, 2025; Thomas Nilsen, "Kola and in Karelia Likely to Get Tens of Thousands of New Soldiers," *Barents Observer*, January 24, 2025; Astri Edvardsen (translation by Birgitte Annie Molid Martinussen), "Russia to Increase the Northern Fleet's Combat Readiness and Strengthen Arctic Shipbuilding and Port Capacity," *High North News*, August 21 (updated August 22), 2024; Malte Humpert, "Russia Upgrades Key Arctic Military Base With Expanded Runway," *High North News*, August 14 (updated August 20), 2024; Paul Goble, "Moscow to Build Drone Bases Along Arctic Coast to Compensate for Weakening Position There," *Eurasia Daily Monitor*, April 18, 2024; Atle Staalesen, "Moscow Says It Will Build Drone Bases Along Arctic Coast," *Barents Observer*, April 15, 2024; Thomas Nilsen, "2023 Saw More Russian Strategic Bombers Outside Norway," *Barents Observer*, January 15, 2024.

[231] See, for example, Robert David English and Morgan Grant Gardner, "Phantom Peril in the Arctic, Russia Doesn't Threaten the United States in the Far North—But Climate Change Does," *Foreign Affairs*, September 29, 2020; Mia Bennett, "U.S. Rhetoric About the Strategic Importance of the Arctic Is Out of Step with Its Spending Priorities," *ArcticToday*, July 26, 2019; "Arctic Conflict With Russia 'Not Likely In The Short-Term', Analyst Says," *Forces*, January 30, 2019.

[232] See, for example, Hilde-Gunn Bye, "Russia Pays Considerable Attention to Improve Arctic Infrastructure, Says Defence Minister," *High North News*, April 14, 2021; Michael B. Petersen and Rebecca Pincus, "Arctic Militarization and Russian Military Theory," *Orbis*, 2021; Lyle Goldstein, "Washington Should Chill Out over Russia's Arctic Ambitions," *Defense News*, November 13, 2020; Robert D. English, "Why an Arctic Arms Race Would Be a Mistake," *ArcticToday*, June 18, 2020; Marc Montgomery, "Russia's Military Feat in Arctic, Spectacular, But No Real Threat to West," *Radio Canada International*, May 12, 2020; Elizabeth Buchanan and Mathieu Boulègue, "Russia's Military Exercises in the Arctic Have More Bark Than Bite," *Foreign Policy*, May 20, 2019; Mathieu Boulègue, "Russia's Military Posture in the Arctic," Chatham House, June 28, 2019 (updated December 15, 2020); Arne F. Finne, "Russia Is a Responsible Actor in the Arctic," *High North News*, January 22, 2019. See also Hilde-Gunn Bye, "From Norway to North America: Differing Views On New Russian Weapon Systems," *High North News*, February 24, 2020.

U.S. and Allied Arctic Military Activities

In General

DOD and the Coast Guard (which is part of the Department of Homeland Security [DHS]) are devoting increased attention to the Arctic in their planning, budgeting, and operations. DOD as a whole, the Army, the Navy and Marine Corps, the Air Force, and the Coast Guard have each issued Arctic strategy documents.[233] As mentioned earlier, U.S. and allied officials have expressed concern over China-Russia military cooperation in the Arctic. DOD's Arctic strategy document states that

> DoD, in cooperation with our Allies and partners, will pursue an end state that preserves the Arctic as a stable region in which the U.S. homeland remains secure and vital national interests are safeguarded.
>
> The [2022] NDS [National Defense Strategy] directs that activities in the Arctic will be calibrated to reflect a "monitor-and-respond" approach that is underpinned by robust intelligence collection capabilities, security cooperation with our regional Allies and partners, and the deterrent value of DoD's ability to deploy the Joint Force globally at the time and place of our choosing. This [DOD Arctic] strategy guides DoD's efforts to build and sustain this monitor-and-respond approach to the Arctic. Implementing this strategy will enable DoD to achieve our desired end state for the region, aligning with efforts to strengthen homeland defense, safeguard U.S. interests, and improve interoperability with Arctic Allies and partners while preserving focus on the pacing challenge of the People's Republic of China (PRC) globally.
>
> Climate change and shifts in the geostrategic environment drive the need for a new strategic approach to the Arctic region. This strategy will strengthen the ability of the United States to build integrated deterrence and effectively manage risk to U.S. interests in the Arctic region by enhancing our domain awareness and Arctic capabilities; engaging with Allies, partners, and key stakeholders; and exercising tailored presence.
>
> Primary risks to the success of this strategy stem from the need to balance against other DoD global commitments or find ways to integrate with other resource requirements. As

[233] See the following documents, some of which are successors to documents issued in earlier years by the same organizations:

- Department of Defense, *2024 Arctic Strategy*, with cover letter dated June 21, 2024, released July 22, 2024, 18 pp.;
- Department of the Army, *Regaining Arctic Dominance, The U.S. Army in the Arctic*, January 19, 2021, 48 pp.;
- Department of the Navy, *A Blue Arctic, A Strategic Blueprint for the Arctic*, undated, released January 5, 2021, 25 pp.;
- Department of the Air Force, *Arctic Strategy, Ensuring a Stable Arctic Through Vigilance, Power Projection, Cooperation, and Preparation*, undated, with cover letter dated July 21, 2020, 14 pp.; and
- U.S. Coast Guard, *Arctic Strategic Outlook*, April 2019, 45 pp.

Regarding DOD's strategy document, see also Lolita C. Baldor, "Pentagon Arctic Report Calls for More Investment in Sensors, Equipment to Keep Up with Russia, China," *Associated Press*, July 22, 2024; Danielle Bochove, "Pentagon to Bolster Response to China, Russia in Arctic," *Bloomberg*, July 22, 2024; Brad Dress, "Pentagon Announces New Arctic Strategy as Region Becomes More Contested," *The Hill*, July 22, 2024; Sandra Erwin, "Pentagon's Arctic strategy emphasizes space and satellite capabilities," *Space News*, July 22, 2024; Patrick Tucker, "Pentagon's New Arctic Strategy Focuses on Adversaries, New Tech," *Defense One*, July 22, 2024; Idrees Ali, with additional reporting by Greg Torode and Ethan Wang, "Pentagon Concerned at Growing Arctic Cooperation between China and Russia," *Reuters*, July 23, 2024.

Regarding the Army, see also Combined Arms Doctrine Directorate staff, "Army Developing First Arctic Doctrine in More than 50 Years," U.S. Army, January 23, 2024.

> such, DoD Components should take these risks into account during resourcing deliberations through DoD's established processes.[234]

U.S. military services are conducting increased exercises and training operations in the Arctic—some in conjunction with forces from the other A7 states and with non-A7 NATO allies—that are aimed at

- reacquainting U.S. forces with—and responding to changes in—operating conditions in the region,
- identifying Arctic military capability gaps,
- rebuilding Arctic-specific warfighting skills that eroded during the post-Cold War era,
- testing the performance of equipment under Arctic conditions,
- strengthening interoperability with allied forces for conducting operations in the region, and
- sending Russia and China signals of resolve and commitment regarding the Arctic.[235]

In addition to these increased exercises and training operations, the Coast Guard is expanding and modernizing its polar icebreaker fleet. (For further discussion, see this report's section on icebreakers, which is the next section.)

Canada, the UK, and the Nordic countries are taking steps to increase their own military presence and operations in the region, and as noted above, have participated alongside U.S. military forces in certain Arctic exercises.[236] NATO is conducting increased exercises in the region, some of

[234] Department of Defense, 2024 Arctic Strategy, with cover letter dated June 21, 2024, released July 22, 2024, p. 1.

[235] See, for example, Sune Engel Rasmussen, "The U.S. Reinforces Europe's Northern Front, Fearing War With Russia," *Wall Street Journal*, May 26, 2025; Todd South, "Army Air Defense Systems Deploy to the Arctic, Africa for First Time," *Defense News*, May 21, 2025; Phillip Walter Wellman, "US Ground Troops Join Arctic Naval Exercise as Drones Change the Battlefield," Stars and Stripes, May 12, 2025; Astri Edvardsen (translation by Birgitte Annie Hansen), "Formidable Shield 2025: 'One of NATO's Most Important Deterrence Exercises This Year,'" *High North News*, May 5, 2025; Thomas Nilsen, "While Trump Casts Doubt on NATO Policy, B-52s Make First Ever Bomb Drops over Lapland," *Barents Observer*, March 7, 2025; Astri Edvardsen (translation by Birgitte Annie Hansen), "Joint Viking 2025: 10,000 Soldiers From 9 Nations Exercise Defending Northern Norway," *High North News*, March 5 (updated March 6), 2025; Thomas Nilsen, "U.S. Marine Corps Joins Large Exercise in Northern Norway amid Trump Turmoil," *Barents Observer*, February 28, 2025; Astri Edvardsen (translation by Birgitte Annie Hansen), "US, UK and Norwegian Air Forces Exercise in the High North: F-35s Integrate With B-52," *High North News*, December 5, 2024; Elisabeth Gosselin-Malo, "NATO Artillery Units Link Up Their Fires in Europe's Snowy North," *Defense News*, November 25, 2024; Astri Edvardsen, "US Aircraft Carrier Truman Trains With Norwegian Forces in the High North," *High North News*, November 14 (updated November 15), 2024; Thomas Nilsen, "Harry S. Truman Carrier Strike Group on Exercise inside the Arctic Circle," Barents Observer, November 12, 2024.

[236] See, for example, James Clark, "Here's How the US Military Is Preparing for an Arctic War," *Task & Purpose*, April 8, 2025; Joseph Trevithick, "Canada Looks To Close Critical Arctic Radar Gaps With Australia's Help," *The War Zone*, March 19, 2025; Natalia Weichsel, The Canadian Military Is Training for Potential Conflicts in the North. Here's What That Looks Like in Eeyou Istchee," *CBC News*, March 13, 2025; Astri Edvardsen (translation by Birgitte Annie Hansen), "Norway and France Forge Closer Defense Ties With an View to the High North," *High North News*, January 22, 2025; Ian Austen, "Canada Moves to Protect Arctic From Threats by Russia and China," *New York Times*, December 6, 2024; Joshua Posaner, "NATO Builds Out Rocket and Arctic Satellite Network Initiatives," *Politico*, October 17, 2024; Patrick Tucker, "NATO considering Arctic Combined Air Operations Center to Deal with Russian Threats," *Defense One*, September 17, 2024; Murray Brewster, "Canada, Germany and Norway Discussing a Security Pact to Cover the North Atlantic and Arctic," *CBC News*, June 20, 2024; Astri Edvardsen (translation by Birgitte Annie Molid Martinussen), "UK Aircraft Carrier in the North: 'A Formidable Show of Strength,'" *High North News*, March 15 (updated March 21), 2024; Luke Carroll, "Canada Showcases Ability to Defend Arctic amid Global Tensions," *CBC* (continued...)

which have been large exercises involving thousands of personnel from multiple countries. In June 2025, it was reported that Germany plans to send ships from its navy to patrol Arctic waters in response to Russian military activities in the region.[237]

Arctic Divided Between USNORTHCOM and USEUCOM

Under DOD's Unified Command Plan (UCP),[238] responsibility for the Arctic is divided between U.S. Northern Command (USNORTHCOM) and U.S. European Command (USEUCOM). USNORTHCOM is responsible for the North American side of the Arctic, while USEUCOM is responsible for the European and Russian side of the Arctic.[239] As mentioned earlier, in June 2025, it was reported that the Department of Defense intends to transfer operational responsibility for Greenland from USEUCOM to USNORTHCOM.

U.S. Navy and Coast Guard

The diminishment of Arctic ice is creating new operating areas in the Arctic for Navy surface ships and Coast Guard cutters.[240] The Navy has increased deployments of attack submarines and surface ships to the Arctic for exercises and other operations. The Coast Guard annually deploys a polar icebreaker, other cutters, and aircraft into the region to perform various Coast Guard missions and to better understand the implications of operating such units there. Key points relating to the Navy and Coast Guard in the Arctic that have emerged over the past 10 to 15 years include the following:

- Search and Rescue (SAR) in the Arctic is a mission of increasing importance, particularly for the Coast Guard, and one that poses potentially significant operational challenges.[241] (SAR is discussed further in a later section of this report.)
- More complete and detailed information on the Arctic as an operating area is needed to more properly support expanded Navy and Coast Guard ship and aircraft operations in the region.[242]

News, March 13, 2024; Thomas Nilsen, "Swedish Forces Exercise in Northern Norway as the Country Officially Joins NATO," *Barents Observer*, March 7, 2024; Jari Tanner, "Newly Enlarged NATO Starts Drill in Finland, Norway and Sweden in Defense of its Nordic Turf," *Associated Press*, March 4, 2024; Brett Simpson, "Scandinavia Is Preparing for War, As NATO Expands, Europe's Far North Is Tangibly Shifting to Combat Footing," *Foreign Policy*, February 9, 2024; Louise Breusch Rasmussen, "Denmark Sets Aside $400 Mln for Drone Surveillance in Arctic, North Atlantic," *Reuter*s, January 19, 2024.

[237] Agence France Presse (AFP), "German Navy to Patrol the Arctic," *Barron's*, June 30, 2025.

[238] For more on the UCP, see CRS In Focus IF10542, *Defense Primer: Commanding U.S. Military Operations*, coordinated by Michael J. Vassalotti.

[239] For a map showing USNORTHCOM and USEUCOM areas of responsibility in the Arctic, see Department of Defense, *2024 Arctic Strategy*, with cover letter dated June 21, 2024, released July 22, 2024, PDF page 2 of 28.

[240] See, for example, Sonoko Kuhara, "What the 'Blue Arctic' Means for the US Pacific Military Presence," *Diplomat*, August 21, 2021; Seapower Staff, "U.S. Coast Guard Cutters Patrol the U.S. Arctic," *Seapower*, August 13, 2021.

[241] See, for example, Department of Homeland Security, Office of the Chief Financial Officer, *Arctic Search and Rescue*, Fiscal Year 2017 Report to Congress, March 13, 2018, 16 pp.

[242] See, for example, Sarena Padilla and Garner Fleming, "Navy, Coast Guard, NOAA Work to Improve Arctic Forecasting for U.S., Allied Forces," *Defense Opinion*, February 20, 2023.

- The Navy and the Coast Guard currently have limited basing and other infrastructure in place in the Arctic to support expanded ship and aircraft operations in the Arctic.[243]
- Improved communication abilities are needed, because existing U.S. military communications systems were designed to support operations in lower latitudes rather than in the polar regions. Improved capabilities for conducting surveillance and reconnaissance in the region are needed so as to support improved domain awareness (DMA), meaning real-time or near-real-time awareness of military and other activities taking place across the region. U.S. military services are taking actions to address the need for improved communications and improved surveillance and reconnaissance in the Arctic.[244]
- Navy officials have stated that they do not see a strong near-term need for building ice-hardened surface ships and deploying them into the Atlantic, but acknowledge that such a need might emerge in the future.[245]
- Cooperation with other Arctic countries will be valuable in achieving defense and homeland security goals.

Some Specific Developments

U.S. and Canada Plan to Update Warning Radars in Arctic

The United States and Canada are working together to modernize the North American Aerospace Defense Command (NORAD). Efforts are to include joint investments in new sensing and command and control capabilities for defending against ballistic missile threats.[246]

Impact of Warmer Temperatures on Bases in Alaska and Exercises in Norway

DOD's September 2021 draft climate adaptation plan states "In the Arctic, permafrost plays an important role regarding natural and built infrastructure. For example, it provides stability of large acreages of wetlands and lakes across the tundra. Permafrost thaw threatens to undermine

[243] See, for example, *Identifying Potential Gaps in U.S. Coast Guard Arctic Capabilities*, Homeland Security Operational Analysis Center (HSOAC), 2018, 100 pp.

[244] See, for example, Jon Harper, "Northern Command Testing Commercial Satcom Capabilities in the Arctic," *Fedscoop*, May 5, 2022; Walker D. Mills, "Solving Communications Gaps in the Arctic with Balloons," Center for International Maritime Security (CIMSEC), August 23, 2021; Bill Liquori and Iris Ferguson, "How the US Space Force Plans to Improve Arctic Communication," *C4ISRNet*, July 14, 2021.

[245] See, for example, Ben Werner, "Arleigh Burke Destroyers Are More Viable Option for Near-Term Navy Presence in Arctic," *USNI News*, September 18, 2019; Megan Eckstein, "CNO: Arctic Operations Limited Now, But Future Ship Designs Should Consider Environment," *USNI News*, September 12, 2016.

[246] See, for example, Jeff Pelletier, "Biden, Trudeau Promise Upgrades to Arctic Defence," *Nunatsiaq News*, March 24, 2023; Murray Brewster, "A Plan to Plug Gaps in the Continent's Arctic Defence Shield Faces Roadblocks," *CBC News*, January 4, 2023; Michael Peck, "The US and Canada Are Updating a Cold War-Era System to Keep an Eye on Russian and Chinese Missiles. Experts Say They Need to Add a Lot More Territory Too," *Business Insider*, October 26, 2022; Hilde-Gunn Bye, "Canada to Spend Billions on Modernizing Air Defense in the Arctic," *High North News*, June 21 (updated June 23), 2022; Lee Berthiaume (Canadian Press), "Ukraine War Sparks Fresh Worries About North America's Own Defences," *CBC*, March 5, 2022. See also by Caitlin Lee and Aidan Poling, *Bolstering Arctic Domain Awareness to Deter Air & Missile Threats to the Homeland*, Mitchell Institute, June 2023, 31 pp.; Murray Brewster, "Canada Spending Almost $5B to Upgrade Continental Defence, Anand Says," *CBC News*, June 20, 2022; Paul Vieira, "Canada Plans Billions in Military Spending to Counter Russia Threat in Arctic," *Wall Street Journal*, June 20, 2022.

roads and structural foundations."[247] An August 2020 press report identified Eielson Air Force Base southeast of Fairbanks, Fort Wainwright in Fairbanks, and Clear Space Force Station south of Anderson (previously known as Clear Air Force Base) as locations where facilities have been impacted by thawing permafrost.[248]

A May 2023 congressionally mandated DOD report on the impact of changes in permafrost on DOD infrastructure, facilities, and operations examined eight DOD installations—six in Alaska, one (the Alaska Radar System and North Warning System) in multiple sites in Alaska and Canada, and one in Greenland. The report states

> Potential permafrost thaw poses no risk for facilities and assets located at three of the eight installations (Joint Base Elmendorf-Richardson, Clear Space Force Station (SFS), and Eareckson Air Force Station (AFS)). Permafrost thaw poses minor risk to facilities at Fort Greely. The remaining four (Pituffik Space Base (SB) [formerly Thule Air Base], Eielson Air Force Base (AFB), Fort Wainwright, and the Alaska Radar System and North Warning System (61 total sites with 57 on permafrost) are susceptible to moderate to considerable risk that thaw would cause differential settlement, thus impairing structural integrity or allow ground water infiltration into ground voids leading to freeze/thaw heave. The impacts to the DoD Arctic mission and assets stationed at the at-risk installations, Pituffik Space Base (SB), Eielson AFB, and Fort Wainwright, or located at the at-risk radar sites of the Alaska Radar System and North Warning System could be significant.[249]

A May 24, 2023, press report stated: "Climate change is rapidly altering the Arctic landscape, in particular the permafrost that serves as a foundation for buildings across the region. Warming temperatures are thawing out the frozen ground, and in the process it is threatening to unsettle structures that were built decades ago. That's particularly worrisome for the U.S. military, which maintains facilities across the Arctic region. And it's one reason [Deputy Defense Secretary Kathleen] Hicks embarked on a two-day tour of the nation's northernmost military bases."[250]

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[247] Department of Defense, Office of the Undersecretary of Defense (Acquisition and Sustainment), *Department of Defense Draft Climate Adaptation Plan, Report Submitted to National Climate Task Force and Federal Chief Sustainability Officer*, September 1, 2021, p. 13.

[248] Sara Karlovitch, Luciana Perez-Uribe, Julia Lerner, and Lindsey Collins, "As the World Warms, Costs Rise for Alaska Military Bases," *Anchorage Daily News*, August 1, 2020. (Also published as Sara Karlovitch, Luciana Perez-Uribe, Julia Lerner, and Lindsey Collins, "Global Warming Is Having a Costly, and Dangerous, Impact on Key Military Bases in Alaska," *Seattle Times*, August 9, 2020.) See also Sharon E. Burke, "The Arctic Threat that Must Not Be Named," *War on the Rocks*, January 28, 2021; Brian W. Everstine, "Climate Change Will Guide How the Air Force Builds Arctic Infrastructure," *Air Force Magazine*, November 20, 2020; Rhemi Marlatt, "The Intersection of U.S. Military Infrastructure & Alaskan Permafrost Through the 21st Century," Arctic Institute, October 27, 2020.

[249] Department of Defense, *Permafrost Thaw on Infrastructure, Facilities, and Operations of the Department of Defense*, Report to Congress, Office of the Under Secretary of Defense for Acquisition and Sustainment, May 2023, p. 3. Report accessed May 19, 2025, at https://www.acq.osd.mil/eie/imr/mc/Downloads/2023%20Report%20to%20Congress%20on%20Permafrost%20Thaw.pdf.

[250] Daniel Cusick, "U.S. Military Sees Growing Threat in Thawing Permafrost," *E&E News (Scientific American)*, May 24, 2023. See also Tom Vanden Brook, "Baked Alaska: Climate Change's Extreme Heat Is Warming the State, and Creating National Security Problems," *USA Today*, July 20, 2023.

Ellen Knickmeyer, "Climate Toll on Arctic Bases: Sunken Runways, Damaged Roads," *Associated Press*, April 15, 2022; Department of Defense, Inspector General, *(U) Evaluation of the Department of Defense's Efforts to Address the Climate Resilience of U.S. Military Installations in the Arctic and Sub-Arctic*, Report No. DODIG-2022-083, April 13, 2022, 45 pp., declassified version, accessed May 19, 2025, at https://media.defense.gov/2022/Apr/15/2002977604/-1/-1/1/DODIG-2022-083.PDF. For a press report about this DOD Inspector General report, see Malte Humpert, "U.S. Arctic and Sub-Arctic Military Bases Are Unprepared For Impacts of Climate Change," *High North News*, May 3, 2022.

A March 2022 press report stated: "The weather along Norway's Arctic coast ... is becoming increasingly hard to predict as warming trends change the terrain and storms become more frequent.... The changing conditions mean that U.S. forces will have to adapt how they operate, both for the safety of their forces and the success of any potential future combat operations in the High North.... In the air, pilots must account for more extreme rainfall and storms.... Avalanches are also a greater risk now."[251]

October 2023 Coast Guard Arctic Implementation Plan

In October 2023, the Coast Guard released an implementation plan for its 2019 Arctic strategy document.[252] The implementation plan includes 14 initiatives.[253]

September 2022 Establishment of DOD Arctic Strategy and Global Resilience Office

In September 2022, DOD established an office for Arctic strategy and global resilience "to ensure U.S. strategy and policy protects U.S. interests in that crucial region," and named Iris A. Ferguson as Deputy Assistant Secretary of Defense for Arctic and Global Resilience.[254]

June 2021 DOD Creation of Ted Stevens Center for Arctic Security Studies

In June 2021, DOD announced the creation of "a new DOD center to focus on issues related to the Arctic. The Ted Stevens Center for Arctic Security Studies will be the sixth such regional center for the department."[255]

April 2021 Agreement Regarding Bases in Norway

On April 16, 2021, "the United States and the Kingdom of Norway concluded the recently negotiated Supplementary Defense Cooperation Agreement (SDCA).... The Agreement supplements the provisions of the 1951 NATO Status of Forces Agreement (SOFA) and establishes a framework to advance our capabilities, in support of the NATO Alliance's collective defense.... The SDCA includes four initial key locations as focal points for increased cooperation

[251] Phillip Walter Wellman, "As Weather Warms, Heavy Rains and Avalanches Become Part of Planning for Marines During Arctic Exercise," *Stars and Stripes*, March 22, 2022.

[252] U.S. Coast Guard, *Arctic Strategic Outlook Implementation Plan*, October 2023, 25 pp.

[253] The 14 initiatives are enhance Arctic operations and exercises; expand Arctic surface capabilities and associated support infrastructure; expand Arctic aviation capabilities; expand Arctic communications capabilities; improve Maritime Domain Awareness (MDA); strengthen the Arctic Coast Guard Forum (ACGF); preserve U.S. leadership in the Arctic Council; modernize the U.S. Arctic marine transportation system (MTS); continue implementation of the IMO Polar Code; strengthen marine environmental preparedness and response; strengthen the Center for Arctic Study and Policy; enhance the Coast Guard's culture of Arctic innovation; communicate strategically; and formalize the Coast Guard Polar enterprise.

[254] Jim Garamone, "DOD Establishes Arctic Strategy and Global Resilience Office," *DOD News*, September 27, 2022; Mike Glenn, "Pentagon Establishes New Senior Coordinator for Arctic Policy," *Washington Times*, September 27, 2022.

[255] Department of Defense news release, "DOD Announces Center to Collaborate on, Advance Shared Interests in Arctic Region," *DOD News*, June 9, 2021. See also Department of Defense, "The Department of Defense Announces Establishment of Arctic Regional Center," June 9, 2021.

with Norway: Evenes Air Station, Ramsund Naval Station, Rygge Air Station, and Sola Air Station."[256]

August 2018 Reestablishment of 2nd Fleet

In May 2018, the Navy announced that it would reestablish the 2nd Fleet, which was the Navy's fleet during the Cold War for countering Soviet naval forces in the North Atlantic. The fleet's formal reestablishment occurred in August 2018. The 2nd Fleet was created in 1950 and disestablished in September 2011. In its newly reestablished form, it is described as focusing on countering Russian naval forces not only in the North Atlantic but in the Arctic as well.[257]

Sufficiency of U.S. Arctic Military Activities

Some observers have expressed concern about whether the United States is doing enough militarily to defend its interests in the Arctic, and in some cases have offered recommendations for doing more.[258] Whether DOD and the Coast Guard are devoting sufficient resources to the Arctic and taking sufficient actions for defending U.S. interests in the region is a topic of congressional oversight.[259] Those who argue that DOD and the Coast Guard are not devoting sufficient resources and taking sufficient actions argue, for example, that DOD and the Coast Guard should build ice-hardened surface ships other than icebreakers for deployment to the Arctic and/or establish a strategic seaport in Alaska's north to better support DOD and Coast Guard

[256] Department of State, "U.S.-Norway Supplementary Defense Cooperation Agreement (SDCA)," Fact Sheet, Bureau Of Political-Military Affairs, April 16, 2021; Government of Norway, "Norway signs Supplementary Defense Cooperation Agreement with the United States," April 16, 2021. See also Chad Garland, "US Can Build Military Facilities in Norway Under New Defense Cooperation Pact," *Stars and Stripes*, April 16, 2021; Thomas Nilsen, "U.S. Navy Will Build Airport Infrastructure in Northern Norway to Meet Upped Russian Submarine Presence," *Barents Observer*, April 16, 2021; Terje Solsvik and Nerijus Adomaitis, "Norway to Allow U.S. Military to Build on Its Soil in New Accord," *Reuters*, April 16, 2021; Paul McLeary, "Norway, US Bolster Russian Sub Watching With New Bases," *Breaking Defense*, April 19, 2021.

[257] See, for example, Christopher Woody, "The US Navy's Newest Fleet Is Bulking Up for 'Leaner, Agile' Operations to Counter Russia in the Atlantic and the Arctic," *Business Insider*, January 18, 2019; Patricia Kime, "The Navy Isd gearing Up for 'Leaner, Agile' Operations in Arctic, North Atlantic," *Military.com*, January 16, 2019; Rich Abott, "2nd Fleet To Be Fully Operational in 2019, Sees Real Russian Threat," *Defense Daily*, December 3, 2018; Sam LaGrone, "U.S. 2nd Fleet Racing Toward a 2019 Operational Capability," USNI News, November 29, 2018; Paul McLeary, "New Second Fleet To Stay Lean, Unpredictable, Commander Says; & Watching China," *Breaking Defense*, November 29, 2018; Sam LaGrone, "CNO: New 2nd Fleet Boundary Will Extend North to the Edge of Russian Waters," *USNI News*, August 24, 2018.

[258] See, for example, Andrew Spafford and Samantha Olson, "The Melting Fortress: The United States, Canada, and the Race Against Time in the Arctic," *Breaking Defense*, September 27, 2024; James G. Foggo III and Russell J. Handy, "The U.S. Must Take the Lead in a Destabilized, Increasingly Militarized Arctic," *Defense Opinion*, August 14, 2024; Kenneth R. Rosen, "The End of American Exceptionalism in the High North," *Foreign Policy*, June 7, 2024; Chan Mo Ku and Jinwan Park, "Time to Create a New Quad for the Arctic Pacific to Counter China and Russia," *Breaking Defense*, May 23, 2024; Liselotte Odgaard, "NATO Is Unprepared for Russia's Arctic Threats," *Foreign Policy*, April 1, 2024; Theresa Hitchens, "Amid Chinese Activity, New NORTHCOM Chief Calls for More Exercises Near Arctic," *Breaking Defense*, March 14, 2024; John Grady, "U.S. Fleet Forces Commander Focused on Arctic, Increased Naval Presence in Region," *USNI News*, March 6, 2024; Sonner Kehrt, "US Military Can't Sustain Arctic Operations, 'Let Alone Dominate,' Experts Say," *War Horse*, January 18, 2024; Abbie Tingstad et al., *Report on the Arctic Capabilities of the U.S. Armed Forces*, RAND, 2023, 89 pp.; Mark Green, "Russia, China and the Threat to the North Pole, The U.S. Needs More Icebreakers and Other Arctic Defenses," *Wall Street Journal*, January 5, 2024.

[259] See, for example, Riley Rogerson, "Top US Northern Command Official Calls Arctic Military Resources Insufficient at Senate Hearing," *Anchorage Daily News*, March 23, 2023.

operations in the Arctic.[260] (Anchorage, in the southern part of Alaska's mainland, was designated a U.S. strategic seaport for supporting DOD operations in 2004.[261])

FY2025 National Defense Authorization Act (H.R. 5009/P.L. 118-159)

In the FY2025 National Defense Authorization Act (NDAA) (H.R. 5009/P.L. 118-159 of December 23, 2024), Section 1071 requires DOD to submit annual reports for FY2026, FY2027, and FY2028 on resourcing and military construction requirements to implement DOD's Arctic Strategy.

Polar Icebreaking[262]

Within the U.S. government, the Coast Guard is the U.S. agency responsible for polar icebreaking. The Coast Guard's large icebreakers are called polar icebreakers rather than Arctic icebreakers because they perform missions in both the Arctic and Antarctic. The Coast Guard's polar icebreakers do not simply break ice—they are multimission cutters that conduct a variety of other operations that are conducted in lower-latitude waters by the Coast Guard's general-purpose cutters. U.S. polar ice operations conducted in large part by the Coast Guard's polar icebreakers support 9 of the Coast Guard's 11 statutory missions.[263]

Operations to support National Science Foundation (NSF) research activities in both polar regions account for a significant portion of U.S. polar icebreaker operations. Providing support for NSF's research in the Antarctic focuses on performing an annual mission, called Operation Deep Freeze (ODF), to break through Antarctic sea ice so as to reach and resupply McMurdo Station, the large U.S. Antarctic research station located on the shore of McMurdo Sound, near the Ross Ice Shelf. The Coast Guard's medium polar icebreaker, *Healy*, spends most of its operational time in the Arctic supporting NSF research activities and performing other operations.

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[260] Brian W. Everstine, "DOD Leaders Want More Arctic Funding, But Not Right Now," *Air Force Magazine*, June 17, 2021; Greg Hadley, "VanHerck: Services 'Didn't Move the Ball Very Far' With Arctic Spending in 2022," *Air Force Magazine*, June 10, 2021.

[261] See, for example, Patti Bielling, "Anchorage Is Named DoD's Newest Strategic Seaport," Military Surface Deployment & Distribution Command (SSDC), news release No. 028-2004, August 17, 2004, accessed May 19, 2025, at https://www.portofalaska.com/wp-content/uploads/2006_POA_Strategic_Seaport_Press_Release.pdf. For more on U.S. strategic seaports, see U.S. Department of Transportation, Maritime Administration, "National Port Readiness Network (NPRN)," updated December 7, 2021, accessed May 19, 2025, at https://www.maritime.dot.gov/ports/strong-ports/national-port-readiness-network-nprn; Kevin Tokarski, "The Maritime Administration Strategic Ports Program," second of three briefings (slides 11 through 23 of 41), accessed May 19, 2025, at https://www.aapa-ports.org/files/2019AnnualConvention/Strategic%20Ports.pdf; Government Accountability Office, *Defense Logistics: The Department of Defense's Report on Strategic Seaports Addressed All Congressionally Directed Elements*, GAO-13-511R, May 13, 2013, 23 pp.; Rolando C. Baez, "The Strategic Seaport Program: Ensuring Transportation Readiness," U.S. Army, January 10, 2017; Joan Bondareff and Kate Scontras, "Strategic Seaports," *Maritime Reporter*, December 2012: 16-17, accessed May 19, 2025, at https://magazines.marinelink.com/nwm/MaritimeReporter/201212/#page/18, and reprinted (with bylines of Joan M. Bondareff and Katherine V. Scontras), at https://www.blankrome.com/publications/strategic-seaports.

[262] This section was prepared by Ronald O'Rourke, Specialist in Naval Affairs, Foreign Affairs, Defense, and Trade Division. It adapts material from CRS Report RL34391, *Coast Guard Polar Security Cutter (Polar Icebreaker) Program: Background and Issues for Congress*.

[263] The nine missions supported by polar ice operations are search and rescue; maritime safety; aids to navigation; ice operations; marine environmental protection; living marine resources; other law enforcement (protect the exclusive economic zone [EEZ]); ports, waterways and costal security; and defense readiness. The two missions not supported by polar ice operations are illegal drug interdiction and undocumented migrant interdiction. (Department of Homeland Security, *Polar Icebreaking Recapitalization Project Mission Need Statement, Version 1.0*, approved by DHS June 28, 2013, p. 10.)

Even with the diminishment of polar ice, there are still significant ice-covered areas in the polar regions, and diminishment of polar ice could lead in coming years to increased commercial cargo ship, cruise ship, research ship, and naval surface ship operations, as well as increased exploration for oil and other resources, in the Arctic. Such activities could require increased levels of support from polar icebreakers, particularly since waters described as "ice free" can actually still have some amount of ice.

Some observers have identified polar icebreaking capacity as a component of U.S.-Russia (or U.S.-China) competition in the Arctic, and express concern about what they view as a U.S. "icebreaker gap" compared to the much-larger Russian polar icebreaker fleet.[264] Other observers disagree with that perspective.[265]

A 2023 Coast Guard fleet mix analysis concluded that the service will require a total of eight to nine polar icebreakers, including four to five heavy polar icebreakers and four to five medium polar icebreakers, to perform the Coast Guard's polar (i.e., Arctic and Antarctic) missions in coming years.

The operational U.S. polar icebreaking fleet currently consists of two ships—the heavy polar icebreaker *Polar Star* and the medium polar icebreaker *Healy*. *Polar Star* entered service in 1976 and is now well beyond its originally intended 30-year service life. *Healy* entered service in 2000. A third ship is to be added to the operational U.S. polar icebreaking fleet. On December 11, 2024, the Coast Guard purchased *Aiviq*, a commercial polar ship with icebreaking capability that was built in 2012. The Coast Guard completed acceptance of *Aiviq* on December 20, 2024. The Coast Guard is modifying the ship to become a second Coast Guard medium polar icebreaker and has renamed the ship *Storis* in honor of a previous Coast Guard cutter of that name. The Coast Guard has scheduled the ship's commissioning for August 2025 and reportedly aims to have it operating from its Alaska home port starting the summer of 2026.

To recapitalize and expand its polar icebreaking fleet, the Coast Guard is planning to acquire new heavy polar icebreakers called Polar Security Cutters (PSCs) and new medium polar icebreakers called Arctic Security Cutters (ASCs). The Coast Guard initiated the PSC program in its FY2013 budget submission. The Coast Guard in April 2019 awarded the contract for designing and the building the first PSC to Halter Marine Inc. of Pascagoula, MS, a shipyard that was then owned by Singapore Technologies (ST) Engineering. In November 2022, ST Engineering sold Halter Marine to Louisiana-based Bollinger Shipyards. The former Halter Marine is now called Bollinger Mississippi Shipbuilding. On April 11, 2025, the Coast Guard released a Request for Information (RFI) for ASCs.

Since the April 2019 contract award, the PSC program has experienced significant cost growth and schedule delay, and a change in contractor from Halter Marine to Bollinger as a result of the above-noted November 2022 shipyard purchase. As a result of the PSC program's cost growth and schedule delay, the PSC program has become a prominent oversight item in congressional reviews of Coast Guard budgets and programs. On April 18, 2025, it was reported that the Coast

[264] See, for example, Juliana Wheeler, "How Icebreakers Are Becoming the Litmus Test for the U.S. Arctic Strategy," *ArcticToday*, November 13, 2024; Ella Sherman, "The US Military Doesn't Have the Icebreakers to Compete in the Arctic and Is 'Severely Outnumbered' by Russia, Commander Warns," *Business Insider*, March 14, 2024; Mike Glenn, "U.S. Icebreaker Gap with Russia a Growing Concern as Arctic 'Cold War' Heats Up," *Washington Times*, September 23, 2021.

[265] See, for example, Keith Johnson, "The Arctic Great Game Won't Be Won in U.S. Shipyards," *Foreign Policy*, September 3, 2024; Paul C. Avey, "The Icebreaker Gap Doesn't Mean America Is Losing In The Arctic," *War on the Rocks*, November 28, 2019.

Guard is negotiating with a Finnish shipbuilder for building three to five ASCs and possibly also three PSCs.

Search and Rescue (SAR)[266]

Increasing sea and air traffic through Arctic waters has increased concerns regarding Arctic-area SAR capabilities.[267] Given the location of current U.S. Coast Guard operating bases, it could take Coast Guard aircraft several hours, and Coast Guard cutters days or even weeks, to reach a ship in distress or a downed aircraft in Arctic waters. The Coast Guard has stated that "the closest Coast Guard Air Station to the Arctic is located in Kodiak, AK, approximately 820 nautical miles south of Utqiagvik, AK, which is nearly the same distance as from Boston, MA, to Miami, FL."[268] In addition to such long distances, the harsh climate complicates SAR operations in the region.

Particular concern has been expressed about cruise ships carrying large numbers of civilian passengers that may experience problems and need assistance.[269] There have been incidents of this kind with cruise ships in waters off Antarctica. In August 2018, a Russian-flagged passenger ship with 162 people on board ran aground on Canada's Northwest Passage,[270] and in September 2023, a Bahamas-flagged cruise ship with 206 people on board ran aground in Alpefjord, Greenland.[271]

The Coast Guard participates in exercises focused on improving Arctic SAR capabilities. Further increasing U.S. Coast Guard SAR capabilities for the Arctic could require one or more of the following: enhancing or creating new Coast Guard operating bases in the region; procuring additional Arctic-capable aircraft, cutters, and rescue boats for the Coast Guard; and adding systems to improve Arctic maritime communications, navigation, and domain awareness. It may also entail enhanced forms of cooperation with navies and coast guards of other Arctic countries.

On May 12, 2011, representatives from the member states of the Arctic Council, meeting in Nuuk, Greenland, signed an agreement on cooperation on aeronautical and maritime SAR in the Arctic.[272] The agreement divides the Arctic into SAR areas within which each party has primary

[266] This section was prepared by Ronald O'Rourke, Specialist in Naval Affairs, Foreign Affairs, Defense, and Trade Division.

[267] See, for example, Elías Thorsson, "Increased Arctic Shipping Brings Increased Risks," *Arctic Business Journal*, October 21, 2023.

[268] Coast Guard, *Arctic Strategic Outlook*, April 2019, p. 11.

[269] See, for example, Birgitte Annie Hansen, "Is the Arctic Prepared for a Large-Scale Cruise Ship Incident?" *High North News*, March 25 (updated March 26), 2025; Lara Johannsdottir, David Cook, and Gisele M. Arruda, "Systemic Risk of Cruise Ship Incidents from an Arctic and Insurance Perspective," *Elementa: Science of the Anthropocene*, University of California Press, 2021.

[270] Malte Humpert, "A Cruise Ship Runs Aground in Canada's Arctic Waters; The Akademik Ioffe's Sister Ship Was Nearby, and Together with Canadian Coast guard Ships, Was Able to Rescue All Passengers," *ArcticToday*, August 28, 2018.

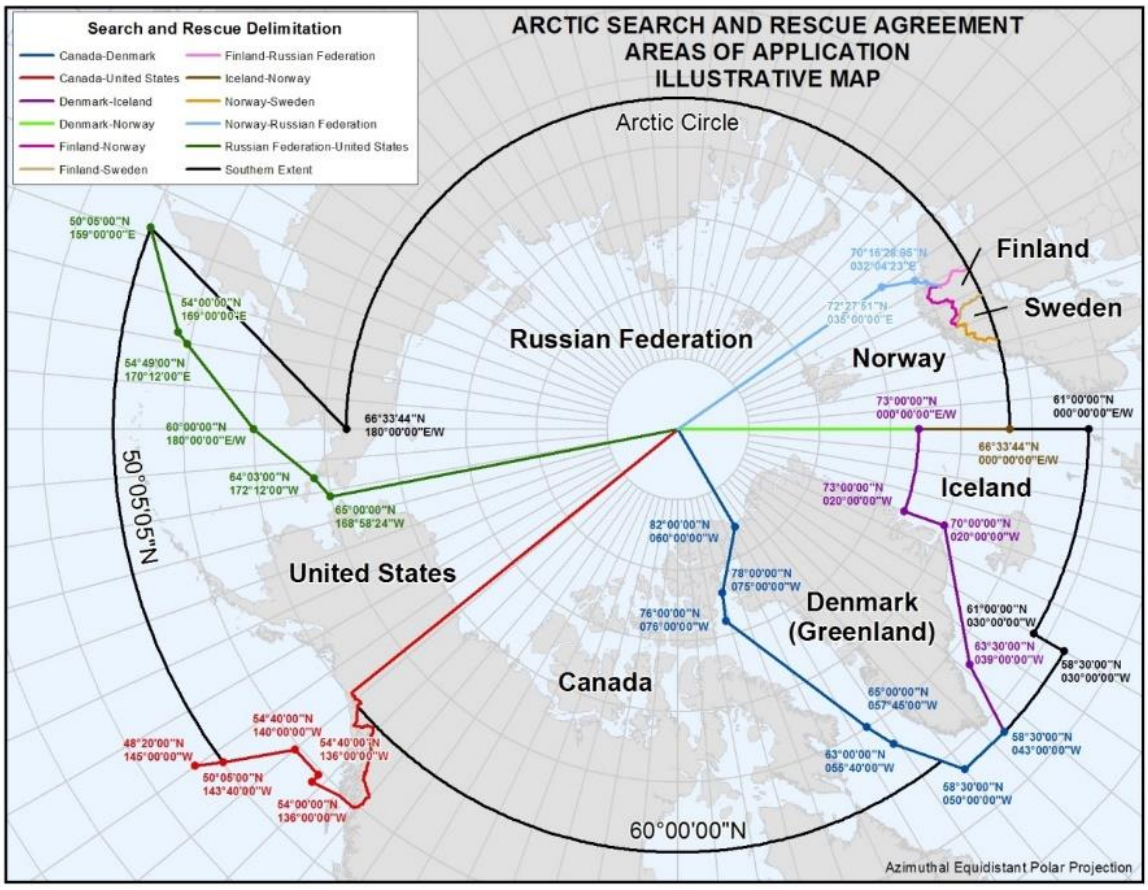
[271] Danielle Bochove and Ragnhildur Sigurdardottir, "Freed Cruise Ship Shows Risks of More Traffic in Remote Arctic," *Bloomberg*, September 14, 2023; Li Cohen, "Luxury Cruise Ship that Ran Aground in Greenland with Over 200 People on Board Is Freed," *CBS News*, September 14, 2023; Essi Lehto and Louise Breusch Rasmussen, "Cruise Ship Pulled Free After Running Aground in Greenland," *Reuters*, September 14, 2023; Zahid Mahmood, Benjamin Brown, James Frater, and Sahar Akbarzai, "Ocean Explorer: Luxury Cruise Ship Freed after Running Aground in a Greenland Fjord," *CNN*, September 14, 2023; Jan M. Olsen, "A Fishing Vessel in Greenland Will Try to Free a Cruise Ship that Ran Aground with 206 People," *Associated Press*, September 13, 2023; Heidi Pérez-Moreno, "Cruise Ship Freed after Being Stranded in Greenland for Days," *Washington Post*, September 13, 2023 (updated September 14).

[272] For a State Department fact sheet on the agreement, see "Secretary Clinton Signs the Arctic Search and Rescue Agreement with Other Arctic Nations," May 12, 2011, accessed May 19, 2025, at https://2009-2017.state.gov/r/pa/prs/ps/2011/05/163285.htm.

responsibility for conducting SAR operations. **Figure 6** shows a map of the national areas of SAR responsibility based on the geographic coordinates listed in the Annex to the agreement.

Figure 6. Arctic SAR Areas in Arctic SAR Agreement

(Based on geographic coordinates listed in the agreement)



Source: Map posted at "Arctic Region," U.S. Department of State, accessed May 19, 2025, at https://2021-2025.state.gov/arctic/arctic-search-and-rescue-agreement-map/.

Commercial Sea Transportation[273]

Background

The search for a shorter route from the Atlantic to Asia has been the quest of maritime powers since the Middle Ages. The diminishment of Arctic ice raises the possibility of saving several thousands of miles and several days of sailing between major trading blocs.[274] If the Arctic were to become a viable shipping route, the ramifications could extend far beyond the Arctic. For example, lower shipping costs could be advantageous for China (at least its northeast region), Japan, and South Korea because their manufactured products exported to Europe or North

[273] This section was prepared by John Frittelli, Specialist in Transportation Policy, Resources, Science, and Industry Division.

[274] Extended daylight hours in the Arctic during the summer may also be an advantage.

America could become less expensive relative to other emerging manufacturing centers in Southeast Asia, such as India.[275] Melting ice could potentially open up two trans-Arctic routes:[276]

- **The Northern Sea Route** (NSR, a.k.a. the "Northeast Passage"), along Russia's northern border from Murmansk to Provideniya, is about 2,600 nautical miles in length. It was opened by the Soviet Union to domestic shipping in 1931 and to transit by foreign vessels in 1991. This route would be applicable for trade between northeast Asia (north of Singapore) and northern Europe. Most transits through the NSR are associated with the carriage of LNG from Russia's Yamal Peninsula, and Russia is actively promoting the use of this route. The NSR accounts for the vast majority of large cargo ship transits in the Arctic.[277]
- **The Northwest Passage** (NWP) runs through the Canadian Arctic Islands. The NWP actually consists of several potential routes. The southern route is through Peel Sound in Nunavut, which has been open in recent summers and contains mostly one-year ice. However, this route is circuitous, contains some narrow channels, and is shallow enough to impose draft restrictions on ships. The more northern route, through McClure Strait from Baffin Bay to the Beaufort Sea north of Alaska, is much more direct and therefore more appealing to ocean carriers, but more prone to ice blockage.[278] The NWP is potentially applicable for trade between northeast Asia (north of Shanghai) and the northeast of North America, but it is less commercially viable than the NSR.[279] Cargo ship transits have been extremely rare but cruise vessel excursions and research vessels are more common.

Destination Traffic, Not Trans-Arctic Traffic

Most cargo ship activity currently taking place in the Arctic is to transport natural resources from the Arctic or to deliver general cargo and supplies to communities and natural resource extraction facilities. Thus, cargo ship traffic in the Arctic presently is mostly regional, not trans-Arctic.

Unpredictable Ice Conditions Hinder Trans-Arctic Shipping

Arctic waters do not necessarily have to be ice free to be open to shipping. Multiyear ice can be over 10 feet thick and problematic even for icebreakers, but one-year ice is typically 3 feet thick or less. This thinner ice can be more readily broken up by icebreakers or ice-class ships (cargo ships with reinforced hulls and other features for navigating in ice-infested waters). However, more open water in the Arctic has resulted in another potential obstacle to shipping: unpredictable ice flows. In the NWP, melting ice and the opening of waters that were once covered with one-year ice has allowed blocks of multiyear ice from farther north and icebergs from Greenland to

[275] Presentation by Stephen Carmel, Senior Vice President, Maersk Line Ltd., Halifax International Security Forum, *Arctic Security: The New Great Game?* November 21, 2009.

[276] A third but more remote possibility is a route directly over the North Pole.

[277] Traffic statistics available at https://arctic-lio.com/.

[278] This was the route pioneered by the SS *Manhattan*, an oil tanker modified for ice breaking in 1969 to carry Alaskan North Slope oil to the Atlantic. This was the first commercial passage through the NWP, but the building of the Alaskan pipeline was found to be the more economical means of transporting oil from the North Slope to the lower 48 states.

[279] Although the NWP is often compared to the alternative route through the Panama Canal in terms of distance and sailing days from Asia to the U.S. east coast, another alternative to consider is the shorter and faster transcontinental rail route across Canada or the United States.

flow into potential sea lanes. The source of this multiyear ice is not predicted to dissipate in spite of climate change. Moreover, the flow patterns of these ice blocks are very difficult to forecast.[280] Thus, the lack of ice in potential sea lanes during the summer months can add even greater unpredictability to Arctic shipping. This is in addition to the extent of ice versus open water, which is also highly variable from one year to the next and seasonally.

The unpredictability of ice conditions is a major hindrance for trans-Arctic shipping in general, but can be more of a concern for some types of ships than it is for others. For instance, it would be less of a concern for cruise ships, which may have the objective of merely visiting the Arctic rather than passing through and could change their route and itinerary depending on ice conditions. On the other hand, unpredictability is of the utmost concern for container ships that carry thousands of containers from hundreds of different customers, all of whom expect to unload or load their cargo upon the ship's arrival at various ports as indicated on the ship's advertised schedule. The presence of even small blocks of ice or icebergs from a melting Greenland ice sheet requires slow sailing and could play havoc with schedules. Several container shipping lines and shippers have pledged not to ship through the Arctic.[281] Ships carrying a single commodity in bulk from one port to another for just one customer have more flexibility in terms of delivery windows, but would not likely risk an Arctic passage under prevailing conditions.

Ice is not the sole impediment to Arctic shipping. The region frequently experiences adverse weather, including not only severe storms, but also intense cold, which can impair deck machinery. During the summer months when sea lanes are open, heavy fog is common in the Arctic.

Commercial ships would face higher operating costs on Arctic routes than elsewhere. Ship size is an important factor in reducing freight costs. Many ships currently used in other waters would require two icebreakers to break a path wide enough for them to sail through; ship owners could reduce that cost by using smaller vessels in the Arctic, but this would raise the cost per container or per ton of freight.[282] Also, icebreakers or ice-class cargo vessels burn more fuel than ships designed for more temperate waters and would have to sail at slower speeds. The shipping season in the Arctic only lasts for a few weeks, so icebreakers and other special required equipment would sit idle the remainder of the year. None of these impediments by themselves may be enough to discourage Arctic passage but they do raise costs, perhaps enough to negate the savings of a shorter route. Thus, from the perspective of a shipper or a ship owner, shorter via the Arctic does not necessarily mean cheaper and faster.[283]

Basic Navigation Infrastructure Is Lacking

Considerable investment in navigation-related infrastructure would be required if trans-Arctic shipping were to become a reality. Channel marking buoys and other floating visual aids are not possible in Arctic waters because moving ice sheets will continuously shift their positions. Therefore, vessel captains would need to rely on marine surveys and ice charts. For some areas in

[280] S.E.L. Howell and J.J. Yackel, "A Vessel Transit Assessment of Sea Ice Variability in the Western Arctic, 1969-2002: Implications for Ship Navigation," *Canadian Journal of Remote Sensing*, vol. 30, no. 2, 2004.

[281] Ocean Conservancy, https://oceanconservancy.org/protecting-the-arctic/take-the-pledge/.

[282] "Arctic Unlikely to See Major Shipping Growth," *New Zealand Transport and Logistics Business Week*, April 24, 2008.

[283] Stephen M. Carmel, Senior Vice President, Maersk Line Ltd., "The Cold, Hard Realities of Arctic Shipping," *United States Naval Institute, Proceedings*; July 2013, pp. 38-41.

the Arctic, however, these surveys and charts are out of date or not sufficiently accurate.[284] To remedy this problem, aviation reconnaissance of ice conditions and satellite images would need to become readily available for ship operators.[285] Ship-to-shore communication infrastructure would need to be installed where possible. Refueling stations may be needed, as well as, perhaps, transshipment ports where cargo could be transferred to and from ice-capable vessels at both ends of Arctic routes. Shipping lines would need to develop a larger pool of mariners with ice navigation experience. Marine insurers would need to calculate the proper level of risk premium for polar routes, which would require more detailed information about Arctic accidents and incidents in the past.

The U.S. Army Corps of Engineers, along with the state of Alaska, has studied the feasibility of a "deep-draft" port in the Arctic (accommodating ships with a draft of about 35 feet). The northern and northwestern coastlines of Alaska are exceptionally shallow, generally limiting harbor and near-shore traffic to shallow-draft barges. Coast Guard cutters and icebreakers have drafts of 35 to 40 feet while NOAA research vessels have drafts of 16 to 28 feet, so at present these vessels are based outside the Arctic and must sail considerable distances to reach Arctic duty stations. Supply vessels supporting offshore oil rigs typically have drafts over 20 feet. A deep-draft port could serve as a base of operations for larger vessels, facilitating commercial maritime traffic in the Arctic. The study concluded that the existing harbors of Nome or Port Clarence on Alaska's west coast may be the most suitable for deepening because of their proximity to the Bering Strait and deeper water.[286] However, at a July 2016 hearing, the Coast Guard indicated its preferred strategy was to rely on mobile assets (vessels and aircraft) and seasonal bases of operation rather than pursue a permanent port in the Arctic.[287] Congress has provided funds for engineering and design of the Nome project.

The U.S. Committee on the Marine Transportation System, a Cabinet-level committee of federal agencies with responsibilities for marine transportation, identified a list of infrastructure improvements for Arctic navigation in a 2013 report.[288] The report prioritizes improvements to information infrastructure (weather forecasting, nautical charting, ship tracking) and emergency response capabilities for ships in distress.

Regulation of Arctic Shipping

Due to the international nature of the shipping industry, maritime trading nations have adopted international treaties that establish standards for ocean carriers in terms of safety, pollution prevention, and security. These standards are agreed upon by shipping nations through the International Maritime Organization (IMO), a United Nations agency that first met in 1959.[289]

[284] In July and August 2010, NOAA surveyed the Bering Straits area in order to update its charts but stated that it will take more than 25 years to map the prioritized areas of navigational significance in U.S. Arctic waters. See https://web.archive.org/web/20180605213143/http://www.noaanews.noaa.gov/stories2010/20100720_fairweather.html.

[285] Ice reporting that currently exists is intended for scientists not mariners.

[286] *Alaska Deep-Draft Arctic Port System Study*, March 2013; http://www.poa.usace.army.mil/Library/ReportsandStudies/AlaskaRegionalPortsStudy.aspx. The navigation channel at Nome presently ranges from 10 to 20 feet in depth. Much of the harbor at Port Clarence has a natural depth of 35 to 40 feet.

[287] Oral testimony of Admiral Charles D. Michel, Coast Guard Vice Commandant, House Committee on Transportation and Infrastructure, Subcommittee on Coast Guard and Maritime Transportation, *Coast Guard Arctic Implementation Capabilities*, July 12, 2016.

[288] U.S. Committee on the Marine Transportation System, *U.S. Arctic Marine Transportation System: Overview and Priorities for Action*, 2013.

[289] See http://www.imo.org/ for more information.

Key conventions that the 168 IMO member nations have adopted include the Safety of Life at Sea Convention (SOLAS), which was originally adopted in response to the *Titanic* disaster in 1912 but has since been revised several times; the Prevention of Pollution from Ships (MARPOL), which was adopted in 1973 and modified in 1978; and the Standards for Training, Certification, and Watchkeeping for Seafarers (SCTW), which was adopted in 1978 and amended in 1995 and 2010. It is up to ratifying nations to enforce these standards. The United States is a party to these conventions, and the U.S. Coast Guard enforces them when it boards and inspects ships and crews arriving at U.S. ports and the very few ships engaged in international trade that sail under the U.S. flag.

Like the United States, most of the other major maritime trading nations lack the ability to enforce these regulations as a "flag state" because much of the world's merchant fleet is registered under so-called "flags of convenience." While most ship owners and operators are headquartered in major economies, they often register their ships in Panama, Liberia, the Bahamas, the Marshall Islands, Malta, and Cyprus, among other "open registries," because these nations offer more attractive tax and employment regulatory regimes. Because of this development, most maritime trading nations enforce shipping regulations under a "port state control" regime—that is, they require compliance with these regulations as a condition of calling at their ports. The fragmented nature of ship ownership and operation can be a further hurdle to regulatory enforcement. It is common for cargo ships to be owned by one company, operated by a second company (which markets the ship's space), and managed by a third (which may supply the crew and other services a ship requires to sail), each of which could be headquartered in different countries.

Arctic Polar Code

While SOLAS and other IMO conventions include provisions regarding the operation of ships in ice-infested waters, they were not specific to the polar regions. To supplement these requirements, a new IMO polar code went into effect on January 1, 2017.[290] The code applies to passenger and cargo ships of 500 gross tons or more engaged in international voyages. It does not apply to fishing vessels, military vessels, pleasure yachts, or smaller cargo ships. The polar requirements are intended to improve safety and prevent pollution in the Arctic, and they include provisions on ship construction, ship equipment related to navigation, and crew training and ship operation. The code requires ships to carry fully or partially enclosed lifeboats. The code requires that the crew have training in ice navigation. Nations can enforce additional requirements on ships arriving at their ports or sailing through their coastal waters. For instance, U.S. Coast Guard regulations largely follow IMO conventions but mandate additional requirements in some areas. U.S. coastal states can require ships calling at their ports to take additional safety and pollution prevention safeguards.[291] Canada and Russia have additional pollution regulations for Arctic waters exceeding MARPOL. The U.S. Coast Guard has studied and has recommended a specific vessel traffic separation scheme for the Bering Strait between Alaska and Russia, which experiences over 400 transits per year, and which the IMO has approved.[292]

[290] https://www.imo.org/en/MediaCentre/HotTopics/Pages/Polar-default.aspx.

[291] For example, see Alaska State Legislature, HJR 19, Arctic Marine Safety Agreements; http://www.akleg.gov/basis/Bill/Detail/30?Root=HJR%2019.

[292] 82 *Federal Register* 11935, February 27, 2017.

Oil, Gas, and Mineral Exploration[293]

Lands and waters in the Arctic region—including U.S. lands and waters in and around Alaska—have attracted interest and presented challenges in terms of oil, gas, and mineral development. Decreases in ice extent in and around the Arctic Ocean may alter options for exploration in offshore and onshore areas across the region, for the United States and other countries. Efforts to map the margins of the U.S. outer continental shelf (OCS) and the continental shelves of other nations could impact oil, gas, and mineral exploration.

Offshore Oil and Gas Exploration

The shrinking Arctic ice cap, or conversely, the growing amount of ice-free ocean, has increased interest in exploring for offshore oil and gas in the region. Reduced sea ice means that ships towing seismic arrays can explore regions of the Arctic Ocean for longer periods of time with less risk of colliding with floating sea ice.[294] Less sea ice over longer periods compared to previous decades also means that the seasonal window for offshore Arctic drilling remains open longer, increasing the opportunities for making a discovery.

In addition to the improved access to larger portions of the Arctic afforded by shrinking sea ice, interest in Arctic oil and gas was fueled by a 2008 U.S. Geological Survey (USGS) appraisal of undiscovered oil and gas north of the Arctic Circle.[295] The USGS stated that the "extensive Arctic continental shelves may constitute the geographically largest unexplored prospective area for petroleum remaining on Earth."[296] In the report, the USGS estimated that 90 billion barrels of oil, nearly 1,700 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids may remain to be discovered in the Arctic (including both U.S. and international resources north of the Arctic Circle).[297] The U.S. Energy Information Administration stated in 2012 that this would constitute approximately 13% of the world's undiscovered conventional oil resources and 30% of natural gas.[298] In terms of U.S. resources specifically, DOI's Bureau of Ocean Energy Management (BOEM) estimated in 2021 that the Alaska portions of the U.S. OCS contain undiscovered, technically recoverable resources of approximately 25 billion barrels of oil and 124 trillion cubic feet of natural gas (although not all of these resources may be economically viable to recover).[299]

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[293] This section was prepared by Laura Comay, Specialist in Natural Resources Policy, Resources, Science, and Industry Division; Emma Kaboli, Analyst in Energy Policy, Resources, Science, and Industry Division; Caitlin Keating-Bitonti, Analyst in Natural Resources Policy, Resources, Science, and Industry Division; and Lexie Ryan, Analyst in Energy Policy, Resources, Science, and Industry Division.

[294] A seismic array is typically a long string or streamer of geophones—acoustic devices used for recording seismic signals—towed behind a ship while the ship traverses a prospective oil and gas-bearing portion of the seafloor. The seismic signals are processed and interpreted to give a cross-section or three-dimensional image of the subsurface.

[295] See USGS Fact Sheet 2008-3049, *Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle*, http://pubs.usgs.gov/fs/2008/3049/, hereinafter referred to as "USGS 2008 Fact Sheet."

[296] USGS 2008 Fact Sheet.

[297] USGS 2008 Fact Sheet, p. 1.

[298] U.S. Energy Information Administration, "Today in Energy: Arctic Oil and Natural Gas Resources," January 20, 2012, http://www.eia.gov/todayinenergy/detail.cfm?id=4650.

[299] Bureau of Ocean Energy Management (BOEM), "Assessment of Undiscovered Technically Recoverable Oil and Gas Resources of the Nation's Outer Continental Shelf, 2021," at https://www.boem.gov/sites/default/files/documents/oil-gas-energy/resource-evaluation/2021_National_Assessment_Map_BTU.pdf. BOEM defines *technically recoverable resources* as "oil and gas that could be produced as a consequence of natural pressure, artificial lift, pressure maintenance, or other secondary recovery methods, but without any consideration of economic viability" (BOEM, (continued...)

Despite the warming trend in the Arctic, severe weather and sea ice continue to pose challenges to exploration. In addition, any discovery of new oil and gas deposits far from existing storage, pipelines, and shipping facilities could not be developed until infrastructure is built to extract and transport the petroleum.

Offshore of Alaska, the U.S. OCS covers more than 1 billion acres,[300] including some areas with high oil, gas, and mineral potential. Some have expressed interest in expanding America's oil and gas portfolio in the Alaska OCS. Currently, 2 of the 15 federal planning areas in BOEM's Alaska region—the Beaufort Sea and Cook Inlet—contain active federal leases, and only the Beaufort Sea has producing wells (from a joint federal-state unit).[301] In December 2023, the Secretary of the Interior approved an offshore oil and gas leasing program for 2024-2029 that contains no lease sales in the Alaska region.[302] Under the Trump Administration, BOEM had issued a draft five-year offshore oil and gas leasing program that would have scheduled lease sales in all 15 Alaska planning areas, including three sales in the Beaufort Sea and three in the Chukchi Sea, both of which lie within the ARPA-defined Arctic boundary.[303] The draft program did not advance further in the Trump Administration.

Offshore oil and gas activities in the region have fluctuated as industry weighs changing oil prices, development costs, and regulations. BOEM reported that, between February and November 2016, companies relinquished more than 90% of leases they had held in the Beaufort and Chukchi Sea planning areas, in the midst of a slump in oil prices.[304] While there were 450 active leases in the Chukchi Sea planning area at the end of 2015, as of January 2024 there were none.[305] In the Beaufort Sea, active leases dropped from 77 at the end of 2015 to 6 in January 2024.[306] Despite these changes, recent discoveries onshore and in state waters on Alaska's North Slope have contributed to ongoing interest in the region.

"Assessment of Undiscovered Oil and Gas Resources of the Nation's Outer Continental Shelf, 2021," at https://www.boem.gov/sites/default/files/documents/oil-gas-energy/resource-evaluation/2021%20Fact%20Sheet.pdf).

[300] This region includes some areas within the Arctic boundary as defined by the ARPA (15 U.S.C. 4111; see **Figure 1**), such as the Beaufort and Chukchi Seas, and some areas outside that boundary, such as Cook Inlet.

[301] BOEM, "BP Exploration (Alaska) (BPXA)—Northstar," at http://www.boem.gov/About-BOEM/BOEM-Regions/Alaska-Region/Leasing-and-Plans/Plans/BP-North-Star.aspx. There also are additional (nonfederal) leases in Alaska state waters; see Alaska Department of Natural Resources, Division of Oil and Gas, "Acreage by Lessee—Summary," January 4, 2024, https://dog.dnr.alaska.gov/Documents/Leasing/PeriodicReports/Lease_AcreageByLesseeSummary.pdf.

[302] BOEM, *2024-2029 National Outer Continental Shelf Oil and Leasing: Proposed Final Program*, September 2023 (approved in December 2023), https://www.boem.gov/sites/default/files/documents/oil-gas-energy/leasing/2024-2029_NationalOCSProgram_PFP_Sept_2023_Compliant.pdf. An earlier draft of the program had narrowed potential leasing in the Alaska region to the Cook Inlet planning area, which lies outside the Arctic boundary as defined by the ARPA. The final program did not include any lease sales in this area, based on "limited expressed interest of potential oil and gas producers, the lack of development on existing OCS leases, and the potential for higher environmental risks associated with new leasing in relatively undeveloped areas" (p. 7). The final program schedules leasing for the 2024-2029 period only in the Gulf of Mexico.

[303] BOEM, *2019-2024 Outer Continental Shelf Oil and Gas Leasing Draft Proposed Program*, January 2018, at https://www.boem.gov/NP-Draft-Proposed-Program-2019-2024/. The draft program also included other Alaska region planning areas in addition to the Beaufort and Chukchi Seas and Cook Inlet, although industry interest in these other areas may be lower, as many are thought to have relatively low or negligible petroleum potential.

[304] BOEM, *2017-2022 Outer Continental Shelf Oil and Gas Leasing: Proposed Final Program*, November 2016, p. S-3, https://www.boem.gov/sites/default/files/oil-and-gas-energy-program/Leasing/Five-Year-Program/2017-2022/2017-2022-OCS-Oil-and-Gas-Leasing-PFP.pdf.

[305] For 2015 data, see BOEM, "Combined Leasing Report, as of January 1, 2016," at https://www.boem.gov/Combined-Leasing-Reports-2016/. For January 2024 data, see BOEM, "Combined Leasing Report, as of January 1, 2024," at https://www.boem.gov/sites/default/files/documents/oil-gas-energy/leasing/Lease%20stats%201-1-24.pdf.

[306] Ibid.

The evolving federal regulatory environment for Arctic offshore activities has been shaped by concerns about industry's ability to respond to potential oil spills, given the region's remoteness and harsh conditions. The section of this report on "Oil Pollution Implications of Arctic Change" discusses this issue in greater detail. In 2016, BOEM and the Bureau of Safety and Environmental Enforcement (BSEE) released final safety regulations for Arctic exploratory drilling that include multiple requirements for companies to reduce the risks of potential oil spills—for example, the requirement that companies have a separate rig available at drill sites to drill a relief well in case of a loss of well control.[307]

Under authority provided in the Outer Continental Shelf Lands Act, U.S. Presidents have withdrawn from leasing consideration certain Arctic Ocean areas deemed especially sensitive to the impacts of oil and gas activities.[308] For example, leasing is prohibited in the Bristol Bay area of the North Aleutian Basin.[309] In January 2021, President Biden indefinitely withdrew from leasing other large portions of the U.S. Arctic—including the entire Chukchi Sea planning area and almost all of the Beaufort Sea planning area—reinstating a withdrawal originally instituted by President Obama.[310]

Offshore Mineral Exploration

Seabed mineral deposits can form in seafloor environments within a country's OCS and in areas beyond national jurisdiction in the deep sea. Volcanic activity at ocean ridges often increases the concentration of dissolved metals in the surrounding seawater. In these areas, minerals can precipitate from the seawater onto the seabed, forming mineral deposits. Polymetallic sulfide, or seafloor massive sulfide deposits commonly form at active and inactive hydrothermal vents along ocean ridges, and commonly contain copper, gold, zinc, lead, barium, and silver.[311] Ferromanganese crusts and nodules have been observed on the Arctic seabed.[312]

[307] Department of the Interior, "Requirements for Exploratory Drilling on the Arctic Outer Continental Shelf," 81 *Federal Register* 46477, July 15, 2016. In December 2020, the Trump Administration published a proposed revision to the rule (85 *Federal Register* 79266), but in June 2021 the Biden Administration withdrew the proposed revision.

[308] Section 12(a) of the Outer Continental Shelf Lands Act (43 U.S.C. §1341(a)) authorizes the President to, "from time to time, withdraw from disposition any of the unleased lands of the outer Continental Shelf."

[309] Presidential Memorandum, "Withdrawal of Certain Portions of the United States Arctic Outer Continental Shelf from Mineral Leasing," December 20, 2016, https://www.whitehouse.gov/the-press-office/2016/12/20/presidential-memorandum-withdrawal-certain-portions-united-states-arctic; hereinafter cited as "Presidential Memorandum of December 20, 2016."

[310] Executive Order 13990, Section 4(b), January 25, 2021. President Obama had withdrawn multiple parts of the Alaska OCS from leasing consideration (Executive Order 13754, December 9, 2016; and Presidential Memorandum of December 20, 2016). In April 2017, President Trump's Executive Order 13795 modified President Obama's withdrawals so as to open all the withdrawn areas for leasing consideration except for the North Aleutian Basin. However, in a March 2019 court decision (League of Conservation Voters v. Trump, 363 F.Supp.3d 1013 (D.Alaska 2019)), the U.S. District Court for the District of Alaska vacated this provision in President Trump's executive order. Additionally, in January 2021, President Biden's Executive Order 13990 reinstated President Obama's Arctic withdrawals in their original form.

[311] International Seabed Authority (ISA), "Minerals: Polymetallic Sulphides," at https://www.isa.org.jm/index.php/exploration-contracts/polymetallic-sulphides; International Energy Agency, "The Role of Critical Minerals in Clean Energy Transition" (2022), p. 156, https://iea.blob.core.windows.net/assets/ffd2a83b-8c30-4e9d-980a-52b6d9a86fdc/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf; and Kathryn Miller et al., "An Overview of Seabed Mining Including the Current State of Development, Environmental Impacts, and Knowledge Gaps," *Frontiers in Marine Science*, vol. 4 (2018).

[312] James Hein et al., "Arctic Deep Water Ferromanganese-Oxide Deposits Reflect the Unique Characteristics of the Arctic Ocean," *Geochemistry, Geophysics, Geosystems*, vol. 18, (2017) pp. 3771-3800.

Non-hydrocarbon mineral deposits in waters surrounding Alaska can be divided into three general categories: deposits in shallow, coastal waters, which are generally under state mining jurisdiction; deposits in federal waters in the OCS, which are generally deeper waters and are under federal jurisdiction; and deposits in areas beyond national jurisdiction, which would be regulated by an international organization established by UNCLOS. Mining in the coastal waters surrounding Alaska is relatively common; examples include various ongoing gold mining operations in Nome and in the Norton Sound, and a barite mine on Castle Island that operated from 1966 until 1980.[313]

Interest in identifying potential mineral deposits in Alaska's OCS, including in waters inside the Arctic region, has been increasing. Two potential drivers for this interest include growing demand for some minerals, and decreasing sea ice, which could lower exploration and exploitation costs. In an assessment of available geologic information, the USGS stressed caution in drawing conclusions from prior exploration efforts, noting that characterization of regions as

> prospective for deep-ocean minerals in the Alaska OCS, where "prospective" indicates that a region is consistent with the geologic and oceanographic criteria required to potentially host marine minerals, ... does not mean that a region hosts marine minerals and does not indicate that the marine minerals occurring in that region will be economically viable. Sparse geologic sampling limits knowledge of marine minerals in the Alaska region, especially in deep water regions.[314]

BOEM, the federal agency authorized to oversee mineral leasing in the OCS, does not indicate that any entity has requested a mineral lease in Alaska's OCS waters.[315] According to BOEM, hydrothermal vents offshore the western Alaskan Aleutian Islands may be a potential target for certain marine minerals.[316] Some Members of Congress have opposed deep-seabed mining, both on the U.S. OCS and in areas beyond national jurisdiction,[317] while other Members have proposed legislation that would direct certain federal departments to support polymetallic nodule collection by allied partners as a strategy to provide alternative sources of minerals needed for U.S. industry.[318]

Norway is the first Arctic coastal state to make a decision to advance deep-seabed mining in the Arctic. In 2008, Norwegian geologists discovered a hydrothermal vent system along the Arctic Mid-Ocean Ridge, known as Loki's Castle, located in Norway's EEZ.[319] Massive sulfide deposits have developed around the venting system.[320] On January 9, 2024, Norway's Parliament voted in favor of allowing commercial-scale deep-seabed mining exploration, and potential exploitation, within the country's EEZ, between Jan Mayen Island and the Svalbard archipelago.[321] Shortly

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[313] Amy Gartman, Kira Mizell, and Douglas C. Kreiner, *Marine Minerals in Alaska—A Review of Coastal and Deep-Ocean Regions*, U.S. Geological Survey (USGS), Professional Paper 1870, 2022, p. 4, https://doi.org/10.3133/pp1870 (hereinafter referred to as Gartman et al., *Marine Minerals in Alaska*); and USGS, "Castle Island," at https://mrdata.usgs.gov/ardf/show-ardf.php?ardf_num=PE026.

[314] Gartman et al., *Marine Minerals in Alaska*, pp. 4-5.

[315] BOEM, "Requests and Active Leases," at https://www.boem.gov/marine-minerals/requests-and-active-leases.

[316] Zoom briefing between CRS and BOEM Marine Mineral Program, March 7, 2024.

[317] See in the 118th Cong. H.R. 4537 and H.R. 4536.

[318] See in the 118th Cong. H.R. 7636.

[319] Rolf B. Pedersen et al., "Discovery of a Black Smoker Vent Field and Vent Fauna at the Arctic Mid-Ocean Ridge," *Nature Communications*, vol. 1, no. 126 (2010).

[320] Ibid.

[321] Norway's proposed area for seabed mining contains an estimated 280,000 square kilometers (82,000 square nautical miles). Victoria Klesty, "Norway Parliament Votes in Favour of Seabed Mining, as Expected," *Reuters*, January 9, (continued...)

thereafter, the European Parliament passed a resolution expressing its concerns about Norway's decision.[322] Citing the potential ecological damage of seabed mining, the European Parliament has supported an international moratorium on deep-seabed mining.[323]

In areas beyond national jurisdiction in the Arctic Ocean, the International Seabed Authority (ISA), an organization established under UNCLOS, has the authority to issue seabed mining exploration and exploitation contracts to companies sponsored by countries party to UNCLOS.[324] Exploration and commercial recovery of seabed minerals occurring in areas beyond national jurisdiction in the Arctic would not be limited to Arctic countries. As of February 2024, the ISA had issued no contracts for seabed mining activities in the Arctic Ocean.[325]

In the Arctic Ocean, USGS scientists have identified high concentrations of critical minerals in seafloor deposits sampled more than 300 nautical miles north of Alaska.[326] These USGS-identified resources fall beyond current U.S. jurisdiction. In general, a coastal country's sovereign rights over natural resources of the seafloor, subsoil, and overlying water column extends 200 nautical miles seaward of its coastline.[327] However, Arctic coastal nations, including the United States, have pursued ocean mapping efforts to extend the outer limits of their continental shelves in the Arctic Ocean in accordance with UNCLOS (see "Extent of the Continental Margin," below).

Extent of the Continental Margin[328]

A strategic objective of the 2022 *National Strategy for the Arctic Region* is for the United States to "delineate the outer limits of the U.S. continental shelf in accordance with international law."[329] This area of the continental shelf, beyond the limits of the 200-nautical-mile EEZ, is known as the *extended continental shelf* (ECS).[330] A coastal nation with an established ECS can exercise sovereign rights over the natural resources of the seabed and subsoil in this area, but not the overlying water column. Since 2003, the U.S. Department of State, the NOAA, and USGS have

2024, https://www.reuters.com/business/environment/norway-parliament-votes-favour-seabed-mining-expected-2024-01-09/.

[322] European Parliament, "Motion for a Resolution on Norway's Recent Decision to Advance Seabed Mining in the Arctic," 2024/2520(RSP), January 31, 2024, https://www.europarl.europa.eu/doceo/document/B-9-2024-0095_EN.html.

[323] The official stance of the European Parliament is not strictly representative of the positions taken by all European Union members. European Parliament, "European Parliament resolution of 3 May 2022 Toward a Sustainable Blue Economy in the EU: The Role of the Fisheries and Aquaculture Sectors," 2021/2188(INI), May 3, 2022, https://www.europarl.europa.eu/doceo/document/TA-9-2022-0135_EN.html.

[324] UNCLOS, Article 156. For more information on the International Seabed Authority, see CRS Report R47324, *Seabed Mining in Areas Beyond National Jurisdiction: Issues for Congress*, by Caitlin Keating-Bitonti.

[325] ISA, "Exploration Contracts," at https://www.isa.org.jm/exploration-contracts.

[326] USGS, "Delineating the U.S. Extended Continental Shelf," September 23, 2022, https://www.usgs.gov/programs/cmhrp/science/delineating-us-extended-continental-shelf; and USGA, "Critical Minerals in the EEZ," June 5, 2020, https://www.usgs.gov/news/featured-story/critical-minerals-eez.

[327] UNCLOS, Articles 56 and 77.

[328] The *continental margin* comprises the submerged prolongation of the land mass of the coastal country and consists of the seabed and subsoil of the continental shelf, the slope, and the rise (UNCLOS, Article 76(3)). The *continental shelf* of a coastal country comprises the seabed and the subsoil of the submarine areas that extend beyond its territorial sea (the area 12 nautical miles seaward of the coastline) throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles (UNCLOS, Article 76(1)).

[329] See Strategic Objective 4.2 in White House, *National Strategy for the Arctic Region*, October 2022, p. 14.

[330] For more information on the U.S. extended continental shelf, see CRS Report R47912, *Outer Limits of the U.S. Extended Continental Shelf: Background and Issues for Congress*, by Caitlin Keating-Bitonti.

worked together to collect geological and geophysical data required to map potential U.S. ECS areas through the U.S. Extended Continental Shelf Project, a federal initiative with the aim to delineate the full extent of the U.S. ECS.[331]

On December 19, 2023, the U.S. Department of State announced the outer limits of the U.S. ECS (**Figure 7**).[332] The declared total U.S. ECS would be approximately 288,000 square nautical miles (987,700 square kilometers),[333] roughly 8% of the seafloor area beneath the U.S. EEZ.[334] The U.S. Extended Continental Shelf Project identified 151,700 square nautical miles (520,400 square kilometers) of the U.S. ECS in the Arctic that the United States claims to be a prolongation of the land mass of Alaska.[335] The U.S. ECS in the Arctic represents 53% of the total U.S. ECS. Much of the data to delineate the ECS in the Arctic Ocean for the United States and Canada was collected in a two-ship operation involving the U.S. Coast Guard Cutter *Healy* and the Canadian Coast Guard ship *Louis S. Saint Laurent*.[336]

According to the U.S. Department of State, upon U.S. accession to UNCLOS, the United States will be ready to file its submission package with the Commission on the Limits of the Continental Shelf (CLCS), an independent entity created under UNCLOS that consists of 21 experts in geology, geophysics, or hydrography.[337] Under Article 76 of UNCLOS, a coastal country can file a submission to the CLCS concerning the extent of its continental shelf.[338] In addition, the provisions set forth under Article 76 describe the geological and geophysical characteristics of the seabed and subsoil that are used to delineate the outer limits of the ECS.[339] The CLCS does not approve or grant an ECS to coastal countries but makes recommendations to countries on the location of their ECS limits based on the scientific evidence they submit. The limits of the ECS established by a coastal country on the basis of the CLCS recommendations are "final and binding."[340]

[331] U.S. Department of State, "U.S. Extended Continental Shelf Project: About the U.S. ECS Project," https://www.state.gov/about-the-us-ecs-project/.

[332] U.S. Department of State, "Announcement of U.S. Extended Continental Shelf Outer Limits: Fact Sheet," December 19, 2023, https://www.state.gov/announcement-of-u-s-extended-continental-shelf-outer-limits-2/.

[333] U.S. Department of State, *U.S. ECS Executive Summary*, p. 9.

[334] The U.S. exclusive economic zone (EEZ) contains 3.4 million square nautical miles. NOAA, "The United States Is an Ocean Nation," https://www.gc.noaa.gov/documents/2011/012711_gcil_maritime_eez_map.pdf.

[335] U.S. Department of State, *U.S. ECS Executive Summary*, pp. 9 and 15.

[336] U.S. Department of State, "U.S. Extended Continental Shelf Project: Data Collection," https://www.state.gov/data-collection-us-ecs-project/.

[337] U.S. Department of State, *U.S. ECS Executive Summary*, p. 6. The 21 members of the Commission on the Limits of the Continental Shelf (CLCS) serve in a personal capacity. For a list of members and their nationalities, see United Nations, "Commission on the Limits of the Continental Shelf (CLCS): Members of the Commissions," https://www.un.org/depts/los/clcs_new/commission_members.htm.

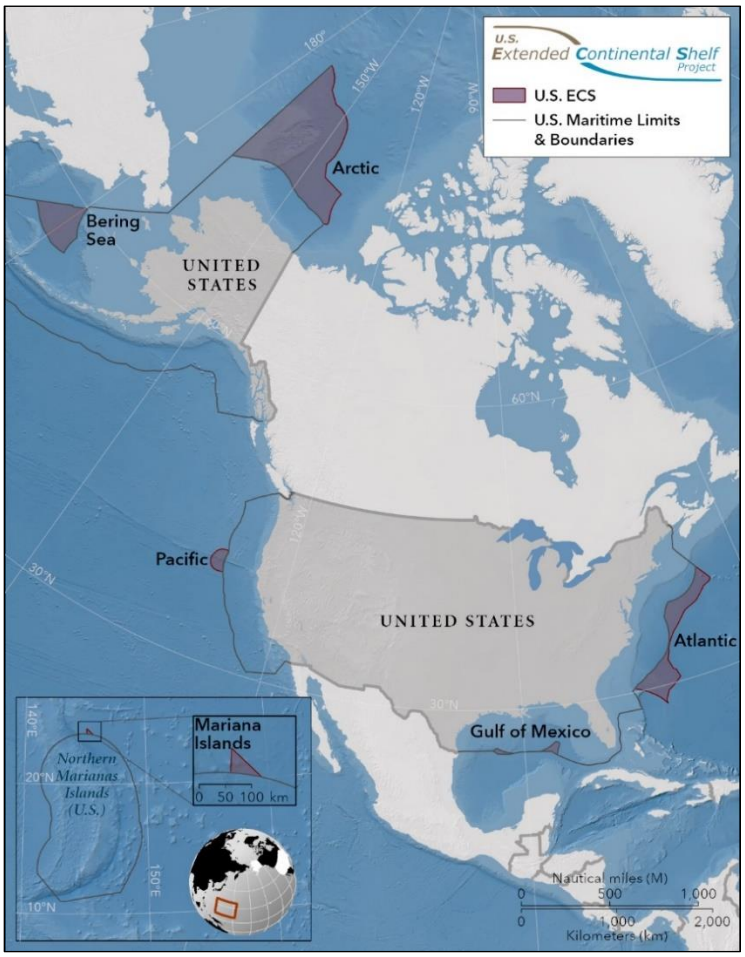
[338] UNCLOS, Article 76, paragraph 8. Annex II of UNCLOS addresses the CLCS.

[339] UNCLOS, Article 76, paragraphs 4 and 5 contain two formulas and two constraint lines that can be applied in any combination to determine the outer limits of the ECS. For more information, see CRS Report R47324, *Seabed Mining in Areas Beyond National Jurisdiction: Issues for Congress*, by Caitlin Keating-Bitonti, and U.S. Department of State, "U.S. Extended Continental Shelf Project: Data Collection," at https://www.state.gov/data-collection-us-ecs-project/.

[340] UNCLOS, Article 76, paragraph 8.

Figure 7. Seven Regions of the U.S. Extended Continental Shelf

(As determined by the U.S. Extended Continental Shelf Project)



Source: U.S. Department of State, "The U.S. ECS," December 19, 2023, https://www.state.gov/the-us-ecs/.

Notes: Areas of the U.S. extended continental shelf (ECS) identified by the U.S. Extended Continental Shelf Project, a federal initiative that aims to establish the full extent of the U.S. ECS according to international law (i.e., in alignment with Article 76 of the United Nations Convention on the Law of the Sea). Red lines represent the outer limits of the U.S. ECS, and red shaded areas delineate the U.S. ECS beyond the 200 nautical mile limit of the continental shelf (thin dark lines), representing 288,000 square nautical miles (987,700 square kilometers). Portions of the U.S. ECS are bounded by previously established maritime boundaries with neighboring countries (i.e., Cuba, Mexico, and Russia). Other portions may overlap with ECS areas of other neighboring countries (i.e., the Bahamas, Canada, and Japan).

The U.S. Department of State also said the United States is open to filing its submission to the CLCS as a nonparty to UNCLOS.[341] It remains unclear if the CLCS would consider a U.S. submission in these circumstances.[342] Further, it remains unclear how the international community would respond to such a U.S. submission. One source reports objections from Russia, with a member of the Russian Federation Council quoted as saying, "The Americans act without any international legal basis at all, which means the international community has every right not

[341] U.S. Department of State, *U.S. ECS Executive Summary*, p. 6.

[342] For example, see James Kraska, "Strategic Implication of the U.S. Extended Continental Shelf," Wilson Center, December 19, 2023, https://www.wilsoncenter.org/article/strategic-implication-us-extended-continental-shelf.

to recognize new borders."[343] A second source quoted a lawmaker who heads the Russian parliament's Arctic committee as stating, "The unilateral expansion of boarders in the Arctic is unacceptable and can only lead to increased tensions," in reference to the U.S. ECS announcement.[344] According to the U.S. Department of State, "The United States has been, is, and will be engaged in consultations and negotiations with governments of neighboring countries concerning the delimitation of areas subject to the respective jurisdiction of the United States and of these countries."[345]

In the Arctic Ocean, portions of the U.S. ECS are bounded by Canada to the east and Russia to the west.[346] The United States and Canada do not have a maritime boundary agreement in the Arctic. However, according to the U.S. Department of State, "Canada has advised the United States that it would not object to the consideration of a U.S. submission by the [CLCS], without prejudice both to the delineation of the outer limits of its own continental shelf and to the matters relating to the delimitation of boundaries in this region between the United States and Canada."[347] In 1990, Russia (then the Soviet Union) and the United States agreed to a maritime boundary to address overlapping maritime zones in the Arctic (i.e., EEZ and ECS).[348] To date, Russia has not asserted ECS claims in any areas that might be considered part of the U.S. ECS. Disputes over maritime boundaries, including those with overlapping ECS, must be resolved between the countries involved in the disagreement. The CLCS has no mandate to establish boundaries or resolve disputes and cannot prejudice the resolution of boundary disputes.

Other Arctic coastal countries have collected geological and geophysical data to delineate the outer limits of their ECSs in the region. All Arctic coastal countries except for the United States, which is a nonparty to UNCLOS, have filed submissions to the CLCS for an ECS in the Arctic.[349] Some experts contend that given the long queue of countries waiting for the CLCS to issue recommendations, the delineation of ECS areas in the Arctic could likely take a decade or more.[350] The CLCS provided its first favorable recommendations to Norway in 2009, just over

[343] James Brooke, "Echoing Trump's Offer to Buy Greenland, America Quietly Doubles Its Claim to Arctic Seabed," *New York Sun*, January 4, 2024, https://www.nysun.com/article/echoing-trumps-offer-to-buy-greenland-america-quietly-doubles-its-claim-to-arctic-seabed.

[344] Mike Eckel et al., "Under Sea, Under Stone: How the U.S. Claimed Vast New Arctic Territory–In An Unusual Way," *Radio Free Europe/Radio Liberty*, January, 26, 2024, https://www.rferl.org/a/arctic-sea-claims-interactive-map/32793427.html.

[345] U.S. Department of State, "Continental Shelf and Maritime Boundaries; Notice of Limits," 88 *Federal Register* 88470, December 21, 2023.

[346] U.S. Department of State, *U.S. ECS Executive Summary*, p. 15.

[347] Ibid., p. 19, and Canadian Broadcasting Corporation, "Canada Pledges to Work with U.S. Over Competing Claims to Arctic Sea Floor," January 3, 2024, https://www.cbc.ca/news/canada/north/canada-work-with-us-artic-sea-floor-claims-1.7073547.

[348] The Senate gave advice and consent to ratify the maritime boundary agreement in 1991 (U.S. Congress, Senate, *The Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Maritime Boundary, with Annex, Signed at Washington, June 1, 1990*, 101st Cong., 2nd sess., September 26, 1990, Treaty Doc. 101-22). The Russian Duma has not approved the maritime boundary agreement. Both countries appear to continue to provisionally apply the boundary agreement. See Lawfare, "An Off-the-Shelf Guide to Extended Continental Shelves and the Arctic," April 21, 2021, https://www.lawfaremedia.org/article/shelf-guide-extended-continental-shelves-and-arctic.

[349] United Nations, Division for Ocean Affairs and the Law of the Sea, "Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982," updated October 30, 2023, https://www.un.org/Depts/los/clcs_new/commission_submissions.htm (hereinafter referred to as United Nations, "Submissions to the CLCS").

[350] For example, Andrey Todorov, "Russia's Arctic Shelf Bid and the Commission on the Limits of the Continental (continued...)

two years after Norway filed its submission for an ECS in the Arctic.[351] Iceland, though not an Arctic coastal country, filed a submission regarding an ECS in the vicinity of the Arctic Circle in 2009 and received a favorable recommendation from the CLCS in 2016.[352] Denmark filed two submissions in 2013 and 2014, and in 2019, Canada filed a submission to the CLCS.[353] Canada's submission includes potentially overlapping areas with the United States' continental shelf in the Arctic Ocean. Through regular consultations, the United States does not object to the consideration of Canada's submission on the Arctic Ocean.[354] As of February 2024, Denmark and Canada are still waiting for their respective Arctic submissions to be considered by the CLCS.

Russia was the first country to file a submission for an ECS with the CLCS in 2001.[355] Russia's initial submission to the CLCS included the Lomonosov Ridge and demonstrated its bid to extend political activities and potentially establish security infrastructure in Arctic regions.[356] The CLCS found the Russian Federation's 2001 submission to have insufficient scientific evidence.[357] In 2015, the Russian Federation presented to the CLCS a revised submission that included not only the Lomonosov Ridge but also the Mendeleev Rise and the Podvodnikov Basin.[358] In late March 2021, the Russian Federation submitted two addenda to its 2015 revised submission, presenting evidence for the Gakkel Ridge and the Nansen and Amundsen Basins to be components of the extended Russian continental shelf.[359] The United States communicated no objections to the CLCS regarding Russia's 2015 revised submission and 2021 addenda.[360] On February 6, 2023,

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Shelf, Explained," March 2, 2023, https://sites.tufts.edu/fletcherrussia/russias-arctic-shelf-bid-and-the-commission-on-the-limits-of-the-continental-shelf-explained/; and Bjørn Kunoy, "Recommendations on the Russian Federation's Proposed Outer Continental Shelf in the Arctic Area," *EJIL:Talk!*, March 3, 2023, https://www.ejiltalk.org/recommendations-on-the-russian-federations-proposed-outer-continental-shelf-in-the-arctic-area/.

[351] Commission on the Limits of the Continental Shelf (CLCS), *Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the Progress of Work in the Commission*, CLCS/62, New York, March 2-April 9, 2009, https://documents.un.org/doc/undoc/gen/n09/307/58/pdf/n0930758.pdf?token=yeIjuddPE4866Nk46N&fe=true.

[352] CLCS, *Progress of Work in the Commission on the Limits of the Continental Shelf*, CLCS/93, New York, February 1-March 18, 2016, https://documents.un.org/doc/undoc/gen/n16/108/88/pdf/n1610888.pdf?token=1XBBE2RKE504FJewpD&fe=true.

[353] See United Nations, "Submissions to the CLCS."

[354] See United States Mission to the United Nations, "Receipt of the Partial Submission Made by Canada to the Commission on the Limits of the Continental Shelf," August 28, 2019, https://www.un.org/depts/los/clcs_new/submissions_files/can1_84_2019/2019_08_28_USA_NV_UN_001.pdf.

[355] United Nations, "Commission on Limits of Continental Shelf Receives its First Submission," press release, SEA/1729, December 21, 2001, https://press.un.org/en/2001/sea1729.doc.htm.

[356] CLCS, "Submission to the Commission: Submission by the Russia Federation," updated on June 30, 2009, https://www.un.org/depts/los/clcs_new/submissions_files/submission_rus.htm.

[357] Several other nations objected to Russia's submission due to a lack of scientific evidence. Ibid.

[358] CLCS, *Partial Revised Submission of the Russian Federation to the Commission on the Limits of the Continental Shelf in Respect of the Continental Shelf of the Russian Federation in the Arctic Ocean*, 2015, http://www.un.org/Depts/los/clcs_new/submissions_files/rus01_rev15/2015_08_03_Exec_Summary_English.pdf.

[359] CLCS, *Addendum to the Partial Revised Submission of the Russian Federation to the Commission on the Limits of the Continental Shelf in the Area of the Gakkel Ridge, Nansen and Amundsen Basins*, Executive Summary, 2021, https://www.un.org/depts/los/clcs_new/submissions_files/rus01_rev15/Addendum_1_2021_Executive_Summary_Gakkel_Ridge_English.pdf.

[360] U.S. Mission to the United Nations, "Receipt of the Partial Revised Submission made by the Russian Federation to the Commission on the Limits of the Continental Shelf," October 30, 2015, https://www.un.org/depts/los/clcs_new/submissions_files/rus01_rev15/2015_11_02_US_NV_RUS_001_en.pdf; and CLCS, *Recommendations of the Commission on the Limits of the Continental Shelf in Regard to the Partial Revision Submission Made by the Russian Federation in Respect of the Arctic Ocean on 3 August 2015 with Addenda Submitted on 31 March 2021*, approved by the Commission, with amendments, on February 6, 2023, p. 4,
(continued...)

the CLCS issued favorable recommendations to Russia regarding its submission related to the Mendeleev Rise, Podvodnikov Basin, Lomonosov Ridge, and surrounding areas.[361] Russia accepted these recommendations. The CLCS, however, rejected Russia's submission related to the Gakkel Ridge due to insufficient documentation of morphological continuity with the Russian continental shelf.[362] Russia has since submitted additional evidence for the Gakkel Ridge.[363] As of February 2024, the CLCS has not provided a follow up recommendation for the Gakkel Ridge. In total, Russia's ECS submission would capture approximately 70% of the Arctic Ocean beyond its EEZ.[364]

The delineation of ECSs in the Arctic Ocean could signal to non-Arctic states (e.g., China)[365] that existing and potential Arctic resources are under the legal jurisdiction of the five Arctic coastal nations.[366] Because an ECS falls under national jurisdiction, the management, exploration, and exploitation of natural resources (e.g., minerals) on the ECS seafloor would be subject to domestic regulations. An established ECS would prohibit countries from pursuing exploration or exploitation contracts through the ISA for areas located within another country's ECS.

Onshore Energy and Mineral Development

Alaska generally, including some areas within the Arctic region, is known to contain economically viable onshore deposits of oil, gas, and minerals. A warming Arctic means new opportunities and challenges for energy and mineral exploration and development onshore. Longer summers could extend exploration seasons for areas that are only accessible for ground surveys during the warmer months. Such impacts could be felt on existing energy developments, including the Willow Project and producing oil and gas fields,[367] and on existing mineral operations in the Arctic, producing gold, silver, zinc, lead, and construction aggregates.[368] In addition to existing mineral operations, development of resources of critical minerals for growing technology sectors such as lithium, cobalt, rare earth elements, and graphite may provide a new source of the key materials needed for energy and technology advances. Prospective exploration and development, including potential future energy developments on the 1.6-million-acre Coastal

https://www.un.org/depts/los/clcs_new/submissions_files/rus01_rev15/2023RusRev1RecSum.pdf (hereinafter referred to as CLCS, *Recommendations to the Russian Federation in Respect to the Arctic Ocean*, February 6, 2023).

[361] CLCS, *Recommendations to the Russian Federation in Respect to the Arctic Ocean*, February 6, 2023, pp. i-63.

[362] Ibid., p. 24.

[363] United Nations, "Submissions to the CLCS."

[364] Martin Breum, "Russia Extends Its Claim to the Arctic Ocean Seabed," *ArcticToday*, April 4, 2021, https://www.arctictoday.com/russia-extends-its-claim-to-the-arctic-ocean-seabed/?wallit_nosession=1.

[365] In 2018, China released its national Arctic policy. In the national Arctic policy, China stated, "China is an important stakeholder in Arctic affairs" and declared China a "near-Arctic State." The People's Republic of China, *China's Arctic Policy*, January 2018, https://english.www.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm. In recent years, China's polar icebreakers have collected geological and geophysical data in the Arctic Ocean, and China has invested in several infrastructure projects in the region (e.g., RAND Cooperation, "What Does China's Arctic Presence Mean to the United States?," December 29, 2022, https://www.rand.org/pubs/articles/2022/what-does-chinas-arctic-presence-mean-to-the-us.html; and *Modern Diplomacy*, "U.S. Military May Not Be Ready for Arctic Competition," December 28, 2023, https://moderndiplomacy.eu/2023/12/28/u-s-military-may-not-be-ready-for-arctic-competition/).

[366] For example, Abbie Tingstad, "The US Is Taking an Important, but Imperfect Step in Initiating Extended Continental Shelf Claims – What Are the Implications for the Arctic?," Wilson Center, December 19, 2023, https://www.wilsoncenter.org/article/us-taking-important-imperfect-step-initiating-extended-continental-shelf-claims-what-are.

[367] CRS Legal Sidebar LSB10943, *The Willow Project: History and Litigation*, by Adam Vann.

[368] USGS Survey, *Mineral Commodity Summaries 2022*, 2022, pp. 10-16, https://doi.org/10.3133/mcs2022.

Plain of the Arctic National Wildlife Refuge (ANWR)[369] and the central North Slope in the National Petroleum Reserve in Alaska (NRP-A), could be expanded by a warming Arctic.[370]

The cost of transportation is one key factor among many that affect the economic viability of onshore energy or mineral development. Generally, onshore developments in temperate climates can be accessed by permanent roads to deliver machinery and supplies, and to transport the product to market. In contrast, the rugged terrain and harsh climate in parts of the Arctic may preclude access to onshore energy or mineral development by permanent roads and require the use of sea transport and seasonal roads. These types of transportation methods may be accessible only during certain times during the year and may also be more costly to maintain and use compared to permanent roads in more temperate climates.

Current infrastructure in the Arctic that supports energy and mineral development includes the construction and use of ice roads and bridges, which are built and used only during the season when temperatures fall and remain below a threshold. As temperatures rise in the warmer months, the roads weaken, ultimately to a point at which they can no longer be used. The months during which ice roads and bridges are accessible is referred to as the ice road transport season. The warming trend in the Arctic is shortening the ice road transport season, creating challenges to transporting machinery, supplies, and product to and from the development sites. To offset the effects of warming temperatures on ice roads and bridges, developers employ technologies and road construction strategies that extend the ice road season.[371] Such technologies may also impose an additional cost on developers.

In some parts of the Arctic, where ice, gravel, and paved roads are not feasible, less sea ice could allow ships to transport heavy equipment to remote locations, and to transport ore from mines to markets. Such potential improvements in access would be limited by the onshore development's proximity to a suitable sea harbor where a port could be established.

Another factor that could affect onshore energy and mineral developments is the thawing of the permafrost. Permafrost, which is ground, soil, rock, or other material that remains frozen from year to year, has historically served as a solid foundation base for infrastructure, including roads. Permafrost underlies most of the producing oil and gas fields in Arctic Alaska, as well as the Trans-Alaska Pipeline, which transports oil through the central North Slope. Thawing permafrost creates many challenges, as roads, buildings, pipelines, drill pads, and other infrastructure can become unstable and collapse. These changes can result in higher costs to onshore energy and mineral developments, potentially requiring refreezing measures, leading existing developments to close, or rendering new projects unfeasible to pursue.

[369] CRS In Focus IF12006, *Arctic National Wildlife Refuge: Status of Oil and Gas Program*, by Laura B. Comay, and CRS Report RL33872, *Arctic National Wildlife Refuge (ANWR): An Overview*, by Laura B. Comay, Michael Ratner, and R. Eliot Crafton.

[370] USGS, *Assessment of Undiscovered Oil and Gas Resources in the Central North Slope of Alaska, 2020,* 2020, https://doi.org/10.3133/fs20203001; USGS, *Assessment of undiscovered oil and gas resources in the Cretaceous Nanushuk and Torok Formations, Alaska North Slope, and summary of resource potential of the National Petroleum Reserve in Alaska, 2017*, 2017, https://doi.org/10.3133/fs20173088.

[371] See NOAA, "Arctic Change," at https://www.pmel.noaa.gov/arctic-zone/detect/land-road.shtml.

Oil Pollution and Pollution Response[372]

Oil Pollution Implications of Arctic Change

Climate change impacts in the Arctic, particularly the decline of sea ice and retreating glaciers, has led to increased human activities in the region, some of which have the potential to create oil pollution.[373] A primary concern is the threat of a large oil spill in the area. Although a major oil spill has not occurred in the Arctic, potential economic activity, such as tourism (cruise ships), oil and gas exploration, and cargo transportation, increases the risk of oil pollution (and other kinds of pollution) in the Arctic.[374] Significant spills in high northern latitudes (e.g., the 1989 *Exxon Valdez* spill on the southern coast of Alaska and spills in the North Sea) suggest that the "potential impacts of an Arctic spill are likely to be severe for Arctic species and ecosystems."[375]

Risk of Oil Pollution in the Arctic

A primary factor determining the risk of oil pollution in the Arctic is the level and type of human activity conducted in the region. Although changes to the Arctic climate are expected to increase access to natural resources and shipping lanes, the region will continue to present logistical challenges that may hinder human activity in the region. For example, unpredictable ice conditions may discourage trans-Arctic shipping. If trans-Arctic shipping were to occur frequently, it would likely represent a considerable portion of the overall oil pollution risk in the region. In recent decades, many of the world's largest oil spills have been from oil tankers, which can carry millions of gallons of oil.[376]

Offshore oil exploration and extraction activities in the Arctic may present a risk of oil pollution. Interest in these activities in the region has fluctuated in recent years. Historically, oil well blowouts from offshore oil operations have been a source of major oil spills, eclipsing the largest tanker spills. The largest unintentional oil spill in recent history was from the 2010 *Deepwater Horizon* incident in the Gulf of Mexico.[377] During that incident, the uncontrolled well released (over an 87-day period) approximately 200 million gallons of crude oil.[378] The second-largest unintentional oil spill in recent history—the *IXTOC I*, estimated at 140 million gallons—was due to an oil well blowout in Mexican Gulf Coast waters in 1979.[379]

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[372] This section was prepared by Jonathan L. Ramseur, Specialist in Environmental Policy, Resources, Science, and Industry Division.

[373] For further discussion of issues relating to oil spills in general, see CRS Report RL33705, *Oil Spills: Background and Governance*.

[374] Arctic Council, Emergency Prevention, Preparedness and Response Working Group, *Guide to Oil Spill Response in Snow and Ice Conditions*, 2015, at https://oaarchive.arctic-council.org/handle/11374/403; see also Brian Dunn, "Report on 12th Arctic Shipping Summit, Montreal, February 21-22," *Canadian Sailings*, March 12, 2018, pp. 34-36.

[375] Arctic Monitoring and Assessment Programme (AMAP), Arctic Oil and Gas 2007, 2008.

[376] For example, the *Exxon Valdez* spilled approximately 11 million gallons of oil, but its carrying capacity was approximately 60 million gallons.

[377] Larger oil spills occurred during the 1991 Iraq War, but many of those spills were deliberate. A 1910-1911 onshore oil blowout in the California San Joaquin Valley is reported to have spilled 9.4 million barrels of crude oil (almost 400 million gallons).

[378] An estimated 17% of this oil did not enter the Gulf environment but was directly recovered from the wellhead by the responsible party (British Petroleum, BP). See the Federal Interagency Solutions Group, Oil Budget Calculator Science and Engineering Team, *Oil Budget Calculator: Deepwater Horizon-Technical Documentation*, November 2010; and CRS Report R42942, *Deepwater Horizon Oil Spill: Recent Activities and Ongoing Developments*.

[379] National Research Council (NRC) of the National Academies of Science, *Oil in the Sea III: Inputs, Fates, and Effects*, 2003.

Until the 2010 *Deepwater Horizon* incident, the spill record for offshore platforms in U.S. federal waters had shown improvement from prior years.[380] A 2003 National Research Council (NRC) study of oil and gas activities on Alaska's North Slope stated "blowouts that result in large spills are unlikely."[381] Similar conclusions were made in federal agency documents regarding deepwater drilling in the Gulf of Mexico before the 2010 *Deepwater Horizon* event.[382] Some would likely contend that the underlying analyses behind these conclusions should be adjusted to account for the 2010 Gulf oil spill. However, others may argue that any activities in U.S. Arctic waters present less risk of an oil well blowout than was encountered by the *Deepwater Horizon* drill rig, because the proposed U.S. Arctic operations would be in shallower waters (150 feet) than the deepwater well (approximately 5,000 feet) that was involved in the 2010 Gulf oil spill. In addition, some have pointed out that the pressures in the Chukchi Sea would be two to three times less than they were in the well involved in the 2010 Gulf oil spill.[383] Regardless of these differences, even under the most stringent control systems, oil exploration and extraction activities would present some level of oil spill risk in the region, as some accidents are likely to occur from equipment failure or human error. In addition, as discussed below, an oil spill in the Arctic would present unique response and cleanup challenges.

Potential Impacts

No oil spill is entirely benign. Even a relatively minor spill, depending on the timing and location, can cause significant harm to individual organisms and entire populations. Regarding aquatic spills, marine mammals, birds, bottom-dwelling and intertidal species, and organisms in early developmental stages—eggs or larvae—are especially vulnerable. However, the effects of oil spills can vary greatly. Oil spills can cause impacts over a range of timescales, from only a few days to several years, or even decades in some cases.

Conditions in the Arctic may have implications for oil spill impacts that are less understood than in the more temperate regions.[384] According to a 2016 study, "oil spill science in ice-covered waters is at an ad hoc level."[385] For example, information on the long-term effects of oil and its environmental persistence within the Arctic is limited.[386] In addition, the historical data for the region do not provide reliable baselines to assess current environmental or ecosystem states,[387] presenting challenges to those tasked with measuring impacts. These measurement challenges are exacerbated by several factors, including the "rapid rates of climate change" in the region.[388]

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[380] See CRS Report RL33705, *Oil Spills: Background and Governance*; and Dagmar Etkin (Environmental Research Consulting), Analysis of U.S. Oil Spillage, Prepared for American Petroleum Institute, August 2009.

[381] National Research Council of the National Academies of Science, *Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope*, 2003.

[382] See, for example, Minerals Management Service (MMS), Outer Continental Shelf Oil & Gas Leasing Program: 2007-2012, Final Environmental Impact Statement, 2007, chapter 4; MMS, Proposed Gulf of Mexico OCS Oil and Gas Lease Sale 206, Central Planning Area, Environmental Assessment, 2007.

[383] Letter from Marvin E. Odum, President, Shell Oil Company to S. Elizabeth Birnbaum, Minerals Management Service (May 14, 2010). Cited in a staff paper from the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling ("The Challenges of Oil Spill Response in the Arctic," 2011).

[384] National Research Council (NRC) of the National Academies of Science, *Responding to Oil Spills in the U.S. Arctic Marine Environment*, 2014 (hereinafter, NRC Report, 2014).

[385] Mawuli Afenyo, "A State-of-the-Art Review of Fate and Transport of Oil Spills in Open and Ice-Covered Water," *Ocean Engineering*, 2016.

[386] NRC Report, 2014.

[387] Ibid.

[388] NRC Report, 2014, p. 58.

Response and Cleanup Challenges in the Arctic

Conditions in the Arctic impose unique challenges for personnel charged with (1) oil spill response, which is the process of getting people and equipment to the incident, and (2) cleanup duties, either recovering the spilled oil or mitigating the contamination so that it poses less harm to the ecosystem. These challenges may play a role in policy development for economic activities in the Arctic.

Spill Response Challenges

Response time is a critical factor for oil spill recovery. With each hour, spilled oil becomes more difficult to track, contain, and recover, particularly in icy conditions, where oil can migrate under or mix with surrounding ice.[389] Most response techniques call for quick action, which may pose logistical challenges in areas without prior staging equipment or trained response professionals. Many stakeholders are concerned about a "response gap" for oil spills in the Arctic.[390] A response gap is a period of time in which oil spill response activities would be unsafe or infeasible. A 2016 study (prepared for the Bureau of Safety and Environmental Enforcement) estimated response gaps for two locations in the U.S. Beaufort and Chukchi Seas during the summer and winter seasons, and for the year overall.[391] The study found that during the summer months (July-October), open water oil recovery would not be "favorable" approximately 33% of the time.[392] By comparison, that estimate increases to 75% and 95% for the year overall and for the winter months (November-June), respectively. The response gap for the northern Arctic latitudes is likely to be extremely high compared to other regions.[393]

In the event of an oil spill, the Coast Guard has response authority in the coastal zone.[394] A Coast Guard official would serve as the On-Scene Coordinator with the authority to perform cleanup immediately using federal resources, monitor the response efforts of the spiller, or direct the spiller's cleanup activities. According to a 2014 National Research Council (NRC) report, "the lack of infrastructure in the Arctic would be a significant liability in the event of a large oil spill."[395] The logistics in the Arctic were described as a "tyranny of distance" by the Vice Commandant of the Coast Guard.[396]

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[389] World Wildlife Fund, *Oil Spill: Response Challenges in Arctic Waters* (2007).

[390] Coastal Response Research Center, *Opening the Arctic Seas: Envisioning Disasters and Framing Solutions* (2009), partnership between the NOAA and the University of New Hampshire.

[391] Nuka Research and Planning Group, *Estimating an Oil Spill Response Gap for the U.S. Arctic Ocean*, 2016; study funded by the Department of the Interior's Bureau of Safety and Environmental Enforcement.

[392] A 2017 study stated that most of the marine activities in the Arctic region occur during the summer months. See Jeremy Wilkinson et al., "Oil Spill Response Capabilities and Technologies for Ice-Covered Arctic Marine Waters: A Review of Recent Developments and Established Practices," *Ambio*, 2017.

[393] A 2007 estimate of Prince William Sound (PWS) also may be instructive. A 2007 study found a response gap for PWS of 38% for the time of the study period (65% during the winter season). Note that PWS has existing infrastructure for response, while the more remote Arctic areas do not. Nuka Research and Planning Group, LLC, *Response Gap Estimate for Two Operating Areas in Prince William Sound, Alaska* (2007), Report to Prince William Sound Regional Citizens' Advisory Council.

[394] For more details, see CRS Report RL33705, *Oil Spills: Background and Governance*.

[395] NRC Report, 2014.

[396] Admiral Ray Charles, Vice Commandant of the Coast Guard, Testimony before the Senate Committee on Commerce, Science, and Transportation, December 12, 2019, https://www.commerce.senate.gov/2019/12/expanding-opportunities-challenges-and-threats-in-the-arctic-a-focus-on-the-u-s-coast-guard-arctic-strategic-outlook.

The Coast Guard has no designated air stations north of Kodiak, AK, which is almost 1,000 miles from the northernmost point of land along the Alaskan coast in Point Barrow, AK.[397] Although some of the communities have airstrips capable of landing cargo planes, no roads connect these Arctic communities to the main highway systems or large communities in Alaska.[398] Vessel infrastructure is also limited. The nearest major port is in the Aleutian Islands, approximately 1,300 miles from Point Barrow.

A 2010 Government Accountability Office (GAO) report identified further logistical obstacles that would hinder an oil spill response in the region, including "inadequate" ocean and weather information for the Arctic and technological problems with communications.[399] A 2014 GAO report highlighted steps taken by some groups (e.g., the National Oceanic and Atmospheric Administration) to improve some of these logistical elements.[400] The U.S. Coast Guard includes an initiative to "strengthen marine environmental response in the Arctic" as part of its 2015 Arctic Strategy Implementation Plan.[401] A 2016 GAO Report provided an initial assessment of these efforts.[402] In 2019, the Coast Guard issued its Arctic Strategic Outlook, which stated one of its objectives was to "enhance capability to operate effectively in a dynamic Arctic."[403]

In addition, the Department of the Interior's BOEM and BSEE issued a final rule in 2016 requiring certain safety measures for drilling operations in the Arctic, but, as discussed above, the status of that rulemaking is uncertain.[404]

The costs of an oil spill response would likely be significantly higher than a similar incident in lower latitude locations of comparable remoteness. This could place a relatively larger burden on the oil spill liability and compensation framework.[405] Pursuant to the Oil Pollution Act (OPA),[406] parties responsible for an oil spill may be liable for cleanup costs, natural resource damages, and specific economic damages.[407] OPA provided both limited defenses from liability and conditional liability limits for cleanup costs and other eligible damages.[408] The Oil Spill Liability Trust Fund (OSLTF) provides an immediate source of funds for federal responses to oil spills and

[397] G.M. Sulmasy and A.P. Wood, U.S. Coast Guard Academy, "U.S. Coast Guard Activity in the Arctic Region," Law of the Sea Institute, Occasional Paper #6, 2014; and U.S. Coast Guard, *Report to Congress: U.S. Coast Guard Polar Operations*, 2008.

[398] NRC Report, 2014.

[399] Government Accountability Office, *Coast Guard: Efforts to Identify Arctic Requirements Are Ongoing, but More Communication about Agency Planning Efforts Would Be Beneficial*, GAO-10-870, 2010.

[400] Government Accountability Office, *Key Issues Related to Commercial Activity in the U.S. Arctic over the Next Decade*, GAO-14-299, 2014.

[401] U.S. Coast Guard, *Arctic Strategy Implementation Plan*, 2015, https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5pw/Arctic%20Policy/CGAS%20IPlan%20Final%20Signed.pdf?ver=2017-08-25-075935-927.

[402] Government Accountability Office, *Arctic Strategy Is Underway, but Agency Could Better Assess How Its Actions Mitigate Known Arctic Capability Gaps*, GAO-16-453, 2016.

[403] U.S. Coast Guard, Arctic Strategic Outlook, 2019, https://www.uscg.mil/Portals/0/Images/arctic/Arctic_Strategic_Outlook_APR_2019.pdf.

[404] See the section above titled "Offshore Oil and Gas Exploration."

[405] For more information on this framework, see CRS Report RL33705, *Oil Spills: Background and Governance*.

[406] P.L. 101-380, primarily codified at 33 U.S.C. §2701 et seq.

[407] 33 U.S.C. §2702.

[408] 33 U.S.C. §2703 and §2704.

compensation for certain damages.[409] The OSLTF can be used if a responsible party's liability limit is reached, but the fund can only provide $1 billion per incident.[410]

Oil Spill Cleanup Challenges

The history of oil spill response in the Aleutian Islands highlights the challenges and concerns for potential spills in the Arctic:

> The past 20 years of data on response to spills in the Aleutians has also shown that almost no oil has been recovered during events where attempts have been made by the responsible parties or government agencies, and that in many cases, weather and other conditions have prevented any response at all.[411]

The behavior of oil spills in cold and icy waters is not as well understood as oil spills in more temperate climates.[412] In addition, in the summer months, the sea ice zone is a particularly challenging environment because the concentration of ice floes within a region is continuously changing.[413] The 2014 NRC report highlights some recent advancements in understanding oil spill behavior in the Arctic climate. At the same time, the report recommends further study on a range of related issues.

The 2014 NRC report states that in colder water temperatures or sea ice, "the processes that control oil weathering—such as spreading, evaporation, photo-oxidation, emulsification, and natural dispersion—are slowed down or eliminated for extended periods of time."[414] In some respects, the slower weathering processes may provide more time for response strategies, such as in situ burning or skimming. On the other hand, the longer the oil remains in an ecosystem, the more opportunity there is for exposure to humans and other species in the ecosystem.

In addition, the 2014 report states the following:

> Arctic conditions impose many challenges for oil spill response—low temperatures and extended periods of darkness in the winter, oil that is encapsulated under ice or trapped in ridges and leads, oil spreading due to sea ice drift and surface currents, reduced effectiveness of conventional containment and recovery systems in measurable ice concentrations, and issues of life and safety of responders.

Oil Spill Policy–Regional Framework

The existing framework for international governance of maritime operations in the Arctic combines broader maritime agreements and agreements that focus on the geographic region. In terms of broader frameworks, the Safety of Life at Sea Convention (SOLAS) and other International Maritime Organization (IMO) conventions include provisions regarding ships in icy waters, but the provisions are not specific to the polar regions.

The IMO's International Code for Ships Operating in Polar Waters (Polar Code) entered into force in 2017 and is mandatory under SOLAS and the International Convention for the

[409] 33 U.S.C. §2712.

[410] 26 U.S.C. §9509.

[411] Transportation Research Board of the National Academy of Sciences, *Risk of Vessel Accidents and Spills in the Aleutian Islands: Designing a Comprehensive Risk Assessment* (2008), Special Report 293, National Academies Press. Washington, DC.

[412] NRC Report, 2014.

[413] Jeremy Wilkinson et al., "Oil Spill Response Capabilities and Technologies for Ice-Covered Arctic Marine Waters: A Review of Recent Developments and Established Practices," *Ambio*, 2017.

[414] NRC Report, 2014.

Prevention of Pollution from Ships (known as MARPOL).[415] The Polar Code addresses a range of issues, including environmental protection.

In 2013, the member states of the Arctic Council signed an Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic.[416] The agreement's objective is to "strengthen cooperation, coordination, and mutual assistance ... on oil pollution preparedness and response in the Arctic." The agreement entered force in 2016.[417] A 2018 Coast Guard document describes the agreement as "binding."[418] The agreement includes multiple requirements for the parties, including oil spill notification, a process for requesting assistance and seeking reimbursement for costs, and joint preparation activities. Pursuant to the agreement the Arctic nations have conducted several joint training exercises.[419]

In addition, the United States has separate bilateral agreements with Canada and Russia that address oil spill response operations. The agreement with Canada was established in 1974 for the Great Lakes and has been amended several times to add more geographic areas, including Arctic waters.[420] According to the 2014 NRC report: "formal contingency planning and exercises with Canada have enabled both the United States and Canada to refine procedures and legal requirements for cross-border movement of technical experts and equipment in the event of an emergency."

The U.S.-Russian agreement was made in 1989 and applies to oil spill-related activities in Arctic waters. The 2014 NRC report asserted that the agreement has not been tested to the same extent as the U.S.-Canada agreement. In 2018, officials from both nations reportedly held a tabletop exercise for an oil spill scenario in the Bering Strait.[421]

Fisheries[422]

The effects of climate change such as increasing sea surface temperatures, changes in regional oceanography, and decreasing permanent sea ice are altering the composition of marine ecosystems in the Arctic.[423] In addition, ocean acidification is occurring as the increasing concentration of carbon dioxide (CO_2) in the atmosphere leads to greater absorption of CO_2 by

[415] See the above section titled "Regulation of Arctic Shipping."

[416] Available at http://www.arctic-council.org. The agreement is sometimes described as the Agreement on Cooperation on Marine Oil Spill Preparedness and Response in the Arctic (MOSPA).

[417] Arctic Council, *Status of ratification of Agreements negotiated under the auspices of the Arctic Council*, 2016.

[418] U.S. Coast Guard, Marine Environmental Response and Preparedness Manual, 2018, https://media.defense.gov/2018/Oct/01/2002046527/-1/-1/0/CIM_16000_14A.PDF.

[419] See Arctic Council, Emergency Prevention Preparedness and Response Working Group, Planning Guidance for MOSPA Exercises, 2019; see also Michael LeVine et al., "Oil Spill Response in the North American Arctic," in *Managing the Risks of Offshore Oil and Gas Accidents: The International Legal Dimension*, edited by Gunther Handl and Kristoffer Svendsen, 2019.

[420] For more information, see U.S. Department of the Interior, Bureau of Ocean Energy Management, *Oil Spill Preparedness, Prevention, and Response on the Alaska OCS*, 2019.

[421] World Wildlife Federation, "Russia and the United States Hold Joint Exercises to Respond to Oil Spills in the Bering Strait," November 2018, https://wwf.ru/en/resources/news/bioraznoobrazie/rossiya-i-ssha-proveli-sovmestnye-ucheniya-po-reagirovaniyu-na-razlivy-nefti-v-beringovom-prolive/.

[422] This section was prepared by Anthony R. Marshak, Analyst in Natural Resources Policy.

[423] F. Mueter, "Arctic Fisheries in a Changing Climate," in *Global Arctic: An Introduction to the Multifaceted Dynamics of the Arctic*, eds. M. Finger and G. Rekvig (Cham, Switzerland: Springer, 2022), pp. 279-296 (hereinafter Mueter, 2022, "Arctic Fisheries in a Changing Climate"); K.F. Drinkwater et al., "Possible Future Scenarios for Two Major Arctic Gateways Connecting Subarctic and Arctic Marine Systems: I. Climate and Physical-Chemical Oceanography," *ICES Journal of Marine Science*, vol. 78, no. 9 (2021), pp. 3046-3065.

the global ocean.[424] The Arctic Ocean is warming and acidifying faster than most other regions of the global ocean, which is likely to affect Arctic ecosystems and their living marine resources, including the distributions and productivity of living marine resources,[425] their prey, and the species that support marine fisheries (e.g., Arctic cod; juvenile stages of red king crab and tanner crab).[426]

As a greater portion of the waters in the central Arctic Ocean become open for longer periods, the region's resources are expected to become more accessible to commercial fishing.[427] Approximately 15% of the world's marine fisheries are caught in the Subarctic and Arctic.[428] A majority of these catches are from large commercial fisheries (e.g., Arctic cod, haddock, capelin) that already occur in southern inflow shelves of the Arctic, including in the Barents and Norwegian Seas north of Europe; the Central North Atlantic off Greenland and Iceland; the Bering Sea off Russia and the United States (Alaska); and the Newfoundland and Labrador Seas off northeastern Canada.[429] Contrastingly, the interior Arctic shelves and the Central Arctic Ocean have generally supported small, important subsistence catches.[430] The southern inflow shelves are also the most likely locations for species expansions depending on available habitat.[431] For example, in U.S. waters in the eastern and northern Bering Sea, northward latitudinal shifts have been observed for Arctic cod, king and tanner crabs, sculpins, green sea urchin, and multiple

[424] For more information about ocean acidification, see CRS Report R47300, *Ocean Acidification: Frequently Asked Questions*, by Caitlin Keating-Bitonti and Eva Lipiec.

[425] P. Fauchald et al., "Poleward Shifts in Marine Fisheries under Arctic Warming," *Environmental Research Letters*, vol. 16, no. 7 (2021), 074057, pp. 1-11; F.T. Chan et al., "Climate Change Opens New Frontiers for Marine Species in the Arctic: Current Trends and Future Invasion Risks," *Global Change Biology*, vol. 25, no. 1 (2018), pp. 25-38.

[426] R.L. Thoman et al., *Arctic Report Card 2023*, NOAA, 2023, https://doi.org/10.25923/5vfa-k694 (hereinafter Thoman et al., 2023, *Arctic Report Card 2023*); W.C. Long et al., "Effects of Ocean Acidification on Juvenile Red King Crab (*Paralithodes camtschaticus*) and Tanner Crab (*Chionoecetes bairdi*) Growth, Condition, Calcification, and Survival," *PLoS One*, vol. 8, no. 4 (2013), pp. e60959, pp 1-10; K. Holsman et al., "Chapter 6: Climate Change Impacts, Vulnerabilities and Adaptations: North Pacific and Pacific Arctic Marine Fisheries," in *Impacts of Climate Change on Fisheries and Aquaculture: Synthesis of Current Knowledge, Adaptation, and Mitigation Options, Food and Agriculture Organization of the United Nations (FAO) Technical Paper 627*, eds. M. Barange, T. Bahri, M.C.M. Beveridge, K.L. Cochrane, S. Funge-Smith, F. Poulain (Rome, Italy: FAO, 2018), pp. 113-138.

[427] Mueter, 2022, "Arctic Fisheries in a Changing Climate"; A.B. Hollowed et al., "Potential Movement of Fish and Shellfish Stocks from the Sub-Arctic to the Arctic Ocean," *Fisheries Oceanography*, vol. 22, no. 5 (2013), pp. 355-370 (hereinafter Hollowed et al., 2013, "Potential Movement of Fish and Shellfish Stocks from the Sub-Arctic to the Arctic Ocean."

[428] D. Zeller et al., "Still Catching Attention: Sea Around Us Reconstructed Global Catch Data, their Spatial Expression and Public Accessibility," *Marine Policy*, vol. 70 (2016), pp. 145-152; Mueter, 2022, "Arctic Fisheries in a Changing Climate."

[429] Erik J. Molenaar and Robert Corell, *Arctic Fisheries*, Arctic Transform, February 9, 2009,http://arctic-transform.org/download/FishBP.pdf; O. Schram Stokke, "Arctic Geopolitics, Climate Change, and Resilient Fisheries Management," in *Ocean Yearbook*, ed. A. Chircop, S. Coffen-Smout, M.L. McConnell, S.L. Seck, vol. 36 (Halifax, Canada: Brill, 2022), pp. 440-474. Although the Bering Sea is included in the Arctic Boundary as defined by the ARPA, the United States manages fisheries from this region separately from those in the Arctic Management Area; National Ocean Economics Program, "Arctic Fisheries," https://www.oceaneconomics.org/NOEP/Arctic/fisheries/.

[430] D. Zeller et al., "Arctic Fisheries Catches in Russia, USA, and Canada: Baselines for Neglected Ecosystems," *Polar Biology*, vol. 34 (2011), pp. 955-973; Mueter, 2022, "Arctic Fisheries in a Changing Climate."

[431] E. Carmack and P. Wassmann, "Food Webs and Physical–Biological Coupling on Pan-Arctic Shelves: Unifying Concepts and Comprehensive Perspectives," *Progress in Oceanography*, vol. 71, no. 2-4 (2006), pp. 446-477; Mueter, 2022, "Arctic Fisheries in a Changing Climate"; Hollowed et al., 2013, "Potential Movement of Fish and Shellfish Stocks from the Sub-Arctic to the Arctic Ocean."

groundfish species.[432] These latitudinal shifts are likely associated with regional warming.[433] Additionally, unprecedented amounts of foreign commercial fishing vessel trash washed ashore across the Bering Strait region in 2020, associated with increased foreign interest in exploiting northern Bering Sea marine fisheries (e.g., Pacific cod, walleye pollock).[434]

As the region warms, climate changes, and ocean acidification increases, fishery managers will be challenged to adjust management measures for changing ecological conditions, existing fisheries, and shifting species distributions.[435] Uncertainties related to these changes and potential new fisheries in Arctic regions, including the central Arctic Ocean, have prompted many fishery managers to support precautionary approaches to fisheries management in the region.[436] For example, some national governments have taken proactive measures to protect Arctic ecosystems from potential commercial fishing expansions, such as prohibitions on commercial fishing in the Norwegian Arctic north and west of the Svalbard archipelago.[437]

For waters under U.S. jurisdiction in the Chukchi and Beaufort Seas, in 2009, NOAA's National Marine Fisheries Service implemented the North Pacific Fishery Management Council's (NPFMC's) Fishery Management Plan (FMP) for Fish Resources of the Arctic Management Area (Arctic FMP).[438] The Arctic FMP addresses concerns that unregulated or inadequately regulated commercial fisheries in the U.S. EEZ off Alaska could harm marine resources such as commercial fish populations (e.g., Arctic cod, saffron cod, snow crab), fish habitat, and other marine populations that are components of the ecosystem.[439] The Arctic FMP prohibits commercial fishing in the Arctic Management Area and moves the northern boundary of the Bering Sea/Aleutian Islands king and tanner crab fishery management plan out of the Arctic Management Area south to the Bering Strait.[440] The Arctic FMP takes a precautionary approach by requiring the consideration of research needs that may improve scientific understanding of fish stocks and environmental conditions before developing commercial fisheries in the region.[441] The NPFMC developed a discussion paper that examines exploratory fishing undertaken by regional fishery management organizations and potential application of these efforts to the Arctic Ocean.[442] The FMP does not regulate subsistence or recreational fisheries in the Arctic, which are

[432] NOAA, National Marine Fisheries Service, Distribution Mapping and Analysis Portal (DisMAP) data records, retrieved from apps-st.fisheries.noaa.gov/dismap/DisMAP.html and accessed May 19, 2025; M. Fossheim, "Recent Warming Leads to a Rapid Borealization of Fish Communities in the Arctic," *Nature Climate Change*, vol. 5 (2015), pp. 673-677; Mueter, 2022, "Arctic Fisheries in a Changing Climate."

[433] Ibid.

[434] G. Sheffield et al., "2020 Foreign Marine Debris Event - Bering Strait," in *Arctic Report Card 2021*, ed. T.A. Moon, M.L. Duckenmiller, R.L. Thoman (NOAA, 2021), pp. 85-92, https://doi.org/10.25923/5s0f-5163.

[435] Mueter, 2022, "Arctic Fisheries in a Changing Climate."

[436] Ibid.

[437] Mueter, 2022, "Arctic Fisheries in a Changing Climate"; L.L. Jørgensen et al., "Responding to Global Warming: New fisheries Management and Measures in the Arctic," *Progress in Oceanography*, vol. 188 (2020), 402423.

[438] 74 *Federal Register* 56734-56746, November 3, 2009.

[439] North Pacific Fishery Management Council (NPFMC), "Fishery Management Plan for Fish Resources of the Arctic Management Area," August 2009, pp. 1-146, https://www.npfmc.org/wp-content/PDFdocuments/fmp/Arctic/ArcticFMP.pdf. Hereinafter NPFMC, 2009, "Fishery Management Plan for Fish Resources of the Arctic Management Area."

[440] NOAA, "Implementation of the Fishery Management Plan for Fish Resources of the Arctic Management Area (Arctic FMP)," https://www.fisheries.noaa.gov/action/implementation-fishery-management-plan-fish-resources-arctic-management-area-arctic-fmp.

[441] NPFMC, 2009, "Fishery Management Plan for Fish Resources of the Arctic Management Area," p. 41.

[442] Steve MacLean, *Exploratory Fishing in Global Regional Fishery Management Organizations*, North Pacific Fishery Management Council, Anchorage, AK, February 2018.

generally for small local use salmonid species and some upstream freshwater finfish species managed by the State of Alaska.[443]

International cooperation is necessary to manage Arctic resources because fish stocks are shared to some degree among the five Arctic coastal states.[444] Further, a large portion of the central Arctic Ocean (2.8 million square kilometers) lies outside the EEZs of these nations. Ideally, regional management would recognize the need to coordinate management for fish populations that move among these national jurisdictional zones and the high seas.[445]

The U.S. executive branch and Congress also have promoted international approaches for the management of stocks in the Arctic Ocean. On June 1, 2008, President George W. Bush signed into law a joint resolution (P.L. 110-243) that directed "the United States to initiate international discussions and take necessary steps with other nations to negotiate an agreement for managing migratory and transboundary fish stocks in the Arctic Ocean." The joint resolution also supported establishment of "a new international fisheries management organization or organizations for the region" and called for the United States to support international efforts to halt the expansion of commercial fishing activities in the Arctic high seas.[446] On July 16, 2015, the five Arctic coastal states signed a nonbinding declaration to prevent unregulated commercial fishing in the high seas portion of the central Arctic Ocean.[447] These five nations agreed that a precautionary approach to fishing was needed because of limited scientific knowledge of marine resources in the central Arctic Ocean.[448]

The declaration was followed by negotiations among officials from the five Arctic coastal states, four major fishing nations,[449] and the European Union.[450] On October 3, 2018, the parties signed a legally binding international accord to prevent unregulated high seas fisheries in the central Arctic Ocean as part of a long-term strategy to safeguard healthy marine ecosystems and to ensure the conservation and sustainable use of fish stocks.[451]

The parties also agreed that no commercial fisheries will be conducted in the Arctic high seas before an international management regime is put in place to regulate commercial fishing. The agreement also established a joint scientific program to conduct research and monitor the region's

[443] NPFMC, "Arctic – Fishery Management Plan for Fish Resources of the Arctic Management Area (Arctic FMP)," https://www.npfmc.org/fisheries-issues/fisheries/fishing-in-the-arctic/; Alaska Department of Fish and Game (ADFG), "Commercial Fisheries Overview – Arctic Management Area," https://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareanorthern.main; ADFG, "North Slope Management Area – Overview," https://www.adfg.alaska.gov/index.cfm?adfg=ByAreaInteriorNorthSlope.main.

[444] As noted in the "Background" section, the five Arctic coastal states include the United States, Canada, Denmark (by virtue of Greenland), Norway, and the Russian Federation.

[445] UNCLOS provides a framework for the management of fish stocks that migrate between EEZs and the high seas. For more information, see CRS Report R47744, *United Nations Convention on the Law of the Sea (UNCLOS): Living Resources Provisions*, by Caitlin Keating-Bitonti.

[446] D. Balton, "Implementing the New Arctic Fisheries Agreement," in *New Knowledge and Changing Circumstances in the Law of the Sea, Publications on Ocean Development*, ed. T. Heidar, vol. 92 (Leiden, Netherlands: Brill Nijhoff), pp. 429-445.

[447] See https://www.wto.org/english/tratop_e/rulesneg_e/fish_e/2015_oslo_declaration.pdf.

[448] Ibid.

[449] The four major fishing nations include Iceland, Japan, South Korea, and the People's Republic of China.

[450] The agreement includes Arctic Indigenous peoples as participants in meetings and as a source of scientific information and local knowledge.

[451] NOAA, "U.S. Signs Agreement to Prevent Unregulated Commercial Fishing on the High Seas of the Central Arctic Ocean," https://www.fisheries.noaa.gov/feature-story/us-signs-agreement-prevent-unregulated-commercial-fishing-high-seas-central-arctic.

marine ecosystem.[452] The agreement is seen by experts as the first step toward establishing one or more regional fisheries management organizations for the Arctic Ocean.[453] On June 25, 2021, the agreement entered into force with the ratification of all 10 signatories.[454]

Currently, there is no commercial fishing in the Central Arctic Ocean, for which a 16-year moratorium is in place since June 2021.[455] However, it remains an open question whether an Arctic Ocean regional fishery management organization will be established, which countries would be included in such an arrangement, and if sustainable commercial fisheries can be developed in the central Arctic Ocean.[456] Additionally, continued domestic and foreign interests in Arctic fisheries, including the opening of a Russian-controlled pollock fishery in the Chukchi Sea in 2020, have furthered concerns among international stakeholders regarding the timing and implementation of such management developments.[457] Furthermore, some concerns linger regarding the perceived fragility of the agreement, including whether certain signatory nations such as Russia and China might remain parties to the agreement.[458]

Protected Species[459]

There are several federal trust species in the Arctic protected by U.S. statutes such as the Endangered Species Act (ESA; 16 U.S.C. §§1531-1543), Marine Mammal Protection Act (MMPA; 16 U.S.C. §§1361-1407), and the Migratory Bird Treaty Act (MBTA; 16 U.S.C. §703-712).[460] Species included under these statutes are protected to varying degrees from factors that affect their populations. Some examples of species listed under one or more of these statutes include the polar bear (*Ursus maritimus*), the bowhead whale (*Balaena mysticetus*), and the Eskimo curlew (*Numenius borealis*).[461]

Ecological changes due to climate change and human activities could affect some protected species in the Arctic. For example, the polar bear was listed as threatened under the ESA in 2008 and is protected under MMPA due to its classification as a marine mammal.[462] Declining sea ice levels in the Arctic threaten polar bear populations. Polar bears use sea ice as a platform to hunt

[452] Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, Article 4.

[453] V. J. Schatz, A. Proelss, and N. Liu, "The 2018 Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean: A Critical Analysis," *The International Journal of Marine and Coastal Law*, vol. 34, no. 2 (2019), pp. 195-244.

[454] U.S. Department of State, "The Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean Enters into Force," press release, June 25, 2021, https://www.state.gov/the-agreement-to-prevent-unregulated-high-seas-fisheries-in-the-central-arctic-ocean-enters-into-force/.

[455] Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, Article 13.

[456] Some experts debate whether existing fisheries resources in the Central Arctic Ocean could sustain a fishery. Mueter, 2022, "Arctic Fisheries in a Changing Climate."

[457] Cliff White, "US, Russia Eyeing Development of Arctic Fisheries," *Seafood Source*, April 12, 2023, https://www.seafoodsource.com/news/supply-trade/us-russia-eyeing-development-of-arctic-fisheries.

[458] National Fisherman (Paul Molyneaux), "Arctic Ocean Fisheries Agreement on Fragile Ground as Global Tensions Mount," *Seafood Source*, March 10, 2023, https://www.seafoodsource.com/national-fisherman/arctic-ocean-fisheries-agreement-on-fragile-ground-as-global-tensions-mount.

[459] This section was prepared by Pervaze A. Sheikh, Specialist in Natural Resources Policy.

[460] For more information on the Endangered Species Act, see CRS Report R46677, *The Endangered Species Act: Overview and Implementation*, by Pervaze A. Sheikh, Erin H. Ward, and R. Eliot Crafton.

[461] Covered species pursuant to the ESA, MBTA, and MMPA are listed in the Code for Federal regulations at 50 C.F.R. §§17.11-17.12 (Endangered and Threatened Wildlife and Plants), 50 C.F.R. §10.13 (List of Migratory Birds), and 50 C.F.R. 18.3 and 216.3 (definitions).

[462] There are 19 populations of polar bears inhabiting the Arctic.

for seals and other prey, travel to maternal denning areas, and seek mates, among other things.[463] In contrast, changing ecological conditions in the Arctic could be helping the bowhead whale. The bowhead whale is listed under the ESA and covered by the MMPA. Bowhead whale populations declined due to hunting and commercial whaling until these activities ceased in the 1920s. According to scientists, in the past 30 years populations of bowhead whales have increased in the Pacific Arctic and East Canada/West Greenland region due to increases in ocean primary production and the availability of zooplankton, which is a food source for the species.[464]

Certain activities in the Arctic have the potential to affect, directly or indirectly, species, including federal trust species, and habitat in the areas in which they are undertaken. In turn, the laws that designate or provide the authority to list and protect federal trust species and their implementing regulations may, with certain exceptions, restrict certain activities, require action agencies to seek permits, or mandate efforts to protect such species. ESA, MMPA, and MBTA, for example, prohibit *take*, including in some cases nonlethal harassment, of covered species.[465] For example, as described in the cases below, federal agencies that authorize, fund, or carry out activities that may affect federally listed endangered or threatened species or modify critical habitat designated under the ESA may be required to consult with FWS or NMFS pursuant to Section 7 of the ESA, and individuals undertaking actions that may harm or harass marine mammals may be required to obtain an incidental take authorization from either FWS or NMFS. For marine mammals that are listed as threatened or endangered under the ESA, action agencies may be required to obtain both an incidental take authorization pursuant to the MMPA, as well as undertake consultation pursuant to the ESA.

Section 9 of the ESA identifies prohibited acts related to species listed as endangered under the act, and Section 4(d) authorizes the listing agency, either FWS or NMFS, to establish protections, including prohibiting take, for species listed as threatened through the issuance of a special rule known as a 4(d) rule.[466] Further, Section 7 of the act requires federal agencies that carry out, fund, or authorize actions that may affect listed species or designated critical habitat to consult with FWS or NMFS.[467] This consultation may result in in the issuance of a biological opinion, which

[463] U.S. Fish and Wildlife Service, *Polar Bears*, https://www.fws.gov/alaska/pages/marine-mammals/polar-bear.

[464] Richard L. Thoman et al., *Arctic Report Card 2020*, National Oceanic and Atmospheric Association, December 2020.

[465] *Take* is defined in statute for ESA and MMPA and defined or clarified in regulations for MMPA and MBTA. With regard to the ESA, *take* "means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 U.S.C. §1532(19)). Pursuant to MMPA, take is defined "take" means to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal" (16 U.S.C. §1362(13)) and is further clarified in regulations to include "the collection of dead animals or parts thereof; the restraint or detention of a marine mammal, no matter how temporary; tagging a marine mammal; or the negligent or intentional operation of an aircraft or vessel, or the doing of any other negligent or intentional act which results in the disturbing or molesting of a marine mammal" (50 C.F.R. §18.3). For the MBTA, *take* is not defined in statute but is defined in regulation to mean "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 C.F.R. §10.12). Pursuant to regulations, both ESA and MMPA allow for certain subsistence use and take by Alaska Natives (50 C.F.R. parts 17 and 18).

[466] Section 9 of the ESA is at 16 U.S.C. 1538, and Section 4(d) is at 16 U.S.C. 1533(d). In the 1970s, FWS promulgated rules, collectively known as the blanket 4(d) rule that extended most of the protections afforded to endangered species to threatened species, unless they were superseded by a species-specific 4(d) rule. The blanket 4(d) rule was modified in 2019, and automatic protections were no longer provided for species listed by FWS after September 26, 2019. NMFS never implemented a similar blanket 4(d) rule, and NMFS issues 4(d) rules on a case by case basis. For more information, see CRS Report R46677, *The Endangered Species Act: Overview and Implementation*, by Pervaze A. Sheikh, Erin H. Ward, and R. Eliot Crafton.

[467] Section 7 of the ESA is at 16 U.S.C. 1536. For more information on Section 7 of the ESA, see CRS Report R46867, *Endangered Species Act (ESA) Section 7 Consultation and Infrastructure Projects*, by Erin H. Ward, R. Eliot Crafton, and Pervaze A. Sheikh.

provides recommendations and requirements to minimize or avoid negative impacts to listed species and critical habitat and may authorize the incidental take—take that is otherwise prohibited and incidental to but not the purpose of an otherwise lawful the action—of listed species.[468] Activities that may require Section 7 consultation could include, but are not limited to, actions related to construction, fisheries, oil and gas, research, and military. For example, the Bureau of Land Management may need to consult with FWS before authorizing oil and gas activities that may affect the polar bear (*Ursus maritimus*) or may be required to consult with FWS.[469] Similarly the Navy may need to consult with NMFS before undertaking military activity that may affect the arctic ringed seal (*Phoca hispida hispida*).[470] In addition, because each of the aforementioned activities may impact marine mammals, both would also be subject to MMPA and may require an incidental harassment authorization under such act.[471]

Indigenous People Living in Arctic[472]

People have been living in the Arctic for thousands of years, and Indigenous peoples developed highly specialized cultures and economies based on the physical and biological conditions of the long-isolated region. However, with trade, the influx of additional populations especially since the 19th century, and ongoing physical changes in the Arctic, many Indigenous populations have already experienced substantial change in their lifestyles and economies. Over the past several decades, many Indigenous groups have increased their demands for international recognition and broader rights, as well as attention to the economic, health, and safety implications of climate change in the North.[473]

Background

Seven of the eight Arctic nations have Indigenous peoples,[474] whose predecessors were present in parts of the Arctic over 10,000 years ago, well before the arrival of peoples with European

[468] Incidental taking is defined at 50 C.F.R. 17.3 as it related to the ESA.

[469] For example, see FWS, Fairbanks Fish and Wildlife Office, Biological Opinion for Coastal Plain Oil and Gas Leasing Program Arctic National Wildlife Refuge, Consultation with the Bureau of Land Management, March 13, 2020, at https://ecos.fws.gov/tails/pub/document/16469143.

[470] For example, see NMFS, Alaska Office, Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion Ice Exercise 2020 NMFS Consultation Number: AKRO-2019-02445, at https://repository.library.noaa.gov/view/noaa/24263.

[471] For example, see NMFS, Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to U.S. Navy 2020 Ice Exercise Activities in the Beaufort Sea and Arctic Ocean, 85 *Federal Register* 6518, 2/05/2020.

[472] This section was originally prepared by Roger Walke, who was a Specialist in American Indian Policy, Domestic Social Policy Division, until his retirement from CRS in October 2010. It has been updated by Mariel Murray, Specialist in Natural Resources Policy in CRS's Resources, Science and Industry Division, with contributions from Jordan Coleman, CRS Research Assistant.

[473] See, for example, Indigenous Peoples' Global Summit on Climate Change, "The Anchorage Declaration," April 24, 2009, p. 2, at https://unfccc.int/resource/docs/2009/smsn/ngo/168.pdf.

[474] *Arctic Human Development Report*, ed. Joan Nymand Larsen et al. (Akureyri, Iceland: Stefansson Arctic Institute, 2004), p. 47; this report is subsequently cited in this section as *AHDR*. The seven countries are Canada, Denmark-Greenland, Finland, Norway, Russia, Sweden, and the United States.

backgrounds.[475] Current Arctic Indigenous peoples comprise dozens of diverse cultures and speak dozens of languages from eight or more non-Indo-European language families.[476]

Before the arrival of Europeans, Arctic Indigenous peoples lived in economies that were chiefly dependent, in varying proportions, on hunting land and marine mammals, catching salt- and fresh-water fish, herding reindeer (in Eurasia), and gathering, for their food, clothing, and other products.[477] Indigenous peoples' interaction with and knowledge of Arctic wildlife and environments has developed over millennia and is the foundation of many of their cultures.[478]

The length of time that Arctic Indigenous peoples were in contact with Europeans varied across the Arctic. As recorded by Europeans, contact began as early as the 9th century CE, if not before, in Fennoscandia[479] and northwestern Russia, chiefly for reasons of commerce (especially furs); it progressed mostly west-to-east across northern Asia, reaching northeastern Arctic Asia by the 17th century.[480] North American Arctic Indigenous peoples' contact with Europeans started in Labrador in the 16th century and in Alaska in the 18th century, and was not completed until the early 20th century.[481] Greenland's Indigenous peoples first saw European-origin peoples in the late 10th century, but those Europeans died out during the 15th or 16th century and Europeans did not return permanently until the 18th century.[482]

Contact led to significant changes in many Arctic Indigenous economies, political structures, foods, cultures, and populations, especially during the 20th century. For example, life expectancy among Alaska Natives has increased from 47 years in 1950 to over 70 years in 2021 (though it still lags behind that of U.S. residents overall, which is 79 years).[483]

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[475] John F. Hoffecker, *A Prehistory of the North: Human Settlement of the Higher Latitudes* (New Brunswick, NJ: Rutgers University Press, 2005), pp. 8, 81, 112-115.

[476] *AHDR*, pp. 47, 53; David Crystal, *Cambridge Encyclopedia of Language*, 2nd ed. (Cambridge: Cambridge University Press, 1997), chap. 50; *Ethnologue: Languages of the World*, 16th ed., ed. M. Paul Lewis (Dallas: SIL International, 2009), available at http://www.ethnologue.com/. The number of languages and language families varies not only with definitions of the Arctic but with definitions of languages and language families.

[477] Jim Berner et al., *Arctic Climate Impact Assessment* (Cambridge: Cambridge University Press, 2005), chapter 12; this report is subsequently cited in this section as *ACIA*.

[478] *ACIA*, pp. 654-655.

[479] Fennoscandia refers to the Scandinavian Peninsula, Finland, the Kola Peninsula of Russia, and certain parts of Russia bordering on Finland.

[480] Janet Martin, *Treasure in the Land of Darkness: The Fur Trade and Its Significance for Medieval Russia* (Cambridge: Cambridge University Press, 1986), pp. 41-42; James Forsyth, *A History of the Peoples of Siberia: Russia's North Asian Colony, 1581-1990* (Cambridge: Cambridge University Press, 1992), pp. 69-83, 102; Lassi K. Heininen, "Different Images of the Arctic and the Circumpolar North in World Politics," in *Knowledge and Power in the Arctic*, Proceedings at a Conference in Rovaniemi, April 16-18, 2007, Arctic Centre Reports 48, ed. Paula Kankaanpaa et al. (Rovaniemi, Finland: University of Lapland, Arctic Centre, 2007), p. 125.

[481] James W. VanStone, "Exploration and Contact History of Western Alaska," and David Damas, "Copper Eskimo," and J. Garth Taylor, "Historical Ethnography of the Labrador Coast," in *Handbook of North American Indian: Vol. 5, Arctic*, vol. ed. David Damas, gen. ed. William C. Sturtevant (Washington: Smithsonian, 1984), pp. 149-155, 408, 509-510.

[482] Inge Kleivan, "History of Norse Greenland," in *Handbook, Vol. 5, Arctic*, op. cit., pp. 549-555; Finn Gad, "Danish Greenland Policies," in *Handbook of North American Indians: Vol. 4, History of Indian-White Relations*, vol. ed. Wilcomb E. Washburn, gen. ed. William C. Sturtevant (Washington: Smithsonian, 1988), p. 110.

[483] The Alaska Native Epidemiology Center, "Alaska Native Health Status Report 2021," at http://anthctoday.org/epicenter/publications/HealthStatusReport/AN_Health_Status_Report_Executive_And_Data_Summaries.pdf.

Also, at present, most Arctic Indigenous peoples have become minorities in their countries' Arctic areas, except in Greenland and Canada.[484] While many Arctic Indigenous communities remain heavily dependent on hunting, fishing, and herding, and are more likely to depend on traditional foods than non-Indigenous Arctic inhabitants,[485] there is much variation. Many Arctic Indigenous people may no longer consume traditional foods as their chief sources of energy and nutrition, although the practice of relying on the surrounding environment as a source of food and materials for daily life (*subsistence*) may still hold cultural significance.[486] Many Arctic Indigenous communities have developed a mixture of traditional economic activities and wage employment.[487] The economics of subsistence and globalization will be key factors in the effects of climate change on Arctic Indigenous peoples, and on their reactions to Arctic climate change.

Arctic Indigenous peoples' current political structures vary, as do their relationships with their national governments. Some Indigenous groups govern their own unique land areas within the national structure, as in parts of the United States and Canada; others have special representative bodies, such as the Saami parliaments in Norway, Finland, and Sweden;[488] a few areas have general governments with Indigenous majorities, such as Greenland (a member country of Denmark), Nunavut territory in Canada, and the North Slope and Northwest Arctic boroughs in Alaska.[489] Control of land, through claims and ownership, also varies among Arctic Indigenous peoples, as do rights to fishing, hunting, and resources.[490] Arctic Indigenous peoples' political relationships to their national and local governments, and their ownership or claims regarding land, are also significant factors in the responses to Arctic climate change by the Indigenous peoples and by Arctic nations' governments.

Effects of Climate Change

Arctic climate change is expected to continue to affect the economies, population, subsistence, health, infrastructure, societies, and cultures of Arctic Indigenous peoples. Changes in sea ice and sea level, permafrost, tundra, weather, and vegetation distributions, as well as increased commercial shipping, mineral extraction, and tourism, will affect the distribution of land and sea mammals, of freshwater and marine fish, and of forage for reindeer. These will, in turn, affect

[484] One source estimates that, around 2003, about 10% of an estimated 3.7 million people in the Arctic were Indigenous. *AHDR*, pp. 19, 29. Estimates of Arctic Indigenous populations are complicated by varying definitions not only of the Arctic but also of Indigenous peoples; for instance, Russia does not count some non-European Arctic ethnic groups, such as the Yakut, as "indigenous minorities" (see "Peoples of the Arctic: Characteristics of Human Populations Relevant to Pollution Issues," in *AMAP Assessment Report: Arctic Pollution Issues*, ed. Simon J. Wilson et al. [Oslo: Arctic Monitoring and Assessment Programme, 1998], pp. 167-169); this report is subsequently cited in this section as *AMAP 1998*.

[485] *AMAP 1998*, chapter 5; see also Birger Poppel et al., *SLiCA Results*, Survey of Living Conditions in the Arctic (Anchorage: Institute of Social and Economic Research, University of Alaska Anchorage, 2007), pp. 4-7, http://www.arcticlivingconditions.org.

[486] Annika E. Nilson and Henry P. Huntington, *Arctic Pollution 2009* (Oslo: Arctic Monitoring and Assessment Programme, 2009), pp. 39-41; this report is subsequently cited in this section as *AMAP 2009*. For more on the significance of subsistence to Alaska Natives, see CRS Report R47511, *Subsistence Uses of Resources in Alaska: An Overview of Federal Management*, by Mark K. DeSantis and Erin H. Ward.

[487] *SLiCA Results*, op. cit., pp. v, 4-8.

[488] AHDR, p. 232. For maps of selected tribal lands in the United States, see CRS Report R48107, *Selected Tribal Lands in 118th Congressional Districts*, by Mainon A. Schwartz and Mariel J. Murray.

[489] *AHDR*, chapter 4, and pp. 232-233.

[490] AHDR, chapters 6-7, and pp. 232-233. For information on the political organization of Alaska Natives and Alaska Native lands, see CRS Report R46997, *Alaska Native Lands and the Alaska Native Claims Settlement Act (ANCSA): Overview and Selected Issues for Congress*, by Mariel J. Murray.

traditional subsistence activities and related Indigenous lifestyles.[491] Arctic Indigenous peoples' harvesting of animals is likely to become riskier and less predictable, which may increase food insecurity, change diets, and increase dependency on outside, nontraditional foods.[492] Food cellars in many locations have thawed during summers, threatening food safety. Related health risks of diabetes, obesity, and mental illness have been associated with these changes.[493]

Alaska Native Climate Change Vulnerability and Related Federal Actions

Alaska Native groups and federal agencies have reported on the vulnerability of Alaska Natives to climate change. In a joint report issued in 2024, the Alaska Native Tribal Health Consortium, the state of Alaska, and the National Oceanic and Atmospheric Administration concluded that 144 Alaska Native communities face some degree of infrastructure damage from erosion, flooding, and/or permafrost degradation. Recognizing this vulnerability, in 2009 GAO recommended that although many Native villages need to relocate, many have been impeded by various barriers. These barriers include difficulties in identifying appropriate new sites, piecemeal programs for state and federal assistance, and obstacles to eligibility for certain federal programs. In 2022, GAO recommended that seven federal agencies change their programs to reduce barriers that hinder Alaska Native villages' access to federal assistance. The 2022 GAO report, along with the 2024 joint report, also recommended that Congress establish an intergovernmental coordinating entity or framework to target federal investments to Alaska Native villages facing environmental threats. In recent years, Congress has provided funding for climate resilience and voluntary community relocation, and several federal agencies are coordinating to implement this direction.

Sources: Alaska Native Tribal Health Consortium (ANTHC), "The Unmet Needs of Environmentally Threatened Alaska Native Villages: Assessment and Recommendations" p. 1, at https://www.anthc.org/news/anthc-publishes-report-unmet-needs-of-environmentally-threatened-alaska-native-villages/; GAO, *Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages Threatened by Flooding and Erosion*, June 3, 2009; GAO, *Federal Agencies Could Enhance Support for Native Village Efforts to Address Environmental Threats, May 2022;* Bureau of Indian Affairs, "Voluntary Community-Driven Relocation Program," at https://www.bia.gov/service/community-driven-relocation. For an overview of federal resources for Indigenous disaster risk, See CRS In Focus IF12460, *Tribal Disaster Risk and Selected Federal Resources*, by Mariel J. Murray et al.

Oil, gas, and mineral exploration and development are expected to increase in the Arctic, as are other economic activities such as forestry and tourism, and these are expected to increase economic opportunities for all Arctic residents, including Indigenous peoples.[494] Pressures to increase participation in the wage economy, however, may speed up changes in Indigenous cultures. Increased economic opportunities may also lead to a rise in the non-Indigenous population, which may further change the circumstances of Indigenous cultures. Some representatives of Arctic Indigenous peoples have related a "conflicting desire between combating climate change and embracing the potential for economic growth through foreign investment."[495]

Although important advances in public health have occurred in Indigenous communities over past decades, some health problems may increase with continued Arctic climate change. Economic development may exacerbate Arctic pollution problems, including higher exposure to mercury, air pollution, and food contamination. The influx and redistribution of contaminants in the air,

[491] *ACIA*, pp. 1000-1001, 1004.

[492] *ACIA*, pp. 1000-1001, 1004.

[493] Parkinson, Alan J. *The Arctic Human Health Initiative*. Washington, DC: U.S. Department of Health and Human Services, 2006; Brubaker, Michael, James Berner, Raj Chavan, and John Warren. "Climate Change and Health Effects in Northwest Alaska." *Global Health Action* 4 (October 18, 2011).

[494] *ACIA*, pp. 1001, 1004.

[495] Aqqaluk Lynge, Chair, Inuit Circumpolar Council, quoted in Stephanie McFeeters, "Lynge talks future of Inuit people," *The Dartmouth*, February 8, 2012.

oceans, and land may change in ways that are now poorly understood.[496] Warmer temperatures and longer warm seasons may increase insect- and wildlife-borne diseases.[497] Climate change may lead to damage to water and sanitation systems, reducing protection against waterborne diseases.[498] Changes in Arctic Indigenous cultures may increase mental stress and behavioral problems.[499]

The response to climate change by Arctic Indigenous peoples has included international activities by Arctic Indigenous organizations and advocacy before their national governments. As one report noted, "The rise of solidarity among Indigenous peoples organizations in the region is surely a development to be reckoned with by all those interested in policy issues in the Arctic."[500] Six national or international Indigenous organizations are permanent participants of the Arctic Council, the regional intergovernmental forum.[501] Due in part to advocacy by Arctic Indigenous peoples, in 2007 the United Nations (UN) General Assembly adopted the UN Declaration on the Rights of Indigenous Peoples.[502] To strengthen the engagement of Indigenous peoples in its efforts to address and respond to climate change, the United Nations Framework Convention on Climate Change established the Local Communities and Indigenous Peoples Platform (LCIPP) in 2015.[503] In October 2023, Arctic Indigenous peoples participated in the Arctic Regional Gathering that was jointly organized by the LCIPP and the Arctic Council.[504] The LCIPP reported that the gathering "enabled the exchange of experience and knowledge and facilitated multidirectional capacity-building related to addressing climate change and restoring the integrity of nature."[505]

CRS Reports on Specific Arctic-Related Issues

CRS In Focus IF10740, *The Nordic Countries and U.S. Relations*, by Kristin Archick

CRS Insight IN11161, *Greenland, Denmark, and U.S. Relations*, by Kristin Archick

CRS Report R47620, *Canada: Background and U.S. Relations*, coordinated by Peter J. Meyer

[496] See, for example, "Health: Increased Bacterial Loads in Potable Water Could Have Significant Health Effects on Indigenous People From the Arctic to Uganda, Says Vanier Scholar," National Aboriginal Health Organization (NAHO), February 17, 2012, http://www.naho.ca/blog/2012/02/17/health-increased-bacterial-loads-in-potable-water-could-have-significant-health-effects-on-indigenous-people-from-the-arctic-to-uganda-says-vanier-scholar/; and Kallenborn et al., *Combined Effects of Selected Pollutants and Climate Change in the Arctic Environment* (Oslo, Norway: Arctic Monitoring and Assessment Programme [AMAP]), Arctic Council, 2011.

[497] *AMAP Assessment 2009: Human Health in the Arctic*, ed. Simon J. Wilson and Carolyn Symon (Oslo: Arctic Monitoring and Assessment Programme, 2009), pp. 4-6, 143.

[498] Brubaker, Michael, James Berner, Raj Chavan, and John Warren, "Climate Change and Health Effects in Northwest Alaska." *Global Health Action* 4 (October 18, 2011); John Warren, "Climate change could affect human health," *Mukluk Telegraph*, January/February 2005, pp. 5-6.

[499] John Warren, "Climate change could affect human health," *Mukluk Telegraph*, January/February 2005, pp. 5-6.

[500] *AHDR*, p. 235.

[501] See http://www.arctic-council.org/. The six organizations are the Aleut International Association, Arctic Athabaskan Council, Gwich'in Council International, Inuit Circumpolar Council, RAIPON (Russian Association of Indigenous Peoples of the North), and Saami Council.

[502] United Nations, Declaration on the Rights of Indigenous Peoples, Resolution A/RES/61/295, at http://www.un-documents.net/a61r295.htm.

[503] The United Nations Framework Convention on Climate Change (UNFCC), "Indigenous Peoples, Leaders in Climate Action," August 8, 2024, at https://unfccc.int/news/indigenous-peoples-leaders-in-climate-action.

[504] UNFCC, "Report of the Facilitative Working Group of the Local Communities and Indigenous Peoples Platform," March 22, 2024, pp. 6-7, at https://unfccc.int/documents/637480.

[505] Ibid., p, 33.

CRS Report R46761, *Russia: Foreign Policy and U.S. Relations*, by Andrew S. Bowen and Cory Welt

CRS Report R44566, *The Coast Guard's Role in Safeguarding Maritime Transportation: Selected Issues*, by John Frittelli

CRS Report RL34391, *Coast Guard Polar Security Cutter (Polar Icebreaker) Program: Background and Issues for Congress*, by Ronald O'Rourke

CRS Report R47912, *Outer Limits of the U.S. Extended Continental Shelf: Background and Issues for Congress*, by Caitlin Keating-Bitonti

CRS Report RL33872, *Arctic National Wildlife Refuge (ANWR): An Overview*, by M. Lynne Corn, Michael Ratner, and Laura B. Comay

CRS In Focus IF12006, *Arctic National Wildlife Refuge: Status of Oil and Gas Program*, by Laura B. Comay

CRS Report R45192, *Oil and Gas Activities Within the National Wildlife Refuge System*, by R. Eliot Crafton, Laura B. Comay, and Marc Humphries

CRS Legal Sidebar LSB10943, *The Willow Project: History and Litigation*, by Adam Vann[506]

CRS Report RL33705, *Oil Spills: Background and Governance*, by Jonathan L. Ramseur

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[506] The Willow Project is an oil and gas drilling and production project in the National Petroleum Reserve-Alaska (NPR-A), a 23-million-acre area on the North Slope of Alaska under federal control.

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