

NATIONAL SECURITY IMPLICATIONS OF CLIMATE CHANGE IN THE ARCTIC

HEARING

BEFORE THE

SUBCOMMITTEE ON EUROPE, ENERGY, THE
ENVIRONMENT AND CYBER

OF THE

COMMITTEE ON FOREIGN AFFAIRS
HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

NOVEMBER 16, 2021

Serial No. 117-89

Printed for the use of the Committee on Foreign Affairs



Available: <http://www.foreignaffairs.house.gov/>, <http://docs.house.gov/>,
or <http://www.govinfo.gov>

U.S. GOVERNMENT PUBLISHING OFFICE

46-092PDF

WASHINGTON : 2022

COMMITTEE ON FOREIGN AFFAIRS

GREGORY W. MEEKS, New York, *Chairman*

BRAD SHERMAN, California	MICHAEL T. McCAUL, Texas, <i>Ranking Member</i>
ALBIO SIRES, New Jersey	CHRISTOPHER H. SMITH, New Jersey
GERALD E. CONNOLLY, Virginia	STEVE CHABOT, Ohio
THEODORE E. DEUTCH, Florida	SCOTT PERRY, Pennsylvania
KAREN BASS, California	DARRELL ISSA, California
WILLIAM R. KEATING, Massachusetts	ADAM KINZINGER, Illinois
DAVID CICILLINE, Rhode Island	LEE ZELDIN, New York
AMI BERA, California	ANN WAGNER, Missouri
JOAQUIN CASTRO, Texas	BRIAN MAST, Florida
DINA TITUS, Nevada	BRIAN FITZPATRICK, Pennsylvania
TED LIEU, California	KEN BUCK, Colorado
SUSAN WILD, Pennsylvania	TIM BURCHETT, Tennessee
DEAN PHILLIPS, Minnesota	MARK GREEN, Tennessee
ILHAN OMAR, Minnesota	ANDY BARR, Kentucky
COLIN ALLRED, Texas	GREG STEUBE, Florida
ANDY LEVIN, Michigan	DAN MEUSER, Pennsylvania
ABIGAIL SPANBERGER, Virginia	AUGUST PFLUGER, Texas
CHRISSEY HOULAHAN, Pennsylvania	PETER MEIJER, Michigan
TOM MALINOWSKI, New Jersey	NICOLE MALLIOTAKIS, New York
ANDY KIM, New Jersey	RONNY JACKSON, Texas
SARA JACOBS, California	YOUNG KIM, California
KATHY MANNING, North Carolina	MARIA ELVIRA SALAZAR, Florida
JIM COSTA, California	JOE WILSON, South Carolina
JUAN VARGAS, California	
VICENTE GONZALEZ, Texas	
BRAD SCHNEIDER, Illinois	

SOPHIA LAFARGUE, *Staff Director*

BRENDAN SHIELDS, *Republican Staff Director*

SUBCOMMITTEE ON EUROPE, ENERGY, THE ENVIRONMENT AND CYBER

WILLIAM R. KEATING, Massachusetts, *Chairman*

ABIGAIL SPANBERGER, Virginia	BRIAN FITZPATRICK, Pennsylvania, <i>Ranking Member</i>
SUSAN WILD, Pennsylvania	ANN WAGNER, Missouri
ALBIO SIRES, New Jersey	ADAM KINZINGER, Illinois,
THEODORE DEUTCH, Florida	BRIAN MAST, Florida
DAVID CICILLINE, Rhode Island	DAN MEUSER, Pennsylvania
DINA TITUS, Nevada	AUGUST PFLUGER, Texas
DEAN PHILLIPS, Minnesota	NICOLE MALLIOTAKIS, New York
JIM COSTA, California	PETER MEIJER, Michigan
VICENTE GONZALEZ, Texas	
BRAD SCHNEIDER, Illinois	

LEAH NODVIN, *Staff Director*

CONTENTS

	Page
WITNESSES	
Zukunft, Admiral Paul F., USCG (Ret.), Former Commandant of the United States Coast Guard	7
Natali, Dr. Susan M., Arctic Program Director, Woodwell Climate Research Center	15
Dorough, Dr. Dalee Sambo Chairperson, Inuit Circumpolar Council	21
Coffey, Mr. Luke Director, Douglas and Sarah Allison Center for Foreign Policy, The Heritage Foundation	27
APPENDIX	
Hearing Notice	54
Hearing Minutes	55
Hearing Attendance	56
ADDITIONAL MATERIALS SUBMITTED FOR THE RECORD	
Additional materials submitted for the record	57

NATIONAL SECURITY IMPLICATIONS OF CLIMATE CHANGE IN THE ARCTIC

Tuesday, November 16, 2021

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON EUROPE, ENERGY, THE ENVIRONMENT,
AND CYBER,
COMMITTEE ON FOREIGN AFFAIRS,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:11 a.m., via Webex, Hon. William R. Keating (chairman of the subcommittee) presiding.

Mr. KEATING. The House Foreign Affairs Subcommittee will come to order.

Without objection, the chair is authorized to declare a recess of the committee at any point, and all members will have 5 days to submit statements. Extraneous material and questions for the record will also be accepted during that period, subject to the length limitations in the rules. To insert something into the record, please have your staff email the previously mentioned address or contact full committee staff.

Please keep your video function on at all times, even when you are not recognized by the chair. Members are responsible for muting and unmuting themselves, and please remember to mute yourself after you finish speaking. Consistent with House Resolution 965 and the accompanying regulations, staff will only mute members and witnesses as appropriate when they are not under recognition to eliminate background noise.

I see that we have a quorum, and I will now recognize myself for an opening statement.

Pursuant to notice, we are holding a hearing today entitled, “National Security Implications of Climate Change in the Arctic.”

Last week, I had the privilege to attend the 26th U.N. Climate Change Conference of the Parties, also known as COP26, in Glasgow, Scotland. The COP26 summit brought parties together to accelerate action toward the goals of the Paris Agreement and the U.N. Framework Convention on Climate Change.

After 2 weeks of intense—and they were intense—deliberations, diplomats from nearly 200 countries reached a final deal to work together to stave off the worst effects of climate change for current and future generations. I personally was encouraged to see member States join forces with civil society, companies, and youth on the front line of climate change, to inspire climate action in all areas of the world.

COP26 has provided global direction to the world. We must undertake to respond and mitigate the existential threat that climate change poses to our world. Now it is time to roll up our sleeves,

get creative, and sometimes make tough decisions. And together, we must work to better understand some of the very real pressing national security challenges that global warming presents to strategically significant regions of the world. As such, we are here today to discuss the national security challenges that global warming is exacerbating in a region critically important to the U.S. and its Nordic partners, the Arctic.

The United States is proud to be an Arctic Nation alongside Canada, Denmark, Finland, Iceland, Norway, Sweden, and the Russian Federation. As a member of the Arctic Council, with economic, diplomatic, military, and environmental interests in the region, we bear a responsibility to mitigate the effects of climate change in the Arctic's lands, oceans, and, most importantly, its peoples.

For this reason, Ranking Member Fitzpatrick and I organized this hearing today to better understand the current state of the Arctic climate change and the implications on national security for not only the United States but for our Nordic partners as well.

The Arctic is categorized by distinctively polar conditions in climate, plant life, and animal life. It is a region rich in distinction for its cultural traditions and is a key component of the global economy.

International interests in the Arctic and the sub-Arctic regions has steadily increased during the 20th century for three major reasons: One, the advantages of the North Pole route as a shortcut between important centers of population; second, the growing realization of economic potentiality, such as minerals, especially petroleum, and forest resources and grazing areas; and third, the importance of the region in the study of global meteorology.

Over the last two decades, Arctic surface air temperature has increased more than double—more than double—the global average. It is widely assumed that the Arctic will continue to warm more than the global surface temperature, which will almost certainly further amplify the loss of Arctic sea ice. The scientific community has even begun to predict that the Arctic Ocean will become practically sea ice-free in late summer by the end of the 21st century.

As the climate changes, the Arctic and the communities that live there are experiencing increasingly catastrophic effects. Ongoing loss of Arctic sea ice has both local and remote impacts on the climate system, influencing the local surface energy budget as well as large-scale ocean and atmospheric circulation patterns and ecosystems.

Reduced Arctic sea ice has been observed to have a range of impacts, including greater ocean transit through the region, expanding fishing and tourism activities, increased options for oil, gas, and mineral exploration in the Arctic offshore and onshore areas, and diminished Arctic marine mammal populations and the human communities that rely on these mammals for nutritional, cultural, and economic reasons.

I believe that the protected access to resources and access to the sea lanes for transit are vital national security interests for the United States and the Arctic. Specifically, the diminishment of Arctic ice and potentially increased maritime access open the door for a race for Arctic resources between the United States and Arctic Council members, like Russia, or observers, importantly like China.

The Arctic has significant resources, as we all know, but I cannot underscore enough that we must not allow global competition to disrupt the already fragile ecosystem that exists in the Arctic. Instead, I believe we need to focus on three main areas to preserve prosperity and stability in the Arctic and continue our decades-long cooperation with our Nordic partners:

One, we need a governmentwide approach to the Arctic to make the Arctic a national priority. The United States needs to continue to strengthen its presence in the Arctic, both militarily and civilian. And we need the appropriate infrastructure in the Arctic to support that presence.

Two, Arctic nations must deal with the consequences of a changing climate and the patterns that are developing. We have a number of areas that are vulnerable to a rising sea level, and we need to make investments now to address these long-term consequences.

Third, preservation of indigenous communities and the ecologies of the Arctic must be a top priority for the United States and other Arctic nations.

To elaborate on the many issues facing the Arctic and to offer their unique perspective, we have invited four expert witnesses to explain the national security, environmental, and societal impacts that global warming poses to the Arctic.

I welcome and thank Admiral Paul Zukunft, former Commandant of the U.S. Coast Guard; Dr. Susan Natali of the Woodwell Climate Research Center, a venerated research institution in the congressional district that I represent; Dr. Dalee Sambo Dorough of the Inuit Circumpolar Council; and Mr. Luke Coffey from The Heritage Foundation for being here today.

That is a lot of witnesses, but we are going to cover a lot of subject matter here.

This is the first House Foreign Affairs Committee hearing on the Arctic in this conference, and I believe each witness' testimony is essential to better understand the climate, the people, and the geostrategic interests of the region.

With that, I welcome an honest assessment where we need to go in our pursuit of a comprehensive Arctic strategy from our expert witnesses. And I want to thank them for being here, realizing that some of them are working out of a different time zone and it was a little more personally difficult in that regard.

So I would like to recognize the ranking member now, Mr. Fitzpatrick, for his opening statement.

Mr. FITZPATRICK. Thank you. Good afternoon. Thank you, Chairman Keating, and thank you to all of our esteemed witnesses as we examine national security threats in the Arctic.

And as one of the eight countries located within the Arctic Circle, the United States has the opportunity to lead in a global effort toward multilateral cooperation in a swiftly changing environment and, fortunately, we can do so in conjunction with our NATO partners in the region and through critical forums like the Arctic Council.

The Arctic environment is undeniably changing. Ice is melting and waterways are becoming more navigable for longer periods of time each year. This increased accessibility also brings the potential for conflict to emerge in this traditionally peaceful region. And

as such, the United States and our partners in the Arctic must insist on the integrity of our sovereignty. Clear expectations and proactive engagement in the region can allow for lowering of political temperatures and reduce the likelihood for future armed conflicts.

Russia in particular, which maintains half of the world's Arctic territory within its borders, seems increasingly likely to test the limits of the United States and our allies in the Arctic. Authoritarians in the Kremlin have already shattered international norms through hostile and illegal occupation of nations like Ukraine and by weaponizing energy resources. And Russia's recent attempts to restrict access to the Northern Sea Route and their reinforcement of previously abandoned military installations are cause for concern and deliberate attention of the Biden administration. We must take steps to ensure that we are fully prepared should this aggression escalate in the Arctic.

Moreover, as the current administration turns back and allows Nord Stream Two pipeline's completion, we must be under no illusion that Russia will take environmental precautions as it prospects unexploited oil and gas reserves in the Arctic.

And given the importance of this region, I urge my colleagues to support investment in U.S. interests and assets in the Arctic by increasing our diplomatic security presence. And the opening of the U.S. consulate in Nuuk, Greenland, was a positive step for invigorated U.S. engagement in the region, but it cannot end there. Our Coast Guard installations, such as Barrow in Alaska, should warrant increased backing as well. And growing Arctic traffic will require expanded specialized search and rescue operations to face the brutal conditions of the high north.

In conclusion, Mr. Chairman, the United States must remain committed to bolstering military and scientific capabilities in the Arctic as the region takes greater focus on the world stage. And environmental changes and advancements in technology will require modernizing aspects of our national security operations to stay competitive. And it is my hope that my colleagues can come together to support this goal.

Again, thanks to the panelists for being here with us.

Mr. Chairman, I yield back.

Mr. KEATING. I thank the ranking member for his opening remarks. And I would like to now call on our witnesses for their opening statements.

First, I will introduce Admiral Paul Zukunft, who has served as the 25th Commandant of the United States Coast Guard from 2014 to 2018.

Coming from my district, a coastal district, Admiral, I cannot tell you my great esteem and appreciation for the Coast Guard and their daily work. Welcome. And I now recognize you for 5 minutes for an opening statement.

**STATEMENT OF ADMIRAL PAUL F. ZUKUNFT, USCG (RET.),
FORMER COMMANDANT OF THE UNITED STATES COAST
GUARD**

Admiral ZUKUNFT. Chair Keating, thank you for those kind remarks. And, Ranking Member Fitzpatrick and members of the sub-

committee, I am truly honored to testify at today's hearing on a topic that has had and continues to have my laser focus, and that is the Arctic.

Before I deliver my oral testimony, I request that my written testimony be entered into the record.

Mr. KEATING. Without objection. So moved. So done.

And I will say this just to preempt the other witnesses. I will now make a motion that all their written testimonies be submitted for the record.

Any objection?

Hearing none, all your written testimonies will be moved for the record.

You may continue, Admiral.

Admiral ZUKUNFT. OK. Thank you, Chair.

The United States has been an Arctic Nation for the past 154 years, after Secretary of State William Seward brokered the purchase of the Alaska territory from a then cash-strapped Russia at a cost of \$7.2 million in then dollars or, roughly, 2 cents per acre.

It was then dubbed "Seward's Folly," but it has proved to be strategic foresight. And not simply due to the vast natural resources in our 49th State, but for had it not been for such a "folly," the Russian republic and its military arsenal would currently occupy this region and the U.S. would, at best, be a near-Arctic Nation.

So we have strategic foresight dating back to 1867, and what I will call strategic afterthought as it pertains to the Arctic over the past several decades. We have a Presidential Policy Directive, strategy, and memorandum released by the three previous administrations, respectively, but each of those were released at the trailing edge of those administrations and failed to carry the full weight from one administration to the next. And I will come back to that in my closing.

Over the past half century, as the chair has mentioned, the Arctic has warmed at nearly twice the rate than the rest of the planet. I witnessed this firsthand when, in 2017, I visited the Jakobshavn Glacier in Greenland, that is moving at an accelerated pace into the North Atlantic Ocean. When I asked the Inuit elders in Ilulissat what I was witnessing, their response in two words was "climate change."

Just as profound, sea ice is in retreat across the Arctic Ocean and great power competition is rapidly filling that void, particularly Russia. Russia operates a fleet of icebreakers that is nine times that of the United States, yet it has a GDP that is nearly one-tenth of that of the United States. Natural islands are being militarized. Icebreaking corvettes with a cruise missile package that can range the northern tier of the United States and beyond are being delivered, and its extraterritorial claims extend up to the North Pole.

And then there is the Northern Sea Route, an international strait under the Law of the Sea Convention that connects the Asian and European markets while trimming one-third of the transit time by bypassing the Suez Canal for commercial shipping during the ice-free season. But Russia not only treats the Northern Sea Route as its internal waters, but has imposed draconian measures for any vessel, to include military ships and, yes, U.S. ships,

to request permission to enter and procure the services of a Russian icebreaker and ship pilot before transiting the Northern Sea Route.

Meanwhile, China deems itself a near-Arctic nation, although its northernmost extreme is some 900 miles south of the Arctic Circle. China has invested heavily in Russia's LNG facility on the Yamal Peninsula and in the economies of Greenland and Iceland.

China gained observer status on the Arctic Council in 2013, and recently delivered its second icebreaker, with aspirations of launching a nuclear icebreaker to advance its Belt and Road Initiative in the Arctic.

While I am pleased to see the U.S. Coast Guard has full funding for two heavy polar security cutters, it is clearly two decades behind in the acquisition and delivery schedule. I must emphasize that the Coast Guard's program of record requires three heavy and three medium polar security cutters. Our Nation's only heavy icebreaker, Polar Star, has been in service for over 45 years now, while serving in the harshest environments on the face of the planet.

The U.S. lacks a deepwater port in the Arctic that compromises sustained at-sea operations in that domain, while bandwidth and maritime domain awareness above 70 degrees north are woefully inadequate.

While I served as Commandant of the Coast Guard, I was fortunate to establish an Arctic Coast Guard Forum in 2016, comprised of the Coast Guards from the eight member Arctic Council nations that have been conducting combined exercises in the Arctic ever since.

And where the U.S. lacks strength in numbers in the Arctic, there are strength in our alliances. Five of the eight Arctic Council nations are members of NATO, while Finland and Sweden are key contributors to NATO-led operations. Collectively, our alliances have an aggregate fleet of 35 icebreakers, to include Norway's Svalbard class icebreaking patrol vessels, to reduce the numbers gap with Russia.

I close by stating that this administration has an opportunity to synthesize the Arctic initiatives of the three previous administrations where there is a commonality across all three of those administrations so that this Arctic roadmap can gain momentum now. The reactivation of the Arctic Executive Steering Committee this past September is clearly a step in the right direction.

Finally, on the matter of maritime governments. The U.S. is not positioned to govern diplomatically in this realm until such time it ratifies the Law of the Sea Convention.

Chair, I thank you for this opportunity to testify, and I look forward to your insights and questions. Thank you.

[The prepared statement of Admiral Zukunft follows:]

Written Testimony**House Foreign Affairs Subcommittee on Europe, Energy, the Environment, and
Cyber****National Security Implications of Climate Change in the Arctic****Admiral Paul F. Zukunft, U.S. Coast Guard (retired)****November 16, 2021**

For the past 154 years, the United States has been an Arctic nation. It was on March 30, 1867 when Secretary of State William H. Seward brokered the acquisition of the Alaska territory from a cash-strapped Russia at a cost of \$7.2 million or roughly two-cents per acre. Skeptics at the time would dub this landfall acquisition as “Seward’s Folly”.

This hearing would not be convened today absent this “folly”; the vast natural resources extracted from and held in reserve in Alaska would be filling the coffers of the Russian republic; conventional and nuclear threats from a peer competitor would be on our threshold compromising early warning detection networks; all while leaving the U.S. consigned to a spectator role as great power competition is filling a void when Arctic sea ice is in retreat. Accordingly, I attest that it will be tantamount to strategic “folly” to fail to match strategic intent with enhanced capabilities and capacity for sustained operations in the Arctic.

The U.S. does not lack for strategic intent and during my tenure as Commander of the Coast Guard’s Pacific theater that encompassed the Arctic and Antarctica from 2012 - 2014, and as Commandant of the Coast Guard from 2014 - 2018, I worked extensively with the private sector, indigenous residents, the Pentagon and Department of Homeland Security, members of Congress and the White House under President Obama’s and President Trump’s Administrations to attain tangible outcomes from the strategic foundation that had been laid. I will first address that strategic foundation going back 25 years.

The Ottawa Declaration of 1996 formerly established the Arctic Council comprised of Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the United States. This 8-nation Council (with 5 standing members of NATO) serves as a coordinating body to address *non-security matters* to include safety of life at sea, maritime pollution and subsistence living among the indigenous residents in the Arctic. Working with Department of State, I was able to establish an Arctic Coast Guard Forum while the U.S. Chaired the Council from 2015 - 2017 that has culminated in combined operations among member nations’ coast guards to enhance collaboration and trust building measures.

National Security Presidential Directive 66 and Homeland Security Directive 25 was issued on January 9, 2009 (just prior to President George W. Bush leaving office) and required the following:

- a. Increased capability and capacity to protect air, land and sea borders in the Arctic;
- b. Increased maritime domain awareness to protect maritime commerce, critical infrastructure and key resources;
- c. The preservation of global mobility of U.S. military and civilian aircraft and ships;
- d. The projection of sovereign U.S. maritime presence in the Arctic; and
- e. The peaceful resolution of disputes in the Arctic.

The National Strategy for the Arctic Region was promulgated on May 10, 2013 and delineates three lines of effort to include:

- a. Advance U.S. security interests to include infrastructure, maritime domain awareness, energy security and freedom of navigation;
- b. Environmental protection; striking a balance between economic development and the preservation of cultural values; and advancing scientific research and charting in the Arctic. (Of note, approximately 5% of the Arctic Ocean has undergone hydrographic surveys and charting to 21st century standards.)
- c. Strengthen international cooperation through continued engagement with the Arctic Council and International Maritime Organization and acceding to the Law of the Sea Convention.

Memorandum on Safeguarding U.S. National Interests in the Arctic and Antarctic Regions was released on June 9, 2020. This memorandum strikes at the heart of our emaciated fleet of ice breakers that lacks sufficiency in numbers and material readiness to exert U.S. sovereignty in the Arctic region and concurrently uphold the Antarctica Treaty System. The memorandum prescribes the acquisition of three heavy, polar-class security cutters. To date, two of those three cutters have been fully funded at a cost of \$1.754 billion with the first cutter scheduled for delivery in 2024 from VT Halter Marine in Pascagoula, MS. (The Coast Guard's program of record calls for three heavy and three medium class polar security cutters.)

For their part, the Coast Guard, and more recently, Department of Defense have released their strategic intent for the Arctic that complement the evolving strategic intent from the three previous administrations. And on September 24, 2021 President Biden's administration reactivated the Arctic Executive Steering Committee in support of the Arctic Council that had been in hiatus under the previous administration.

Yet strategic intent alone does not hold big power competition in check. And what's driving this competition? Simply stated, there is a significantly more open water and less ice covered Arctic Ocean that has opened access to resource exploitation, more

expeditious sea routing between the Asian and European markets and militarization of the Arctic. I will address these big powers individually.

Russia. With the longest Arctic coastline and a fleet of conventional and nuclear powered ice breakers that outnumber that of the U.S. by a factor of 9:1, Russia, despite its GDP of less than one-tenth of the U.S. enjoys regional hegemony in the Arctic. The Northern Sea Route Administration was established in 2013 and oversees the draconian measures imposed by Russia for transiting the more viable Northeast Passage that trims about one-third of the transit time and by-passes the Suez Canal for maritime commerce between Asia and Europe during the relatively ice-free season from Summer to mid-Fall. Any vessel to include foreign military shipping must first submit a request to the Administration that includes ship-specific sensitive information to gain permission for passage, and then retain the services of a Russian icebreaker and ice pilot to transit those waters in repudiation of the tenets of innocent passage under the Law of the Sea Convention when transiting an international strait.

At the same time, Russia has laid claim to an expanded continental shelf that extends up to the North Pole, again in defiance of expanded continental shelf claims that are limited to 350 miles or 150 miles beyond the conventional 200-mile exclusive economic zone under the provisions of the Law of the Sea Convention.

Economically, Russia enjoys vast natural gas reserves that are being exploited and exported from the Yamal Peninsula in northwest Siberia. As a “no-show” at COP26 and with the added advantage of its Northern Sea Route, Russia is positioned to fuel its economy from the liquefied natural gas riches of the Yamal Peninsula over the next several decades.

Militarily, Russia has invested in a two-pronged, access denial and offensive naval combatant approach for the Arctic region. Outlying installations whose mission was primarily for search and rescue are being re-fitted to accommodate missile batteries. Russia also has a program to place 23550 ice class patrol ships into service. These patrol ships are ostensibly icebreaking corvettes capable of launching the Kalibr-NK cruise missile with a range of nearly 1500 miles. In 2017, Russia conducted a military exercise in the Arctic (Zapad 2017) that included 60-70 thousand troops and 70 aircraft.

China. China considers itself a “near Arctic nation”, yet its northern most extreme lies over 900 miles south of the Arctic Circle. China gained observer status to the Arctic Council in 2013 and has viewed the Arctic as a global commons. To that end, it has launched a second icebreaker with aspirations to launch a nuclear powered icebreaker to advance its “polar silk road” initiative. China brokered nearly one-third of the \$27 billion infrastructure project to establish Russia’s Yamal LNG facility, and continues to invest heavily in the economies of Iceland and Greenland to establish a more permanent foothold in the Arctic region. In 2015, China conducted a combined naval exercise with Russia in the Arctic coincident with President Obama’s visit to Alaska under the auspices of climate change.

United States. An anecdote: While I was serving as Commandant of the Coast Guard, the National Security staff strongly encouraged that I deploy our Nation's sole, heavy icebreaker (*Polar Star*) through the Northern Sea Route in a freedom of navigation exercise directed against Russia. *Polar Star* has been in service for over 40 years, operating in the harshest conditions on the face of the planet, namely, Antarctica. *Polar Star's* material readiness has been compromised due to spare parts obsolescence and remains in service only by cannibalizing parts from its sister ship, *Polar Sea*. So when I fielded that request, I could provide no assurance that *Polar Star* could complete the exercise without experiencing a major engineering casualty requiring Russia's assistance in rendering aid to a crippled, U.S. heavy icebreaker. The National Security staff supported my recommendation and we stood down from that freedom of navigation exercise. And this should come as no surprise. The four Commandants who preceded me over a span of 16 years had vigorously campaigned for the recapitalization of our Nation's heavy icebreaking fleet that were successively met with muted responses and mandates for the Coast Guard to conduct further studies. Consequently, the Coast Guard and our Nation is now two decades behind the acquisition and delivery schedules to recapitalize its polar fleet and exert sovereignty in the Arctic region.

One of the greatest assets for the U.S. in the Arctic is our alliances. 5 of the 8 Arctic Council nations (U.S., Canada, Denmark, Iceland and Norway) are NATO partners, and Finland and Sweden are valued contributors to NATO-led operations. Collectively, these 7 named Nations operate a fleet of 35 icebreakers to include Norway's *Svalbard* class of ice breaking patrol vessels. And Canada has designs to replicate the *Svalbard* class with a fleet of 8 *Harry DeWolf* class, icebreaking patrol vessels.

In order to attain Arctic domain awareness that has been articulated in each iteration of our National strategy, there is a prerequisite for space-based bandwidth. Command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) challenges persist in the Arctic where land-based high frequency technology is compromised by solar activity and magnetic anomalies.

Meanwhile, the U.S. is among the few outliers that have not ratified the Law of the Sea Convention. This not only compromises our standing as an arbiter of maritime governance, but nullifies any claim to our expanded continental shelf (an area roughly twice that of the State of California), despite extensive sea bed mapping by the Coast Guard and National Oceanic and Atmospheric Administration to validate such a claim.

The U.S. does not have a Deepwater port in the Arctic, although studies have been completed to assess the feasibility of establishing a port in either Port Clarence, Kotzebue, or Nome, Alaska. The nearest Deepwater port, Dutch Harbor lies some 900 miles distant from the Arctic and off-station times are considerable whenever an icebreaker needs to re-fuel and take on supplies.

And with respect to logistics, supply lines are stretched thin, and shore infrastructure is limited to support a surge force. Case in point: I was the federal-on-scene coordinator during the Deepwater Horizon oil spill in 2010. On any given day, I had nearly 50,000 first responders, 6500 ships and 120 aircraft deployed to mitigate the impact of the largest oil spill in U.S. history. Our shore infrastructure was robust! In contrast, for an oil spill along the environmentally pristine north slope of Alaska, there are accommodations for approximately 50 surge forces in Utqiagvik (formerly known as Barrow), Alaska. There is no deepwater port, while treacherous sea states and persistent, low cloud ceilings inhibit sustained at-sea and air operations respectively in an oil spill response contingency.

It is estimated that nearly one-third of the global unexploited natural gas and 13% of the unexploited oil reside in the Arctic region. Any such exploitation must be tempered with the constraints of oil spill recovery operations, and above all, the cultural values of our native Alaskans.

As sea ice retreats to historic levels on a seasonal basis, there are 31 coastal communities in Alaska directly threatened by coastal erosion. Near-shore sea ice had served as a natural breakwater to those communities, and that natural barrier is no more. Most of these communities lack a road system to enable an expeditious evacuation, and in the event of severe coastal flooding and erosion, I anticipate the Department of Defense will have a pivotal emergency response role under the auspices of Defense Support to Civil Authorities.

Militarily, U.S. presence has historically been focused on nuclear deterrence with submarines operating below the ice cap; nuclear defense under the command and control of the North American Aerospace Defense Command (NORAD); conventional threats under the purview of Alaska Command, a sub-unified element of Northern Command and headquartered at Joint Base Elmendorf-Richardson in Anchorage, Alaska; and adversarial submarine threats in the Greenland, Iceland, United Kingdom gap with Naval P-8 Poseidon aircraft operating from Thule Air Base in Greenland and Naval Air Station Keflavik in Iceland on a rotating basis. More recently, the U.S. and allied partners conducted Operation Trident Juncture in 2018 north of Norway and deployed approximately 50,000 troops, 250 aircraft and 65 ships. The 17th Coast Guard District in Juneau, Alaska serves as the Naval component to Alaska Command.

The Way Ahead:

U.S. presence in the Arctic region has languished under Republican and Democratic Presidential administrations, and on closer examination, executive level directives, strategies and memoranda were released during the trailing edge of each of those administrations culminating in a pause placed upon strategic direction and outcomes once the succeeding administration took office. There is an immediate opportunity for the current administration to weave a common thread across those previous administrations' strategic direction to enhance bi-partisan support and provide tangible assets to bolster U.S. capability and capacity in the Arctic region.

Meanwhile, the Arctic remains a bell weather for climate change and a take away from COP26 is that attaining any semblance of net carbon zero is on the very distant horizon, while the gigatons of greenhouse gases emitted today will persist in the atmosphere for decades to come. The correlation between CO2 concentrations, global temperatures and sea level is profound, and with CO2 concentrations on the rise, I anticipate a continual warming and more accessible Arctic Ocean that will escalate great power competition in the region.

The U.S. must stay the course in supporting the Arctic Council under the direction of the Arctic Executive Steering Committee, the Arctic Coast Guard Forum, and combined military exercises among allied and like-minded nations within the U.S. European Command and U.S. Northern Command theaters of operation.

I am relieved to see two polar security cutters fully funded with reserve space, weight and power to accommodate military weaponry. The next step is to fully fund the recapitalization of our icebreaking fleet with a program of record that includes three heavy and three medium class polar security cutters.

The bandwidth gap in the high latitudes must be closed with space-based capability, and the establishment of a deepwater port above the Arctic Circle is imperative for sustained maritime operations in the Arctic Domain.

Finally, I advocate legislative action for the U.S. to ratify the Law of the Sea Convention. This would not only provide maritime governance legitimacy to our expanded continental shelf claims in the Arctic, but provide a platform to challenge the unilateral action of Russia in denying innocent passage through a recognized international strait - the Northern Sea Route.

Admiral Paul F. Zukunft, U.S. Coast Guard (retired)

Mr. KEATING. Well, thank you, Admiral, and thank you for that sobering testimony, and look forward to some questions.

Second witness I would like to introduce is Dr. Susan M. Natali. She is the Arctic program director at the Woodwell Climate Research Center in Woods Hole, Massachusetts, and it is interesting, just a few miles from where I live.

It is interesting too that it wasn't too long ago that we saw the *Armstrong*, the icebreaking vessel from NSI, as an asset set launch through there, and they are dealing directly on land with Woods Hole. So I look forward to your testimony.

I now recognize Dr. Susan Natali.

**STATEMENT OF DR. SUSAN M. NATALI, ARCTIC PROGRAM
DIRECTOR, WOODWELL CLIMATE RESEARCH CENTER**

Dr. NATALI. Thank you so much.

I am going to share some slides, if we can get this to work, to give members of the committee who have not been to the Arctic an idea of what some of the changes that are happening look like. So can you see those slides now?

Mr. KEATING. Yes.

Dr. NATALI. OK. Great. OK.

So thank you to the committee, in particular Representative Keating, for inviting me to provide testimony to this hearing. I am very honored to be here.

I am Dr. Sue Natali. I am the Arctic program director and a senior scientist at the Woodwell Climate Research Center. I am an Arctic ecologist, and I study the effects of permafrost thaw in northern wildfires on Arctic lands in the global climate.

So Woodwell Climate Research Center is a nonprofit organization. We are based in Falmouth, Massachusetts, made up of researchers who work with partners worldwide to understand and combat climate change.

So while the world has already warmed 1.1 degrees Celsius, on average, above preindustrial levels, the Arctic is warming more than two times faster than this global average. In the coming years, Arctic temperatures are projected to continue to rise at an accelerated rate, further exacerbating climate hazards, including wildfires, sea ice melt, coastal erosion, and permafrost thaw.

OK. So permafrost is ground that has been frozen for 2 or more consecutive years. It is also been frozen for many hundreds to thousands of years. Permafrost underlies about 15 percent of the Northern Hemisphere land area and approximately 85 percent of Alaska's land area.

From a global climate change perspective, permafrost thaw is critically important because the permafrost region stores a vast amount of carbon. There is roughly twice as much carbon stored in permafrost as is currently contained in the entire Earth's atmosphere.

Once thawed, this previously frozen carbon can be broken down by microbes and released into the atmosphere as greenhouse gases, methane, and carbon dioxide. The release of greenhouse gasses from thawing permafrost can accelerate climate warming, leading to additional thaw.

As stated in the International Panel on Climate Change recently released Sixth Assessment Report, the loss of permafrost carbon is irreversible on a human-relevant timeframe. The report projected that between 3 and 41 billion tons of carbon dioxide will be released by thawing permafrost per each 1 degree Celsius of warming by 2100. However, this range likely underestimates the potential of permafrost carbon emissions because, currently, no global models include some important thaw processes, such as thaw-induced ground collapse.

When accounting for the full scope of thaw processes, cumulative permafrost carbon emissions by the end of the century could be on par with continued emissions from a country like Japan or as high as continued emissions from the United States. As a result, permafrost thaw emissions could take up between 25 and 40 percent of the remaining carbon budget to stay below 2 degrees Celsius. This means that we need to be cutting fossil fuel emissions even faster than is currently understood.

The local and regional implications of permafrost thaw are also widespread and significant. Permafrost thaw can cause the ground to sink, a phenomenon known as subsidence. And when there is a large amount of ice in the permafrost, as seen here, the ground can abruptly collapse, which creates hazardous conditions for Arctic residents and contributes to the rising cost of climate change. These hazards are already being experienced across Alaska, endangering human health, destroying public infrastructure, threatening water, cultural resources, traditional food storage and ways of living, and access to subsistence resources.

Additionally, foundations of military infrastructure in the Arctic are already cracking and becoming increasingly unstable due to ground thaw.

The risk and severity of climate impacts are particularly high for coastal communities in Alaska, where loss of land-fast sea ice is increasing storm impacts and permafrost thaw is exacerbating coastal erosion rates. Almost a decade ago, the U.S. Government Accountability Office identified 31 Alaskan villages that face imminent threat from flooding, erosion, and permafrost thaw. At the time of the report, 12 villages were seeking relocation options. However, none of these villages have yet fully relocated, in large part because of a lack of a governance framework to facilitate relocation efforts.

We are working with our partners in some of these communities to monitor the catastrophic and combined effects of permafrost thaw, flooding, and erosion, known as *usteq*, to support climate adaptation planning.

Permafrost thaw is already occurring in Alaska and across the Arctic. Domestically, we need to act now to ensure that communities in Alaska and Federal agencies are prepared for these impacts, and put into place aggressive mitigation and adaptation policies to respond to these changes and to prevent further avoidable climate warming.

Thank you.

[The prepared statement of Dr. Natali follows:]



149 Woods Hole Road
Falmouth, MA 02540-1644

woodwellclimate.org
508 540 9900

info@woodwellclimate.org

**Testimony to the House Foreign Affairs Subcommittee on Europe, Energy, the
Environment and Cyber**

National Security Implications of Climate Change in the Arctic

Dr. Susan M. Natali

Arctic Program Director and Senior Scientist - Woodwell Climate Research Center

November 16, 2021

Thank you to the committee and in particular Representative Keating for inviting me to provide testimony for this hearing.

I am the Arctic Program Director and a Senior Scientist at the Woodwell Climate Research Center ("Woodwell"). I am an Arctic ecologist, who has been studying permafrost thaw for the past 13 years, nine of which were at Woodwell. My research focuses on permafrost thaw and northern latitude fire and the resulting effect on local landscapes and the global climate. Woodwell's Arctic research team uses on-the-ground observations, satellite remote sensing, and computational modeling to understand the impacts of these climate-driven changes across the Arctic and the rest of the world.

The [Woodwell Climate Research Center](https://www.woodwellclimate.org/) is a non-profit organization based in Falmouth, Massachusetts, made up of researchers who work worldwide with partners to understand and combat climate change. Woodwell scientists helped to launch the United Nations Framework Convention on Climate Change in 1992 and shared the Nobel Prize with the Intergovernmental Panel on Climate Change in 2007. Woodwell brings together cutting edge science and more than 35 years of translating science into policy to find societally-relevant solutions to global climate change and climate risks.

While the world has already warmed 1.1°C above pre-industrial levels, the Arctic is warming at least two times faster than the global average. In the coming years, Arctic temperatures are projected to continue to rise at an accelerated pace, further exacerbating climate hazards, including wildfires, sea ice melt, coastal erosion, and permafrost thaw (Markon et al., 2018).

Permafrost, which is ground that has been frozen for at least two consecutive years and often for thousands of years, underlies about 15 percent of Northern Hemisphere land area, and approximately 85 percent of Alaska's land area is underlain by permafrost.

From a global climate change perspective, permafrost thaw is critically important because the permafrost region stores vast amounts of carbon, roughly twice as much as in the atmosphere



149 Woods Hole Road
Falmouth, MA 02540-1644

woodwellclimate.org
508 540 9900

info@woodwellclimate.org

(Hugelius et al., 2014). Once thawed, this previously frozen carbon can be broken down and released into the atmosphere as greenhouse gasses, methane and carbon dioxide. The release of greenhouse gasses from thawing permafrost can accelerate climate warming, leading to additional thaw, resulting in an amplifying feedback loop. As stated in the International Panel on Climate Change (IPCC)'s recently released [Sixth Assessment Report \(AR6\)](#), the loss of permafrost carbon is irreversible on a human-relevant timeframe, and projections of 3-41 GtCO₂ per 1°C of warming by 2100 likely underestimates the potential of permafrost carbon emissions (Baillargeon & Natali, 2021; Natali et al., 2021). Currently, the AR6 models do not include important thaw processes, such as thaw-induced ground collapse and fire-permafrost interactions (Turetsky et al., 2020; Natali et al., 2021). When accounting for the full scope of thaw processes, cumulative permafrost carbon emissions by the end of this century could be on par with continued emissions from a country like Japan or as high as continued emissions from the United States (Natali et al., 2021). As a result, permafrost thaw emissions could take up 25-40 percent of the remaining carbon budget allowable to stay below 2°C.

The local implications of permafrost thaw are widespread and significant. Permafrost thaw can cause the ground to sink, a phenomenon known as subsidence, which can create hazardous conditions for Arctic residents and contribute to the rising costs of climate change (Hjort et al., 2018; Melvin et al., 2017). These hazards are already being experienced across Alaska, endangering human health, destroying public infrastructure, and threatening water, cultural resources, traditional food storage, ways of living, and access to subsistence resources (Brubaker et al., 2011; Brinkman et al., 2016; Bronen, 2015; Hong, Perkins, and Trainor, 2014). In a recently published report in collaboration with the Council of Strategic Risk, Woodwell researchers found that foundations of military infrastructure are already cracking and becoming increasingly unstable, including the Northern Warfare Training Center at Fort Wainwright, Alaska (Guy et al., 2021). Military leaders at installations like Fort Wainwright must increasingly focus not only on threats from foreign actors but also on the changing conditions of their own local environments.

The risk and severity of climate impacts are particularly high for coastal communities in Alaska, where loss of land-fast sea ice is increasing storm impacts, while permafrost thaw is exacerbating coastal erosion rates (Lantuit et al., 2012). Almost a decade ago, the U.S. Government Accountability Office identified 31 Alaskan villages that face imminent threats from flooding, erosion, and permafrost thaw (GAO 2009). At the time of the GAO report, 12 villages were seeking relocation options; however, none of these villages have yet fully relocated, in large part because of a lack of a governance framework to facilitate relocation efforts (Bronen and Chapin, 2013). Woodwell is working with some of these Alaska Native villages to monitor permafrost thaw to support climate adaptation planning. Permafrost thaw and other climate-driven changes in the Arctic will, however, continue to present human security concerns, including food and



149 Woods Hole Road
Falmouth, MA 02540-1644

woodwellclimate.org
508 540 9900

info@woodwellclimate.org

water insecurity, and these impacts have created the need for a concerted and immediate effort to develop a national climate adaptation and relocation governance framework that respects the human rights of impacted communities (Bronen, 2021).

Permafrost thaw is occurring in the Arctic, in some situations significantly earlier than was previously projected. That thawing is having profound local and regional implications, including on the human security of Alaska Native and local residents. Permafrost thaw can endanger human health, destroy public infrastructure, threaten cultural resources, destabilize terrain, and cause community-level displacement. Domestically, we need to act now to ensure that communities in Alaska and federal agencies are prepared for these impacts and put into place aggressive mitigation policies to prevent further avoidable climate warming.

References:

- Baillargeon, N., & Natali, S. (*in revision*). FACT SHEET: Review of Permafrost Science in IPCC's AR6. *Woodwell Climate Research Center*.
<https://www.woodwellclimate.org/review-of-permafrost-science-in-ipccs-ar6/>
- Brinkman, T. J., Hansen, W. D., Chapin, F. S., Kofinas, G., BurnSilver, S., & Rupp, T. S. (2016). Arctic communities perceive climate impacts on access as a critical challenge to availability of subsistence resources. *Climatic Change*, 139(3), 413–427.
<https://doi.org/10.1007/s10584-016-1819-6>
- Bronen, R., & Chapin, F. S. (2013). Adaptive governance and institutional strategies for climate-induced community relocations in Alaska. *Proceedings of the National Academy of Sciences*, 110(23), 9320–9325. <https://doi.org/10.1073/pnas.1210508110>
- Bronen, R. (2015). Climate-induced community relocations: Using integrated social-ecological assessments to foster adaptation and resilience. *Ecology and Society*, 20(3). <https://www.jstor.org/stable/26270247>
- Bronen, R. (2021). Rights, resilience and community-led relocation: Creating a national governance framework. *NYU Review of Law and Social Change*, 45.
https://socialchangenyu.com/wp-content/uploads/2021/04/Robin-Bronen_RLSC-The-Harbinger_45.pdf
- Brubaker, M. Y., Bell, J. N., Berner, J. E., & Warren, J. A. (2011). Climate change health assessment: A novel approach for Alaska Native communities. *International Journal of Circumpolar Health*, 70(3), 266–273. <https://doi.org/10.3402/ijch.v70i3.17820>
- Gasser, T., Kechiar, M., Ciais, P., Burke, E. J., Kleinen, T., Zhu, D., Huang, Y., Ekici, A., and Obersteiner, M. (2018). Path-dependent reductions in CO₂ emission budgets caused by permafrost carbon release. *Nature Geoscience*, 11(11), 830–835.
<https://doi.org/10.1038/s41561-018-0227-0>
- Guy, K., A. Naegele, N. Baillargeon, M. Holland, C.R. Schwalm, C. Churchill. 2021. "Temperatures and tensions rise: security and climate risk in the Arctic."
https://assets-woodwell.s3.us-east-2.amazonaws.com/wp-content/uploads/2021/06/21162718/Global_Risk_and_Security_Arctic_Case_Study.pdf



149 Woods Hole Road
Falmouth, MA 02540-1644

woodwellclimate.org
508 540 9900

info@woodwellclimate.org

- Hjort, J., Karjalainen, O., Aalto, J., Westermann, S., Romanovsky, V. E., Nelson, F. E., Eitzelmüller, B., & Luoto, M. (2018). Degrading permafrost puts Arctic infrastructure at risk by mid-century. *Nature Communications*, 9(1), 5147. <https://doi.org/10.1038/s41467-018-07557-4>
- Hong, E., Perkins, R., & Trainor, S. (2014). Thaw Settlement Hazard of Permafrost Related to Climate Warming in Alaska. *Arctic*, 67(1), 93–103.
- Hugelius, G., Strauss, J., Zubrzycki, S., Harden, J. W., Schuur, E. a. G., Ping, C.-L., Schirmermeister, L., Grosse, G., Michaelson, G. J., Koven, C. D., O'Donnell, J. A., Elberling, B., Mishra, U., Camill, P., Yu, Z., Palmtag, J., and Kuhry, P. (2014). Estimated stocks of circumpolar permafrost carbon with quantified uncertainty ranges and identified data gaps. *Biogeosciences*, 11(23), 6573–6593. <https://doi.org/10.5194/bg-11-6573-2014>
- Lantuit, H., Overduin, P. P., Couture, N., Wetterich, S., Aré, F., Atkinson, D., Brown, J., Cherkashov, G., Drozdov, D., Forbes, D. L., Graves-Gaylord, A., Grigoriev, M., Hubberten, H.-W., Jordan, J., Jorgenson, T., Ødegård, R. S., Ogorodov, S., Pollard, W. H., Rachold, V., ... Vasiliev, A. (2012). The Arctic Coastal Dynamics Database: A New Classification Scheme and Statistics on Arctic Permafrost Coastlines. *Estuaries and Coasts*, 35(2), 383–400. <https://doi.org/10.1007/s12237-010-9362-6>
- Markon, C., Gray, S., Berman, M., Eerkes-Medrano, L., Hennessy, T., Huntington, H. P., Littell, J., McCammon, M., Thoman, R., & Trainor, S. F. (2018). *Chapter 26: Alaska. Impacts, Risks, and Adaptation in the United States: The Fourth National Climate Assessment, Volume II*. U.S. Global Change Research Program. <https://doi.org/10.7930/NCA4.2018.CH26>
- Melvin, A. M., Larsen, P., Boehlert, B., Neumann, J. E., Chinowsky, P., Espinet, X., Martinich, J., Baumann, M. S., Rennels, L., Bothner, A., Nicolsky, D. J., & Marchenko, S. S. (2017). Climate change damages to Alaska public infrastructure and the economics of proactive adaptation. *Proceedings of the National Academy of Sciences*, 114(2), E122–E131. <https://doi.org/10.1073/pnas.1611056113>
- Natali, S. M., Holdren, J. P., Rogers, B. M., Treharne, R., Duffy, P. B., Pomerance, R., & MacDonald, E. (2021). Permafrost carbon feedbacks threaten global climate goals. *Proceedings of the National Academy of Sciences*, 118(21). <https://doi.org/10.1073/pnas.2100163118>
- Turetsky, M. R., Abbott, B. W., Jones, M. C., Anthony, K. W., Olefeldt, D., Schuur, E. A. G., Grosse, G., Kuhry, P., Hugelius, G., Koven, C., Lawrence, D. M., Gibson, C., Sannel, A. B. K., and McGuire, A. D. (2020). Carbon release through abrupt permafrost thaw. *Nature Geoscience*, 13(2), 138–143. <https://doi.org/10.1038/s41561-019-0526-0>
- U.S. Government Accountability Office. (2009). *Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages Threatened by Flooding and Erosion* (pp. 1–48). U.S. Government Accountability Office. <https://www.gao.gov/new.items/d09551.pdf>

Mr. KEATING. Thank you very much, Doctor, and I appreciate that. I will have some questions for you as we go forward.

Dr. Dalee Sambo Dorough is the chairperson of the Inuit Circumpolar Council, fresh back from COP26 in Glasgow, where I also attended.

Welcome back, and thank you for joining us. I now recognize you for 5 minutes.

**STATEMENT OF DR. DALEE SAMBO DOROUGH, CHAIRPERSON,
INUIT CIRCUMPOLAR COUNCIL**

Dr. DOROUGH. Thank you very much, Representative Keating. And also thanks to the Commandant and also Dr. Natali for the comments that they have provided thus far.

Very quickly, I just want to precede my written testimony with a couple of comments: that security from our perspective means something much more than national security. It is really the State of being free from danger or threat. But as you have already heard, we are facing dangers and threats presently to our culture security, our environmental security, our economic security, our food security, or essentially our overall security.

It is not lost on any observer that Arctic matters have emerged in the way of high politics and, therefore, it is crucial for the international norms, rules, and responsibilities that have emerged by nation-States that these remain at the core of our understanding of Arctic relations.

So, again, I am very pleased to make some comments on behalf of the Inuit Circumpolar Council. We represent approximately 180,000 Inuit across Inuit Nunaat, our traditional territories. And our traditional territories cover nearly half of the Arctic region throughout Chukotka, Alaska, Canada, and Greenland.

The Arctic is our homeland. Over thousands of years, we have nurtured reciprocal symbiotic and respectful relationships between our peoples and the Arctic environment, and we have transferred our knowledge through countless generations. Our cultural identities, values, spirituality, livelihoods, and overall mental and physical wellness are tied to our total environment, of which we are an intimate part.

Climate change is a primary concern. Its multiple impacts are adversely affecting our societies, threatening our overall cultural integrity, from threats to our food security and food systems, to relocation and displacement, to adverse impacts on our health and well-being, to the biodiversity of our ecosystems; essentially, our entire way of life. Climate change is damaging and disrupting the natural elements of our lands and territories, including our marine environment.

Climate change impacts are also compounded by State-imposed laws and regulations that hinder our rights and access to resources, and exacerbate issues such as atmospheric pollution, substandard and unreliable infrastructure, increased vessel traffic and shipping, industrialized fishing, unsustainable development, and energy solutions that have been framed as green, all of which are driven by others far from our homelands and without our consent.

Yet, we remain optimistic because we ourselves have solutions. We are prepared to contribute. We simply demand respect for and

recognition of our distinct status, rights, and role, as well as our own governance structures, including our right to maintain, own, and control our knowledge systems to effectively contribute to research and the coproduction of knowledge. Upon this foundation, we can provide indigenous knowledge that will ensure that you, as policy-and decisionmakers, have the best available information to base your decisions upon.

Regarding the subject matter of this hearing, our overall collective security is threatened. Our security includes diverse elements from the Arctic Ocean, its coastal seas, and the cryosphere, which are critical ecosystems that must be protected through partnership with Inuit. And our future security depends upon our distinct involvement in all matters concerning the dynamic relationship that we have with our homelands.

We were organized in the midst of the cold war, to adopt Bernard Baruch's use of the term in 1947. Baruch's original interest is aligned with our hope that the world can renew itself physically or spiritually.

As far back as 1977, we addressed Arctic security by adopting a resolution specific to the peaceful use of the Arctic. These actions are reflected in the ICC Arctic Policy, as well as a 1983 resolution and, more recently, within the 2018 Utqiaġvik Declaration adopted at our last general assembly in Utqiaġvik.

The latter directs ICC leadership to lay the foundation for diplomatic dialog on the establishment of an Arctic zone of peace. Indeed, the U.N. mechanism that crafted the Antarctic Treaty, the Seabed Treaty, and other nuclear weapon-free zones has been explored by the ICC. We urge all Arctic States, including the U.S., to consider this constructive mechanism.

Furthermore, we have adopted the Circumpolar Inuit Declaration on Arctic Sovereignty, which underscores internationally affirmed human rights standards, including the U.N. Declaration on the Rights of Indigenous Peoples. It also calls for close cooperation among Arctic States and Inuit on all matters of Arctic sovereignty. Significantly, the ICC chose to launch this declaration at the Foreign Ministers gathering that coincided with the MELTING ICE conference in April 2009.

In conclusion, we view these matters as interrelated. We respectfully request that the U.S. adopt the same perspective and specifically seriously consider how climate change is impacting Inuit. We ask that you ensure that Inuit have the financial means to address adaptation and mitigation on our own terms, as well as the intellectual and political space to make substantive contributions in favor of ourselves and the United States.

Our direct participation should be afforded in relation to every issue that impacts Inuit lands, territories, and resources, from national security to so-called green energy solutions, to priorities for development, to safeguarding the marine environment, and, ultimately, our pathway toward ensuring our own cultural integrity, our own cultural security.

We are an essential force in all of these questions. In my estimation, we are the central bastion of protection of the Arctic, and we urge the whole of the U.S. Government to recognize the substantive contributions that we are willing to make.

Quyanaq. Thank you.
[The prepared statement of Dr. Dorough follows:]

DALEE SAMBO DOROUGH, PHD
INTERNATIONAL CHAIR
INUIT CIRCUMPOLAR COUNCIL
TUESDAY, NOVEMBER 16, 2021, AT 10:00 am EST
House Foreign Affairs Subcommittee on Europe, Energy, the Environment and Cyber
Title: National Security Implications of Climate Change in the Arctic

On behalf of the Inuit Circumpolar Council, I am pleased to share our perspectives with this Subcommittee. At the international level, our organization represents approximately 180,000 Inuit across Inuit Nunaat -- our traditional territories, which cover nearly half of the Arctic region throughout Chukotka, Alaska, Canada, and Greenland.

The Arctic is our homeland. Over thousands of years, we have nurtured reciprocal symbiotic and respectful relationships between our peoples and the Arctic environment, and we have transferred our knowledge through countless generations. Our cultural identities, values, spirituality, livelihoods, and overall mental and physical wellness are tied to our total environment, of which we are an intimate part.

Climate change is of primary concern. Its multiple impacts are adversely affecting our societies, threatening our overall cultural integrity, from threats to our food security and food systems to relocation and displacement to adverse impacts on our health and well-being to the biodiversity of our ecosystems – essentially our entire way of life. Climate change is damaging and disrupting the natural elements of our lands and territories, including our marine environment.

Climate change impacts are also compounded by state-imposed laws and regulations that hinder our rights and access to resources, and exacerbate issues such as atmospheric pollution; substandard and unreliable infrastructure; increased vessel traffic and shipping; industrialized fishing; unsustainable development; and energy solutions framed as “green”, all of which are driven by others far from our homelands, without our consent.

Yet, we remain optimistic because we ourselves have solutions. We are prepared to contribute. We simply demand respect for and recognition of our distinct status, rights, and role as well as our own governance structures, including our right to maintain, own, and control our knowledge systems to effectively contribute to research and the co-production of knowledge. Upon this foundation, we can provide Indigenous knowledge that will ensure that you, as policy and decision-makers, have the best available information to base your decisions upon.

Regarding the subject matter of this hearing, our overall collective security is threatened. Our security includes diverse elements, from the Arctic Ocean, its coastal seas, and the cryosphere, which are critical ecosystems must be protected through partnership with Inuit. And our future security depends upon our direct involvement in all matters concerning the dynamic relationship that we have with our homelands.

We were organized in the midst of the Cold War, to adopt Bernard Baruch's use of the term in 1947. Baruch's original interest is aligned with our hope that "the world can renew itself physically or spiritually."¹ As far back as 1977, we addressed Arctic security by adopting a resolution specific to the peaceful use of the Arctic. These actions are reflected in the ICC Arctic Policy² as well as a 1983 resolution, and more recently, within the *2018 Utqiagvik Declaration*³. The latter directs ICC leadership to lay the foundation for diplomatic dialogue on the establishment of an Arctic zone of peace. Indeed, the UN mechanism⁴ that crafted the Antarctic Treaty, the Seabed Treaty, and other nuclear weapon free zones has been explored by the ICC. We urge all Arctic states, including the US, to consider this constructive mechanism.

¹ <https://www.history.com/this-day-in-history/bernard-baruch-coins-the-term-cold-war>

² <https://www.inuitcircumpolar.com/project/inuit-arctic-policy/>

³ <https://iccalaska.org/wp-icc/wp-content/uploads/2019/05/FINAL-Utqiagvik-Declaration-2018.pdf>

⁴ <https://www.un.org/disarmament/wmd/nuclear/nwft/>

Furthermore, we have adopted the *Circumpolar Inuit Declaration on Arctic Sovereignty*, which underscores internationally affirmed human rights standards, including the *UN Declaration on the Rights of Indigenous Peoples*. It also calls for close cooperation among Arctic States and Inuit on all matters of Arctic sovereignty. Significantly, the ICC chose to launch this Declaration at the Foreign Ministers gathering that coincided with the *MELTING ICE conference*⁵ in April 2009.

In conclusion, we view these matters as interrelated. We respectfully request that the US adopt the same perspective and specifically, to seriously consider how climate change is impacting Inuit. We ask that you ensure that Inuit have the financial means to address adaptation and mitigation on our own terms, as well as the intellectual and political space to make substantive contributions in favor of ourselves and the United States.

Our direct participation should be afforded in relation to every issue that impacts Inuit lands, territories, and resources, from national security to so-called green energy solutions to priorities for development to safeguarding the marine environment, and ultimately our pathway toward ensuring our own cultural integrity. We are an essential force in all of these questions. In my estimation, we are the central bastion of protection of the Arctic, and we urge the whole of the US government to recognize the substantive contributions that we are willing to make. Quyanaq. Thank you.

⁵ <https://oaarchive.arctic-council.org/handle/11374/1643>

Mr. KEATING. Thank you very much, Doctor, and thank you for all your work in this regard.

Next witness is Mr. Luke Coffey. He is the director of the Douglas and Sarah Allison Center for Foreign Policy at The Heritage Foundation.

You are now recognized for 5 minutes.

STATEMENT OF LUKE COFFEY, DIRECTOR, DOUGLAS AND SARAH ALLISON CENTER FOR FOREIGN POLICY, THE HERITAGE FOUNDATION

Mr. COFFEY. Thank you.

Chairman Keating, Ranking Member Fitzpatrick, and distinguished members of the committee, I am honored to speak before this esteemed committee today about Arctic security issues.

As was already pointed out, the U.S. became an Arctic power on October 18, 1867, and with a stroke of a pen, the then-Secretary of State William Seward ended Russian influence in North America and gave the United States direct access to the Northern Pacific and Arctic Oceans. In his retirement, Seward was asked what his greatest achievement was, and he said: "The purchase of Alaska. But it will take another generation to find it out."

Melting ice has led to an increase in scientific, commercial, tourist, and energy exploration activity in the region. This in itself has led to a growing military presence in the Arctic, but not because there is a threat of war, but because many of the capabilities needed in the region, such as search and rescue, are more immediately and at least for now more effectively provided by militaries and Coast Guards.

Mr. Chairman, today the U.S. has four primary security interests in the Arctic when it comes to national security. First, ensuring the territorial defense of the United States. In this sense, Canada, our northern neighbor, is vital. Relations with Iceland and Greenland are also important in this context.

Second, enforcing U.S. sovereignty in the region. In the Arctic, sovereignty equals security and stability. Respecting the sovereignty of others while maintaining the ability to enforce one's own sovereignty ensures that the chances of armed conflict in the region remain low.

Third, meeting treaty obligations in the Arctic through NATO. Five of the world's eight Arctic countries belong to NATO, but the alliance has no agreed policy on the region.

Finally, ensuring the free flow of shipping and other economic activities in the region.

Mr. Chairman, while the military threat in the Arctic remains low, U.S. policymakers cannot ignore Russia or China's role there. Both directly impact America's ability to meet its security interests.

Russia's recent actions to bolster its military presence in the Arctic is concerning. Russia now has at least 34 military installations in or near the Arctic. It is optimizing those facilities for cold weather warfare, and it has expanded the variety and sophistication of the capabilities deployed to the region. And it is also increasing the range and tempo of the often very aggressive nature of its air and sea patrols in the Arctic region.

There is also an economic aspect of Russia's activities in the Arctic. The Northern Sea Route, which runs along Russia's northern coast, connecting European with Asian markets, is often touted as a possible alternative and even a rival to the Suez Canal. However, some perspective is needed.

Last year, only 32 million tons of goods were shipped along the routes, compared to the 1.2 billion tons that transited the Suez Canal. Of the 32 million tons of goods that shipped along the routes, only 1.2 million tons made the full journey between Europe and Asia, so this is one-tenth of 1 percent of the total volume shipped through the Suez Canal last year.

And this route is not without risk. Shipping lanes are far removed from search and rescue facilities. Oil and gas make up about 82 percent of the volume of goods shipped along the Northern Sea Routes, increasing the odds of an ecological disaster in the region. And there are currently about 20 vessels as we speak, as we meet here today, that are either stuck or they are struggling to make it across the icy waters.

In simplest terms, China sees the Arctic region as another place in the world to advance its economic interests. But considering the problems that China has created in other places around the world, there are reasons to be worried by their activities in the Arctic.

Beijing's Arctic strategy offers a useful glimpse of how it wants the rest of the world to see the role of China in the Arctic region. Writing 5,500 words long in the English language version, the strategy is littered with all the popular Arctic buzz phrases, such as common interests of all countries, law-based governance, climate change, and sustainable development.

Now, the irony is not lost on observers of the South China Sea, where China has shunned international norms to exert dubious claims of sovereignty, or by the fact that China is the world's largest emitter of greenhouse gasses.

Even though China's closest point to the Arctic Circle is more than 800 nautical miles away, Beijing refers to itself as a near-Arctic State, which is a term that is completely made up. Extending Beijing's logic to other countries would mean that Kazakhstan, Belarus, Lithuania, Latvia, Estonia, Poland, Germany, the Netherlands, the United Kingdom, and Ireland are also near-Arctic States.

In conclusion, I want to highlight some of the actions that we should take. We need to increase our freedom of navigation operations in the Arctic. We need to adequately invest in the U.S. Coast Guard and U.S. Navy's Arctic capabilities. We need to continue to raise awareness of China's questionable ambitions in the region and make sure that China does not try exceeding what it is allowed to do under its status as an observer in the Arctic Council. We need to get NATO to finally acknowledge its role in the Arctic and perhaps even hold a future NATO Summit above the Arctic Circle.

And finally, we need to increase America's diplomatic, economic, military, and scientific presence in Greenland, Iceland, Svalbard, and Jan Mayen. These four islands are essentially the foreign operating bases of the North American Continent and serve as what I like to call the Arctic chain of defense for the United States. Now,

none of these actions are about preparing for war; they are simply about preparing for the future.

Thank you, Mr. Chairman, Ranking Member, and members of the committee. I look forward to answering your questions.

[The prepared statement of Mr. Coffey follows:]



CONGRESSIONAL TESTIMONY

National Security Implications of Climate Change in the Arctic

**Testimony before the
Subcommittee on Europe, Energy, the Environment and Cyber of the
Committee on Foreign Affairs**

United States House of Representatives

November 16, 2021

**Luke Coffey
Director of the Douglas and Sarah Allison Center for Foreign Policy in
the Kathryn and Shelby Cullom Davis Institute for National Security and
Foreign Policy at The Heritage Foundation**

Chairman Keating, Ranking Member Fitzpatrick and distinguished Members of the Committee. I am honored to speak before this esteemed Committee about Arctic security issues.

My name is Luke Coffey. I am the Director of the Douglas and Sarah Allison Center for Foreign Policy in the Kathryn and Shelby Cullom Davis Institute for National Security and Foreign Policy at The Heritage Foundation. The views I express in this testimony are my own, and should not be construed as representing any official position of The Heritage Foundation.

The Arctic region, commonly referred to as the High North, is becoming more contested than ever before. The Arctic encompasses the lands and territorial waters of eight countries on three continents. Unlike the Antarctic, the Arctic has no land mass covering its pole (the North Pole), just ocean. The region is home to some of the roughest terrain and harshest weather on the planet.

The region is also one of the least populated areas in the world, with sparse nomadic communities and few large cities and towns. Regions are often very remote and lack basic transport infrastructure. In Greenland, no two population centers are connected by a road. Norway's Ny Ålesund, located on the Svalbard archipelago, is the world's most northerly permanently inhabited place with a population of only 35. Although official population figures are non-existent, the Nordic Council of Ministers estimates the figure is four million,¹ making the Arctic's population about the size of Los Angeles. Approximately half of the Arctic population lives in Russia.

The region is rich in minerals, wildlife, fish, and other natural resources. According to some estimates, up to 13 percent of the world's undiscovered oil reserves and almost one-third of the world's undiscovered natural gas reserves are located in the Arctic.²

The melting of some Arctic ice during the summer months creates security challenges, but also new opportunities for economic development. Reduced ice will mean new shipping lanes opening, increased tourism, and further natural resource exploration. However, it will also mean a larger military presence by more actors than ever before. This increase in economic activity will mean a larger military presence. This is not because there is a heightened threat of conflict in the region—on the contrary things are relatively calm.

However, many capabilities needed in the Arctic, such as search and rescue, are more immediately, and at least for now, more effectively, provided by the military and coast guard.

U.S. Arctic Security Interests

The U.S. became an Arctic power on October 18, 1867, at the ceremony transferring Alaska from Russia to the U.S. At the time this purchase was ridiculed and was known as “Seward’s Folly”—named after the then-Secretary of State William Seward. However with a stroke of a pen, Seward ended Russian influence in North America, gave the United States direct access to the northern Pacific Ocean, and added territory nearly twice the size of Texas for about 2 cents an acre along with 33,000 miles of coastline. In his retirement Seward was asked what his greatest achievement was. He said: “The purchase of Alaska. But it will take another generation to find it out.”³

Today, the U.S. has four primary security interests in the Arctic region:

¹Nordic Council of Ministers, *Arctic Social Indicators*, January 27, 2011, p. 13.

http://library.arcticportal.org/712/1/Arctic_Social_Indicators_NCoM.pdf (accessed November 12, 2021).

²U.S. Geological Survey, “Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle,” July 23, 2008, <http://pubs.usgs.gov/fs/2008/3049/> (accessed November 12, 2021).

³Frederick W. Seward, “Seward’s Folly: A Son’s View,” *University of Rochester Library Bulletin*, Spring 1967, <https://rbscp.lib.rochester.edu/487> (accessed November 12, 2021).

1) Ensuring the territorial defense of the United States. This is particularly true as it pertains to the growing ballistic missile threat. In this regard our relationship with Canada is key. This is also why it is important for the U.S. deepen its relations with Iceland and Greenland—both serving essentially the forward operating bases of the North American continent.

2) Enforcing U.S. sovereignty in the region. In the Arctic, sovereignty equals security and stability. Respecting the national sovereignty of others in the Arctic while maintaining the ability to enforce one's own sovereignty will ensure that the chances of armed conflict in the region remain low. This is why investment in the U.S. Coast Guard is vital to America's Arctic security interest.

3) Meeting treaty obligations in the Arctic region through the North Atlantic Treaty Organization (NATO). Five of the world's eight Arctic countries belong to NATO. Another two, Finland and Sweden, have a very close relationship with NATO. However, NATO has no agreed common position or policy on its role in the Arctic region. This needs to change.

4) Ensuring the free flow of shipping and other economic activities in the region. Economic freedom leads to prosperity and security. With melting ice creating new economic and shipping opportunities in the region it is in America's interests that shipping lanes remain open in line with international norms.

U.S. Strategic Challenges in the Arctic

While the military threat in the Arctic remains low, U.S. policymakers cannot ignore Russia's recent activities to militarize the Arctic region or China's increasing role in the region. Both directly impact America's ability to meet the four aforementioned security interests.

Russia's Militarization

Russia is motivated to play an active role in the Arctic region for three reasons:

1) Low risk promotion of Russian nationalism. Because nationalism is on the rise in Russia, Putin's Arctic strategy is popular among the population. For Russian President Vladimir Putin, the Arctic is an area that allows Russia to flex its muscles without incurring any significant geopolitical risk.

2) The economic potential of the region. Russia is also eager to promote its economic interests in the region. Half of the world's Arctic territory and half of the Arctic region's population is located in Russia. It is well-known that the Arctic is home to large stockpiles of proven, yet unexploited, oil and gas reserves. The majority of these reserves is thought to be located in Russia. In particular, Russia hopes the Northern Sea Route (NSR) will become one of the world's most important shipping lanes.

3) Russia's security in the region. Russia has invested heavily in militarizing its Arctic region. While the Arctic region remains peaceful, Russia's recent steps to militarize the region, coupled with its bellicose behavior toward its neighbors, makes the Arctic a security concern.

While the Arctic region remains peaceful, Russia's recent steps to militarize the Arctic, coupled with its bellicose behavior toward its neighbors, makes the Arctic a security concern.

China's Increasing Role

With the focus on what China is doing in the South China Sea, its massive and questionable infrastructure investments in Central Asia and Africa, its threatening actions against Taiwan, and its coverup of the origins of the COVID-19 virus, it is easy to overlook another aspect of Beijing's foreign policy: the Arctic.

In the simplest terms, China sees the Arctic region as another place in the world to advance its economic interests and expand its diplomatic influence. As a non-Arctic country, China is mindful that its Arctic ambitions in international Arctic institutions are naturally limited—but this has not stopped Beijing from increasing its economic presence in the region.

China's Arctic strategy offers a useful glimpse into how Beijing views its role in the region.⁴ Running 5,500 words long in the English language version, the strategy is littered with all the Arctic buzzwords like "common interests of all countries," "law-based governance," "climate change," and "sustainable development." The irony is not lost on observers of the South China Sea where China has shunned international norms to exert dubious claims of sovereignty, or the fact that China is the world's largest emitter of greenhouse gases.

Even though China's closest point to the Arctic Circle is more than 800 nautical miles away, Beijing refers to itself as a "near Arctic State"⁵—a term made up by Beijing and not found in the lexicon of Arctic discourse. In fact, extending Beijing's logic to other countries would mean that Belarus, Estonia, Germany, Ireland, Kazakhstan, Latvia, Lithuania, the Netherlands, Poland, and the United Kingdom are also "near Arctic states." These are hardly the countries that one imagines when thinking about the Arctic. As former U.S. Secretary of State Mike Pompeo has said: "There are Arctic states, and non-Arctic states. No third category exists. China claiming otherwise entitles them to exactly nothing."⁶

But even with its self-professed and exaggerated role in the Arctic, China does have legitimate interests in the region. After all, China is a global trading nation. It is the world's second-largest economy. It holds a permanent seat on the U.N. Security Council.

Thankfully, so far China's motivation in the Arctic seems to be more about economics and less about security. But considering the economic mess and massive debt China has left in places like Sri Lanka and Djibouti, it is only normal to question China's motivations in the Arctic.

For the most part China wants to increase access and influence in the Arctic region for economic reasons and it is through this lens that U.S. policymakers should approach Chinese activity in the Arctic region.

⁴The State Council Information Office of the People's Republic of China, "China's Arctic Policy," White Paper, January 26, 2018, http://english.www.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm accessed November 12, 2021).

⁵Ibid.

⁶Radio Canada International, "US Stuns Audience by Tongue-Lashing China, Russia on Eve of Arctic Council Ministerial," May 6, 2019, <https://thebarentsobserver.com/en/arctic/2019/05/us-stuns-audience-tongue-lashing-china-russia-eve-arctic-council-ministerial> (accessed November 12, 2021).

The Arctic Chain of Defense

During the Cold War, Soviet submarines, bombers, and reconnaissance aircraft traversed the GIUK (Greenland, Iceland, and the U.K.) gap, key naval passages through the waters of those three countries. The GIUK gap, on account of Russian activity in the North Atlantic, continues to remain strategically important. Technological advancements and a changing environment in the Arctic have shifted some of this military activity further north into Arctic waters.

Today, four islands are vital to the defense of the United States. Due to their geographical locations, Greenland, Iceland, Svalbard, and Jan Mayen are essentially the forward-operating bases of the North American and European continents and serve as an Arctic Chain of Defense (ACOD).

MAP 1

Greenland, Iceland, Svalbard, and Jan Mayen Are Vital to the Arctic Chain of Defense



NOTE: Greenland is a territory of Denmark. Jan Mayen and Svalbard are territories of Norway.
SOURCE: Heritage Foundation research.

ISS081 heritage.org

- Greenland (Denmark).** The U.S.–Danish relationship is built on its shared membership in NATO and shared interest in the Arctic region. However, one of the most important aspects of the U.S.–Danish defense relationship is the access that the U.S. enjoys to Greenland. Greenland is part of North America, and a critical part of America’s national security architecture. Today, the main U.S. military presence is at Thule Air Base in the north of the island.⁷ Thule also serves as a crucial early warning radar and satellite tracking station for the protection of the U.S. homeland.

- Iceland.** A NATO ally in the northern Atlantic Ocean, Iceland sits on the very frontier of the North American landmass, is the westernmost nation in Europe, and is a mere 186 miles from Greenland. Today, Iceland still plays an important role in transatlantic security, especially when viewed in light of recent Russian behavior in continental Europe. Iceland’s relevance to U.S. policy is also largely derived from its location at the edge of the Arctic Circle. After closing the facility in 2006, the U.S. has started to use the facilities at Keflavik Air Station for maritime patrol aircraft. The U.S. reportedly plans to begin housing two fighter jets squadrons accounting for between 18 planes and 24 planes on a rotational basis at Keflavik.⁸ In August, a B-2 Stealth Bomber landed in Iceland for the first time on a refueling stop.

⁷Peterson Air Force Base, “821st Air Base Group,” <https://www.peterson.af.mil/About/Fact-Sheets/Display/Article/326240/821st-air-base-group/> (accessed November 12, 2021).

⁸“Pence to Visit Iceland Over Concerns of ‘Russian Aggression’ in Arctic Region,” Radio Free Europe/Radio Liberty, August 29, 2019, <https://www.rferl.org/a/pence-iceland-visit-russian-aggression-arctic-region/30134840.html> (accessed November 12, 2021).

- **Svalbard (Norway).** Norway's geographical location is vitally important for the defense of the north Atlantic region, and the country is a reliable partner for the U.S. inside NATO. Svalbard is a non-militarized Norwegian archipelago some 500 nautical miles off the northern coast of Norway. The military importance of Svalbard is limited in peacetime due to the restrictions placed on the region under the Svalbard Treaty, which demilitarized the islands. The geostrategic location of Svalbard, especially in terms of its proximity to the Kola Peninsula, home of Russia's Northern Fleet, is not lost on the Russians, either. In 2017, officials in the Russian defense ministry reportedly highlighted Svalbard as a potential area of future conflict for the Russian navy. Even though Svalbard is currently demilitarized, one cannot pretend that in the event of a major outbreak of conflict in the Arctic region that the archipelago would not be front and center in any military campaign. U.S. military planners must always have this reality in the back of their minds.
- **Jan Mayen (Norway)** Situated between Greenland and Norway in the Norwegian Sea, Jan Mayen is a strategically located island, just under 600 miles north of Iceland. The Norwegian Air Force continues to maintain a 1500 meter dirt runway on the island which once served as an important communications outpost during the Cold War. In November 2019, members of the U.S. Air Force visited Jan Mayen and "assessed runway surfaces, glideslope obstructions and firing capes,"⁹ specifically to determine if "C-130J Super Hercules aircraft can land at the Jan Mayen airfield in order to provide transport and resupply to the station located there."¹⁰

A role for NATO

The U.S. ability to meet national security objectives in the Arctic is made possible (and easier) by the close collaboration with partner nations in the region. Luckily for the U.S., six of the other seven Arctic countries are either treaty allies through NATO (Canada, Denmark, Iceland, and Norway) or very close partners, such as non-NATO Finland and Sweden.

Considering that five of the world's Arctic countries are in NATO, one would expect that the Alliance would place a strong focus on the region. This has not been the case. NATO has no agreed common position or policy on its role in the Arctic region. The most recent Summit Declaration does not mention the word "Arctic," nor does the Alliance's most recent Strategic Concept published in 2010.

NATO has been internally divided on the role that the Alliance should play in the High North. Norway is the leading voice inside the Alliance for promoting NATO's role in the Arctic. It is the only country in the world that has its permanent military headquarters above the Arctic Circle, and it has invested extensively in Arctic defense capabilities.

Canada has likewise invested heavily in Arctic defense capabilities. However, unlike Norway, Canada has stymied past efforts by NATO to take on a larger role in the region. Generally

⁹ Christopher Woody, "The US Air Force is fixing up a remote base that could help keep an eye on Russia," *Business Insider*, January 14, 2020, <https://www.businessinsider.com/us-air-force-fixing-up-norwegian-base-arctic-near-russia-2020-1> (accessed November 12, 2021).

¹⁰ <https://www.dvidshub.net/news/357202/435th-crs-strengthens-eucom-capabilities>

speaking, Canada is concerned that an Alliance role in the Arctic would afford non-Arctic NATO countries influence in an area where they otherwise would have none.

As a sovereign nation state, Canada has a prerogative to determine what role, if any, NATO should play in Canada's Arctic region. However, as a collective security alliance, NATO cannot ignore the Arctic altogether, and the Alliance should not remain divided on the issue.

Recommendations

Russia is reverting to its imperial ways, and China is expanding its economic influence across much of the world. As new economic opportunities and security challenges continue to manifest in the Arctic, the U.S. must be prepared. The U.S. should:

- **Conduct Freedom of Navigation operations in the Arctic.** Russia's dubious claim that the Northern Sea Route is an internal waterway goes against international law and norms. The U.S. should follow the lead of the French navy and conduct Freedom of Navigation operations in the region.
- **Continue to invest in the U.S. Coast Guard and U.S. Navy Arctic situational awareness capabilities.** The remote and harsh conditions of the Arctic region make unmanned systems particularly appealing for providing additional situational awareness, intelligence, surveillance, and reconnaissance. The Coast Guard should also consider upgrading facilities, such as its Barrow station in Alaska, to reinforce its Arctic capabilities and demonstrate a greater commitment to the region.
- **Officially acknowledge NATO's role in the Arctic for the first time.** The upcoming NATO Strategic Concept should acknowledge that NATO is, in part, an Arctic alliance
- **Work with allies to develop a NATO Arctic strategy.** The Alliance should agree to develop a comprehensive Arctic policy to address security challenges in the region. This should be done in cooperation with non-NATO members Finland and Sweden.
- **Call for the next NATO summit to be held above the Arctic Circle.** This would bring immediate awareness of Arctic issues to the Alliance. In the next few years, perhaps the Norwegian city of Tromsø would be most appropriate, since few cities above the Arctic Circle have the required infrastructure to hold a major international gathering like a NATO Summit.

Recognize the importance of the ACOD by:

- **Deepening relations with Iceland.** Not only is Iceland an important NATO member, it is also home to a very important air base in the Arctic region. There is also a new opportunity to advance bilateral relations after that the Trump Administration ended the diplomatic sanctions that applied to Reykjavik by the Obama Administration over Icelandic whaling.
- **Improving relations with Greenland.** The Trump Administration announced the establishment of a part time diplomatic presence. This is a positive step that could be improved by the Biden Administration making the diplomatic presence year around. Also, the U.S. should ensure that it invests adequately in the military infrastructure on Greenland.
- **Considering the use of Svalbard for any required scientific needs.** Due to its location in the Arctic region and its particular environmental conditions, Svalbard is very attractive for scientific research. In the past, the Department of Defense has conducted research there

and it should consider doing so in the future if the need arises. This is an excellent way for the U.S. to “fly the flag” in a region with significant geo-political importance.

- **Recognizing the importance of Jan Mayen island.** Its strategic location astride submarine lanes in the Norwegian Sea has once again highlighted Jan Mayen’s role as a valuable piece of the ACOD. The U.S. should continue working closely with Norway to better leverage the island’s strategic location in the Arctic and seek to include Jan Mayen Island in future bilateral or NATO exercises.

Conclusion

America’s interests in the Arctic region will only increase in the years to come. As other nations devote resources and assets in the region to secure their national interests, America cannot afford to fall behind. The U.S. needs to champion an agenda that advances the U.S. national interest and devotes the required national resources to the region. With the Arctic becoming increasingly important for economic and geopolitical reasons, now is not the time for the U.S. to turn away from its own backyard.

CONGRESSIONAL TESTIMONY

The Heritage Foundation is a public policy, research, and educational organization recognized as exempt under section 501(c)(3) of the Internal Revenue Code. It is privately supported and receives no funds from any government at any level, nor does it perform any government or other contract work.

The Heritage Foundation is the most broadly supported think tank in the United States. During 2020, it had hundreds of thousands of individual, foundation, and corporate supporters representing every state in the U.S. Its 2020 operating income came from the following sources:

Individuals 66%
Foundations 18%
Corporations 2%
Program revenue and other income 14%

The top five corporate givers provided The Heritage Foundation with 1% of its 2020 income. The Heritage Foundation's books are audited annually by the national accounting firm of RSM US, LLP.

Mr. KEATING. Thank you, Mr. Coffey.

I think we hear from the four witnesses, when we are talking about our Nation's security in this region, we have to look at it through the lens of their testimony. Certainly, the scientific community is part of our security there. It is necessary to understand what is going on.

The understanding and input from the indigenous population is important for our success. The navigational, economic, and military aspects, it is all intertwined. So thank you for your testimony.

I will now recognize members for 5 minutes each. And pursuant to the House rules, all time yielded is for the purposes of questioning the witnesses.

Because of the virtual format of the hearing, I will recognize members by committee seniority, alternating between Democrats and Republicans. If you miss your turn, please let our staff know and we will circle back to you. If you seek recognition, you must unmute your microphone and address the chair verbally.

I will now recognize myself for 5 minutes.

I think I will start with Admiral Zukunft, because you laid out very clearly the strategic afterthought posture that the U.S. has had. And one of the reasons for having this hearing early in this administration is to try and see if we can accelerate the interest and involvement in the Arctic area on all the fronts we have discussed, because that is something that is critical to our economic and security interests.

Now, our National Intelligence Estimate by the National Intelligence Council on Climate Change and International Responses that show there are increasing challenges to the U.S. national security was released just in October 2021. And it States the Arctic and the non-Arctic States almost certainly will increase their competitions in the area by 2040, and it says it is largely economic, but the risk of miscalculation, even modestly, could be great.

So, Admiral, I would like to—you laid out a situation. Can you spend some more and give us more insight—some more time and give us more insight on the risk of miscalculating just how these involvements impact our security in all the ways we mentioned?

Admiral ZUKUNFT. Thank you, Chair. And I would just categorize that our presence in the Arctic is late to the game. Russia has de facto established itself as a regional hegemon. And we are hearing the same rhetoric coming out of Moscow as well, almost thumbing their nose at any effort we make.

To its credit, and to followup on the testimony by Mr. Coffey, there was a large NATO exercise on the Greenland-Iceland side of the Arctic in 2019. We are waking up, but we are a little bit late to that wake-up call. Clearly, the United States cannot influence this region unilaterally. We have got to do so through our trusted partners.

At the same time, we cannot treat everything as an adversary in the Arctic. Economically is going to be a key driver in this region. And bad things can happen, search and rescue, which is why I established an Arctic Coast Guard Forum. We have the Arctic Council that puts out binding agreements but no teeth behind it. So the Coast Guards are filling that vacuum to address marine environ-

mental protection, indigenous tribes, and as well as search and rescue in the region.

So at least it builds some trust and confidence-building measures, especially when we add Russia to that mix, but we need to invest in this region, which is why we need a strategy at the onset and a strategy that isn't just a skeleton, but we can put flesh on those bones as well.

Mr. KEATING. Thank you.

I just wanted to jump into an issue that was a curiosity to me. You know, in Russia, those massive fires that occurred in Siberia and through the areas, the magnitude is unbelievable.

I would like to, you know, ask our panel, particularly probably Dr. Natali, how much do we know? How much scientific research into the magnitude of the permafrost effect there and those fires, how much have we been able to analyze, given so much of it occurred in Russia?

Dr. NATALI. Yes. Thank you for that question. So we can get information using satellites on fire extent and also emission, and we also do have scientific collaborations with many Russian scientists. So there are certainly—one of the challenges of doing scientific research in the Arctic is that it comprises multiple nations and data sharing is certainly a challenge.

But there is also lots of uncertainties, because when we think about, you know, changes in Arctic lands, permafrost is below the ground. You cannot always often see that with satellites unless there is some pretty substantial ground collapse, and by that point, the impacts have already happened. And also, greenhouse gas emissions from the Arctic, we do not have the capacity, satellites, to view this across the Arctic via satellites. And so the Arctic is a pretty vast place. It is not accessible.

Mr. KEATING. Can you share with us too the magnitude of this? I think it is something that escaped a lot of people's attention, but the magnitude of those fires in Russia?

Dr. NATALI. Yes. I mean, those fires, you know, in the United States, there are lots of conversations about fires that are burning out West, and this is orders of magnitude higher emissions that are happening in these fires in Russia.

And the reason that there is so much carbon greenhouse gasses coming out of these fires—it is not just the area of the fires—is because, in the Arctic, because there is so much carbon below ground, it does not just burn the vegetation and the trees aboveground; it actually burns the soil.

And one of the things that is happening in the Arctic, because the ground isn't refreezing, these fires are continuing to last through the winter. So you are having fires from 1 year are causing more fires in the following year, because they can smolder below ground, just slowly burning this carbon that is below the soils.

And, honestly, when we think about the carbon emissions that are coming as a result of permafrost out of these wildfires and what we can expect in the future, I would say the scientific numbers were, I would say, very likely underestimating.

So when thinking about risk, personally, I would lean toward the high end of some of these ranges, because these processes currently

are not incorporated into our models, into our full scientific understanding.

Mr. KEATING. Thank you so much. My time is expired for now. The chair recognizes Congressman Mast for 5 minutes.

Congressman Mast, he was here a second ago.

The chair recognizes Congressman Pfluger for 5 minutes.

Mr. PFLUGER. Thank you, Mr. Chairman. And thank you to the witnesses for your contributions to this.

I would like to start off with Mr. Coffey, talking about some of the resources that we see in the Arctic and some of the geopolitical challenges that we face right now with regards to control of Eastern Europe.

And you can start in the Baltics and run all the way down through the countries that border Russia, and you can go all the way into the Balkans and see the number of countries that are in some ways being held hostage to energy that is produced by Russia and to the terms and conditions with which you have to sign up to use that energy.

So, Mr. Coffey, can you kind of talk to us a little bit about the resources that are in the Arctic and how those can be used to diversify energy security for our European partners and allies, and how that may also contribute to stabilizing what we know is a competition—and maybe that is a generous word—but with Russia?

So I will yield to you for a second.

Mr. COFFEY. Thank you. That is a very important question. The reality is that, although the region is rich in natural resources, accessing these resources in a financially viable or environmentally safe way is very difficult. And in the case of—one limiting factor is the advancement in technology to extract these resources in an economically viable and environmentally safe way has not kept pace.

In terms of the alternatives that might be provided to Europe for alternatives to energy security coming from Russia, I would actually say that the Arctic is less important than, let's say, other regions of the Eurasian land mass, such as the Caspian region, the South Caucasus, where I think there is a lot of potential for Europe to seek alternatives to its oil and gas away from Russia.

But that being said, there are suspected to be a large number of rare earth mineral deposits in the Arctic region. We heard about this debate when President Trump suggested the United States purchase Greenland, about the potential in Greenland for these resources.

But, you know, take Greenland, for example. It is a very remote part of the world. No two cities in Greenland are connected by a road. So there is very little infrastructure. And right now, most of Greenland is covered by an icecap that is three times the size of Texas and at its deepest point is almost 2 miles thick. So it is impossible to really get these minerals.

Mr. PFLUGER. Let me ask a quick question here, as time is going to run out on us.

I mean, how bad of a situation, energywise, is Europe in right now for this coming winter? I mean, kind of, you know, put some magnitude by it as to what our partners and allies in Europe, as

this is the Europe committee and Energy committee. Tell us about the energy crisis they are facing and how bad it is going to be.

Mr. COFFEY. Yes. Europe is facing a major energy crisis, especially in Central and Eastern Europe, where Russia, once again, uses the export of LNG—or of natural gas, excuse me, as a tool of foreign policy and a tool of aggression.

This can be mitigated in the medium to longer term by focusing more on the Southern Gas Corridor, pushing for a trans-Caspian gas pipeline connecting Turkmenistan across the Caspian to the Southern Gas Corridor and pushing for more U.S. LNG exports to Europe.

But I appreciate that this isn't the specific nature of the hearing today, but it is still all connected in a sense, because as Europe wants to minimize or reduce its greenhouse emissions, natural gas, of course, is considered a transition fuel. And if they are having difficulty paying the high prices for the transition fuel, then this could slow down Europe's ability to meet carbon emission reduction targets in the coming years.

Mr. PFLUGER. Well, I think it is absolutely connected, and I appreciate you making that point, because what we are doing by not allowing our partners and allies to use the cleanest burning LNG in the world, the cleanest burning natural gas in the world, which comes from the United States, is then pushing it to China and Russia, who will fill the void.

And so, any concerns that we have regarding our Earth, our climate in the future need to take into account the fact that those two people, China and Russia, were not at the summit. They didn't participate and they do not care.

So, with that, Mr. Chairman, I yield back. Thank you.

Mr. KEATING. Thank you very much.

Now, the chair recognizes the vice chair of the committee, Congresswoman Spanberger, for 5 minutes.

Ms. SPANBERGER. Thank you, Chairman Keating. I appreciate everyone's willingness and comments here before the subcommittee on this particularly important topic.

Admiral Zukunft, I would love to begin with you. First, thank you for your service. But I would like to focus my questions on Russia's role and interest in shaping the future of the Arctic.

Mr. Coffey just spoke about the scope and size of ice in the Arctic, and so my question is really focused on, as that ice melts, the Russian military is really becoming more engaged in the high north, rebuilding military infrastructure along the coast, requiring military escorts for commercial vessels along the coast, and really reposturing their forces in the region.

So could you—based on your experience, can you describe the extent of Russia's military modernization in the Arctic? And what risks do you think are created by the posture that they are taking on? And also, as a follow-on to that, how do you believe the United States should look at their actions and prepare and potentially react?

Admiral ZUKUNFT. A great question, Congresswoman. I will be glad to address those.

So we have seen this movie before in the East/South China Sea, and Russia has taken a chapter—and maybe they wrote the book

on this—when we start looking at the militarization of natural islands, not man-made, that have the ability to deny access to any military activity, but particularly that of the United States.

When Russia is launching icebreaking corvettes that can carry a cruise missile that can range—and now we have very short windows of time of notification for NORTHCOM NORAD to have awareness that we now have an inbound conventional strike being launched from the Arctic by one of these ships. What is up with that?

And so what we do not have is, you know, confidence, in terms of Russia's way ahead, you know, claiming all the way up to the North Pole as its expanded continental shelf. 350 miles is the limit under the Law of the Sea Convention, which Russia has thumbed its nose at. The same thing with the Northern Sea Route.

Not today, but as we listen to Dr. Natali's brief and we look at CO2 methane releases, as we get more carbon dioxide, which, by the way, takes about a century to metabolize from the atmosphere, that drives temperature, which drives sea level rise.

So is Russia looking at the long game, that not today but at some point in the near future that the Northern Sea Route will become a viable corridor for the Asia European markets, primarily to move LNG from the Yamal Peninsula. Huge economic driver, but that is also what drives Russia's economy, which they use to leverage and influence other nations as well.

So all of this, it cuts across the full spectrum of diplomatic, Law of the Sea Convention, governance, our lack of awareness, which is information, because we have not invested in that infrastructure, the militarization of the Arctic, and economically. Russia is playing this on all four fronts.

Ms. SPANBERGER. Admiral, when you say the lack of information because we have not invested there, could you explain a little bit more what you mean by that?

Admiral ZUKUNFT. Yes. So, you know, we send our icebreakers up there. And once they get much above 72 degrees north, our investment in satellite infrastructure is now on the horizon or nearly below it. So we do not have adequate space-based technology to improve awareness and, more importantly, to improve our bandwidth to move data. So that remains a challenge in the high latitudes for us right now.

Ms. SPANBERGER. And is that a lack of prioritization, from your perspective or from your experience, a lack of real understanding of the potential threat? What would you attribute that to? I mean, certainly

[inaudible].

Admiral ZUKUNFT. From my opening statement, we have great, great directives under three Presidential administrations that underscore this, but, you know, it came out time late in those administrations. As we say, you know, we have a strategic skeleton, but we have not put any flesh on the bone. And those tend to not carry forward from one regime to the next.

So we have that opportunity right now. Maybe COP26 is that catalyst to say, hey, we need to double down on our effort here in the Arctic. I hope we do.

Ms. SPANBERGER. Well, and I see Dr. Dorough shaking her head as well. In the remaining 30 seconds that we have left, putting the meat on the bones, if you could give us just a couple things that would put the meat on the bones in terms of our ability to really understand and track this right. What would you recommend we as Congress advocate for?

Admiral ZUKUNFT. A deepwater port in the Arctic; increased bandwidth for communications, and that also affects communications for indigenous residents as well. Investing in exerting U.S. sovereignty, which means icebreakers. And icebreakers mean they can also carry militarized equipment as well, so using the Norway-Russia model. And by the way, Canada is making those investments as well. You know, leveraging our partners, especially with our partners to the north. And, finally, ratifying the Law of the Sea Convention.

Ms. SPANBERGER. Thank you very much, Admiral Zukunft.

And, Chairman Keating, thank you for your indulgence in letting me go over. And thank you to our witnesses.

Mr. KEATING. Thank you so much.

As a matter of fact, if Dr. Dorough could do this quickly, you had attempted to answer that as well. Could you do that in 30 seconds? Is that possible?

Dr. DOROUGH. Yes, I think so. It is fairly clear—and I think the Commandant and others have said this—that infrastructure is one of the key elements here. It is a key element for research, it is a key element in terms of energy, it is a key element in terms of security, as well as a key element for the impacts of climate change upon our communities. And I think this shouldn't be underestimated. And the Commandant is right, we are late to the wake-up call as far as the United States is concerned. Our communities are already facing and living with substandard infrastructure.

The final comment I want to make is the reference to the norms, the rules, and responsibilities under public international law. In terms of UNCLOS in particular, I think there are a whole host of issues that we have to be mindful of, especially against the backdrop of Russia's activity and the interests of China. These two are constantly scanning the globe for their energy security, their food security, their national security. What about our security?

Mr. KEATING. Thank you.

The chair recognizes Congressman Peter Meijer for 5 minutes.

Mr. MEIJER. Thank you, Mr. Chairman. And thank you to our speakers who are here today on this important issue.

I had the opportunity to visit Franz Josef Land in Svalbard on the Arctic Circle a couple of decades ago, and it was clear then that we had not a significant American military interest or presence. And just how far that needle has shifted with the icebreaker cap that we have that especially, Admiral, you have spoken to, and Mr. Coffey as well, has been very clear.

And the recent—well, relatively recent but ramping up of use of Novaya Zemiya by the Russians for missile testing, you know, shows that they are taking advantage of the fact that we have cast our eye to, granted, incredibly important parts of the world, whether it is Asia Pacific or the CENTCOM AOR. At the same time, we cannot afford to ignore what is going on.

So I appreciate that we are, A, having this hearing, but, B, that there has been a commitment across administrations in order to try to address that icebreaker capability gap.

I am going to go to Mr. Coffey in a second, but, Admiral, in your view, is there anything that we in Congress can be doing to try to expedite—obviously, you know, for the past—this administration, the past two administrations have also affirmed, you know, our commitment to engaging in the Arctic. Is there anything left in Congress' court or is this going to be flowing through executive policy and procurements on the DOD side and Coast Guard side that have already started to progress?

Admiral ZUKUNFT. Yes. Thank you, Congressman. And I will talk, first of all, what we need to do domestically and as we look at who was there, who was not there at COP26. We really need to double down our efforts, what are we doing to adapt to a changing climate.

As we heard from Dr. Dorrough, we have 31 villages. I was out in Shishmaref, which is literally washing into the sea. That is one of the 12 villages that is looking to relocate. Army Corps of Engineers sunk some money in there to build a revetment, but first and foremost, you know, we need to do the humanitarian thing for our first nations that reside in the Arctic region.

And the second is, you know, we need to step up and be a global leader in this domain as well. I stepped up as Commandant of the Coast Guard because our military—I sit with the Joint Chiefs—are focused on, at that time, was Russia, China, North Korea, Iran, and violent extremism. There was nothing left on the plate to make room for the Arctic that says, OK, I will take the Arctic.

We now have a defense strategy that came out in 2019 that now includes the Arctic as well. So, you know, we are making policy statements, we are writing strategies, but now it is time for us to, you know, peel those back another layer, and then where do we need to make smart investments. The immediate one is, we need to adapt to a climate change, and, two, we need to invest in our ability to exert sovereignty in this region.

Mr. MEIJER. Thank you, Admiral.

And, Mr. Coffey, you know, I think this is the first time I have heard in a committee hearing in quite a while the U.N. Convention on Law of the Sea. You know, I would be curious to hear your thoughts on what the benefits of the U.S. being formally a signatory to UNCLOS, the drawbacks, and just where we go from here.

I mean, both in the Arctic and freedom of navigation operations with Russia expanding its continental shelf definition, and, you know, dropping little flags, you know, ever further away from what I think anyone would rationally call its territorial waters

[inaudible] What we are seeing in China with, you know, many dashed plans in order to, again, just assert that control.

You know, is it worth revisiting UNCLOS or should we focus on other methods in order of asserting a global standard around navigation operations?

Mr. COFFEY. Well, in terms of the enforcement of global norms and laws when it comes to maritime operations, the U.S. Navy, for many decades, has set the standard on what is the norm in terms of maritime law.

And also, in addition, many of the maritime boundary disputes that the United States have—well, we only have two maritime boundaries in the Arctic, one with Canada, one with Russia. The one with Russia is a settled matter. The one with Canada is being worked out bilaterally.

So in those two cases, the international norms and the boundary disputes, I do not see how U.S. ratification of the Law of the Sea Treaty would directly benefit the United States.

And then on balance (ph), you have this issue of encroachment on sovereignty, especially when it comes to the extraction of deep seabed minerals and the mechanism that is involved in sharing certain profits from the extraction of these minerals with land-locked countries around the world. There are many good questions that need to be answered about how this might impact the United States going forward, when we have no idea how many potentially trillions of dollars could be generated from this process and how much the United States and the U.S. taxpayer would be forced to share.

Mr. MEIJER. Thank you.

And, Mr. Chairman, with that, my time is expired, but I hope someone can talk a little bit more about those manganese nodules that are sitting on that seabed.

Mr. KEATING. Thank you.

The chair now recognizes Representative Susan Wild for 5 minutes.

Ms. WILD. Thank you very much, Mr. Chairman.

I would like to direct this question to the Admiral. Admiral, last month, the National Intelligence Council released an intelligence estimate on climate change and the challenges the climate crisis and responses to it posed to our national security. And it says—the intelligence report says: Contested economic and military activities will increase the risk of miscalculation, and deescalating tensions is likely to require the adaptation of existing or creation of new forums to address bilateral or multilateral security concerns among Arctic States.

At the same time, as we continue actively working to protect our security and economic interests in the Arctic, could you discuss what you view as the most effective pathways for long-term deescalation of tensions.

Admiral ZUKUNFT. Thank you, Congressman. I will first address the deescalation component of that. In 2016—and this is while the United States chaired the Arctic Council—I worked with the White House and with State Department and was granted approval to invite Russia to Washington, DC.—my counterpart from the Russia Border Guard—which then led to the creation of an Arctic Coast Guard Forum.

My counterpart from Russia literally gave me a bear hug, because their concern, our posture statements—you know, we have an adversarial relationship with Russia but not an enemy. And there is a distinction between the two, and we need to find areas where we can cooperate with one another.

We do so on a regular basis with Russia on the maritime boundary line. Our 17th Coast Guard District in Juneau in real time

shares information with Russia on incursions, and, likewise, they do the same with us as well. So there is an opportunity.

And the other one is NATO. There was a significant NATO exercise that was conducted where the U.S. played a huge role in this. I am talking 250 aircraft, over 70,000 troops, doing an exercise in the Arctic, which is ice-free. We are talking in the North Atlantic, you know, not in the Chukchi Bering Sea in the North Pacific side.

But that sends a signal to Russia. It is like, hey, we are paying attention. And we have gone through some fits and starts with our relationship with our NATO partners, but we have an opportunity right now to say—

Ms. WILD. Well—

Admiral ZUKUNFT [continuing]. Hey, this is a focus area, and not just—they are not just our NATO partners, but Finland and Sweden are significant players as well.

Ms. WILD. Well, good. Then you rendered the second part of that question moot, because I was going to ask you what does Russia's chairmanship of the Arctic Council mean for our interests in the Arctic and whether it presents challenges and could it also present any opportunities. But it sounds like you believe that the opportunities are there. Is that right?

Admiral ZUKUNFT. It is, Congresswoman. And the fact that Ambassador David Bolton, who was our envoy early on in the Arctic Council, is now the director of the Arctic Executive Steering Committee, we have good continuity in terms of strategic vision and direction at the highest levels in terms of our Arctic equities.

Ms. WILD. All right. Great. Well, I am going to move on to Dr. Dorough and just ask, since I have a little more than a minute and a half left, in your testimony, Dr. Dorough, you describe the long-time aspiration for an Arctic zone of peace. Could you expand on this vision and explain how the ongoing threat of confrontation in the region threatens the way of life of indigenous communities?

Dr. DOROUGH. Yes. As I said at the outset of my comments, we emerged in the midst of the cold war, and we see that reemerging through a host of different actions by much more powerful forces than ourselves.

And everything that has been addressed thus far by all of the commentators here is that, presently, we have a level of cooperation and collaboration through the Arctic Council, through the Coast Guard Forum, through a host of different things. But in order to crystallize this region for purposes, not only of ourselves, the designation of the region as a zone of peace, and—I mean, the other examples and precedents are there—that this would then ensure that, at a minimum, we can bring parties to the table, expand the table, if you will, especially when we look at the movements of the Russian Federation, we look at the movements of China. You know, very few have mentioned—actually, it hasn't been mentioned—the Central Arctic Ocean Fisheries Agreement and the desire to look at the viability of commercial or industrial fishing in this area.

You know, we have to find ways to stave these activities off. So a zone of peace may lend itself to a level of dialog that we have not experienced thus far. Indeed, the Arctic Council is a constructive mechanism. It has spawned important international treaties.

Many of those objectives are, in my assessment, unmet in terms of search and rescue, in terms of research and cooperation. But at the same time, in terms of the Arctic Council, there are no discussions about national security and defense issues. And so a full complement and an opportunity for a more frank discussion may be viable through exploring this effort to establish a zone of peace.

It has been an objective since our inception in 1977, largely due to the cold war and the lack of participation of our Siberian Yupik relations, our direct blood relations on the other side of the Bering Strait. Sorry to be long-winded.

Ms. WILD. Thank you so much, Dr. Dorough. Unfortunately, I am out of time, but it is a beautiful vision, and I hope it is accomplished.

Mr. Chairman, thank you so much for holding this very important hearing.

Mr. KEATING. Thank you, Representative.

The chair now recognizes Representative Dan Meuser for 5 minutes.

Mr. MEUSER. Thank you, Chairman Keating. I appreciate being with you all. And thank you to our witnesses.

So I think throughout this testimony, we have seen the Arctic has clearly increasingly become a focal point for great power competition. Russia has increasingly engaged in energy development in the region and regularly conducts military exercises at their, what we might be able to say is, many Arctic bases. China as well has made its Arctic interests known, seeing the potential for new trade routes.

As an Arctic Nation, the United States must protect and advance our interests and push back against such interference from potentially malign actors such as Russia and China. The Arctic may hold as much as 13 percent—we do not know, but that is an estimate—of the world's undiscovered oil reserve, one-third of undiscovered natural gas reserves, and critical minerals.

So, Mr. Coffey, if I may, what role could Arctic oil, gas, and mineral resources play in global energy and resource security?

Mr. COFFEY. Well, thank you for that question. If you are a nation that is dependent on the goodwill of Russia providing your oil and gas, then I would say the opportunities for using the Arctic to diversify or become more energy-secure are not very good.

Half of the world's land mass and half of the world's Arctic coastline is in Russia, and Russia has not shown a willingness in any meaningful way to be a trustworthy partner when it comes to energy matters, especially for Europe.

Right now, China is the main country that benefits from Russia's oil and gas facilities in the Arctic region. And the reason why China benefits from this is because of the pressure that Western economic sanctions has placed on this sector inside Russia, which has forced Moscow to almost go to Beijing with a begging bowl.

Right now, Russia is very much the junior partner when it comes to the bilateral Russian-Chinese relationship, and a lot of that is built on the oil and gas that is in the Arctic that China needs, and Russia needs money and investments to extract.

Mr. MEUSER. Mr. Coffey, who is—numerically, who is stronger, has got more knowledge, and more of a footprint in the Arctic: China, Russia, or the United States?

Mr. COFFEY. Without a doubt, Russia. China's main motivation in the Arctic is still one of economics and trade and energy. To the best of my knowledge, I do not believe that the PLAN, the People's Liberation Army Navy, has even operated in the Arctic Ocean. Certainly, civilian vessels, civilian scientific exploration vessels that could easily be dual-hatted have operated in the Arctic Ocean, but the Navy itself I do not think has, whereas Russia has spent a vast amount of money, time, and resources militarizing the Arctic region.

And I just want to stress, as long as Russia does its militarization inside its own borders, that is Russia's prerogative; but it is when you look at Russia's activities in other places outside of its borders, such as Ukraine, Georgia, Syria, others, for example, that gives you reason to be concerned by Russia's activities in the Arctic region.

Mr. MEUSER. Certainly. We have to certainly anticipate that they will look after their interests, and the United States must look after ours and assure that their interests do not overcome our interests.

So how would you assess, then, the State of U.S. readiness to enforce our interests in the Arctic and counter the increasingly, might be able to say, brazen Russian actions?

Mr. COFFEY. Well, we cannot do it alone, as was already mentioned. We need to work with our partners and allies, especially in NATO. And we also need to make sure that we have adequately resourced maritime capabilities and air and ground capabilities designed and equipped to operate in the harsh environments of the Arctic region.

Are we there yet? No, we are not. Are we seeing increases in funding to get us to where we need to be? I would say yes, we are, but it is going very slowly.

And as it pertains to NATO specifically, right now, the alliance is undergoing strategic concepts review where it is going to publish, next year, a document that is meant to guide the alliance for the future threats that it might face, and this would be a good time for the alliance to finally recognize the Arctic region, because NATO has the responsibility to defend Svalbard in the same way it has the same responsibility to defend Sicily.

Mr. MEUSER. All right. Are we, in your view, effectively managing, with our NATO partners, the interests of the NATO partners versus Russia and China, or do we need a far better plan and need to be more aggressive carrying it out?

Mr. KEATING. And if you could, if you could limit that to 30 seconds, since time is over.

Mr. MEUSER. Oh, I am sorry, Chairman. I thought I had a minute left.

Mr. KEATING. It is OK. No, go ahead. Go ahead.

Mr. COFFEY. We need a better coordinated plan and more resources directed at the unique challenges that the Arctic region faces, for sure.

Mr. MEUSER. All right. Thank you.

I yield back, Mr. Chairman. Thank you.

Mr. KEATING. Thank you, Representative.

The chair now recognizes Representative Dina Titus for 5 minutes.

Ms. TITUS. Thank you, Mr. Chairman. It has been a very interesting hearing.

You have talked a little bit about—Dr. Dorrough did—about the impact of this increased traffic on indigenous people. I would like to carry that just a step further, and it might seem mundane, but if we do not get ahead of it, it will become increasingly a problem.

So to Dr. Dorrough and Dr. Natali, as we see more people in the Arctic, whether they are on scientific expeditions, it is military training, shipping of business interests—and I would venture to say you are going to have increased tourism there too as it becomes more accessible—what are we doing, who is responsible for, do we have the infrastructure to be sure the place does not just get trashed like we have seen in parts of the world where suddenly everybody wants to go there?

Dr. DOROUGH. That is a really important question. Thank you very much. And before I get into any further details, I think this is the other element of UNCLOS that is significant. And many forget that UNCLOS isn't just about real estate. It is about numerous other chapters in terms of protection of the Arctic marine environment, for example.

I think that the increased shipping, the increased vessel trafficking will—including tourism and not just commodities in and out of the Arctic region—has numerous effects, diverse effects.

Interruption of marine mammal habitat threatens our food security. I mean, if we look at the Bering Strait alone and walrus and the reliance upon walrus, never mind whaling, sealing, and a host of other harvesting activities, at the moment, we do not have the infrastructure necessary even to enforce the Polar Code.

We welcomed the Polar Code, IMO's efforts to not only address issues of protection of the marine environment, but safety of life at sea. The infrastructure isn't there. Who is going to provide the infrastructure to ensure that there is safe discharge of gray water, for example? Hence, my earlier comment about the lack of infrastructure. So this question is of central concern.

I will note that, fortunately, through efforts of the Coast Guard and their dialog in consultation with Inuit communities that will be impacted by increased vessel traffic, identification of lanes, this exercise, I think, has to take place throughout the whole of the coastal areas that we as Inuit rely upon. So efforts across the whole of the Arctic should be taken to gain the input and the knowledge of our people as to safe passage, where there is less disruption.

But I think your question is important in terms of ensuring protection of the Arctic Ocean and the coastal seas or essentially the marine environment overall, and in my estimation, that is some of the value of the provisions and the other chapters of UNCLOS that many do not pay attention to because we are more concerned about the high politics that have emerged in the region.

Thank you.

Ms. TITUS. Well, thank you.

Dr. Natali?

Dr. NATALI. Yes. If I could just add, yes—and thanks for this question—if I could just add, talk a little bit about the impacts on Arctic lands. You know, in the Arctic, the ice is infrastructure, right? So we are building these structures on ice that is rapidly freezing. And so it is something to keep in mind that, both as, you know, increasing effects of climate change is putting the current infrastructure at risk, as we go in and build this infrastructure, though, we are also impacting the environment.

And so the climate change can thaw the permafrost, but the infrastructure also can cause impacts, and it is not an impact that goes away the next year when the vegetation grows. When you thaw that ice and when that ground collapses, you have then committed yourself to a lifetime—many, many lifetimes of impact on that land that may not come back.

And so this is something to be concerned about. It is extremely difficult to turn the clock once the land has started to erode and once the land has started to collapse.

Ms. TITUS. Thank you. Thank you very much. I think it is something we should make a priority as we talk about our involvement in the region and not just vis—vis Russia but maybe some collaboration.

Admiral, could you just add to that? You were mentioning how we are going to keep the lanes safe as more and more traffic is there. Who is going to be our traffic cop in the Arctic to be sure we have safety with all this increased travel and traffic?

Admiral ZUKUNFT. Yes. Thank you, Congresswoman. The Coast Guard, working with IMO, we have established a traffic separation scheme that goes through the Bering Strait. So if you are northbound/southbound, it is like interState highway, you keep to the right to minimize a collision at sea.

The bigger challenge is, well, what happens if we have a maritime incident, an oil spill? I was in charge of the Deepwater Horizon oil spill, and at my disposal I had 49,000 responders, 6,500 ships. I could maybe, at best, get 50 responders in any of the villages that would be impacted by an oil spill in that part of the world in the most pristine environments, and yet the most unforgiving environment when it comes to doing any type of pollution response.

So the more we can do on prevention, which includes safe ship routing, the better prepared we will be. But the human factor will always have a role in that.

Ms. TITUS. Well, thank you very much.

I will yield back, Mr. Chairman.

Mr. KEATING. Thank you, Representative.

The chair now recognizes Representative Dean Phillips for 5 minutes.

Mr. PHILLIPS. Thank you, Mr. Chairman. Greetings to our witnesses. I think we all agree that the topic of today's hearing is of critical importance, and—

Ms. TITUS. It was great.

Mr. PHILLIPS [continuing]. And I believe we also all agree that we cannot go it alone. Arctic and non-Arctic actors are going to increase their provocative actions and activities, especially as the

Arctic becomes more accessible because of warming temperatures and diminishing ice. That is something we have already covered today.

So it is clearly more important than ever to find opportunities of common ground and cooperation and shared interests amongst our friends and even our foes. That is exactly why I introduced the Arctic Diplomacy Act of 2021, to establish a United States Ambassador at Large for Arctic affairs and increase U.S. strategic engagement in the region.

I am proud that the legislation has been included in the EAGLE Act, which we, of course, passed out of committee, and that the Arctic diplomacy strategy from the bill was also included as an amendment to the recently House-passed NDAA.

And, of course, with Russia currently chairing the Council, the U.S. has to be mindful about our diplomatic presence.

So first question to you, Mr. Coffey. How will having a senior department official with the rank of Ambassador at the table be favorable to the United States and also to the free world?

Mr. COFFEY. Well, it would be very welcome because it would put the United States at equal level in terms of diplomatic status with other Arctic nations around the world. And I think it would be a beneficial way for the U.S. to exert diplomatic influence when we debate issues related to the Arctic.

Mr. PHILLIPS. I appreciate it.

Admiral, to you, how can the DOS and DOD complement each other relative to priorities in the Arctic?

Admiral ZUKUNFT. Yes, Congressman, well, we are already doing that, and I think the platform we used was the Arctic Coast Guard Forum, to build trust-building measures, doing at-sea operations with the Coast Guards of all eight Arctic Council nations.

To your previous question, we need to revisit the Arctic Executive Steering Committee, which went into hiatus for a period of about 4 or 5 years. It was reactivated in September 2021. As I said earlier, chaired by career Ambassador David Bolton, who has the bona fides that you alluded to in terms of ocean policy and Arctic awareness, and is also our envoy when Russia last chaired the Arctic Council. So we have good continuity there.

And so there may be an opportunity, as we look at, you know, do we have the right breadth and depth in the Arctic Executive Steering Committee as—you know, so we do not create, you know, competing frameworks with a focus area on the Arctic domain.

Mr. PHILLIPS. I appreciate that too.

And, Mr. Coffey, any thoughts on that response?

Mr. COFFEY. Sorry. My—I had a bit of delay in the connection.

No, I think that we are seeing more synergy between the two, and I think that is a positive thing. And we are only now starting to understand some of the—we are only now starting to understand why many of the challenges we face in the Arctic require not only this multilateral approach that we talk about on the international stage, but more of an interagency approach inside the U.S. Government, but also more coordination with the States at the State level and subState level, like with indigenous communities, and also local authorities and municipalities and counties in Alaska.

Mr. PHILLIPS. Thank you. Thank you both.

Last, to Dr. Natali, of course, COP26 just wrapped up. I would welcome your thoughts relative to the Arctic-related outcomes and commitments on the heels of the summit. Any perspective you want to share, I would welcome it.

Dr. NATALI. Yes. So the last IPCC report, AR6 did account for carbon emissions from permafrost but not appropriately. So I think that is something that really needs to happen. I think in our conversations about, you know, whether we are going to make it to 1.—or keep temperatures below 1.5 and 2 C, we need to start accounting for—fully accounting for carbon emissions from the Arctic, which currently still is not happening.

And then I think the other thing I would like to see more conversations on is just about loss and damage of Arctic lands as a result of erosion and permafrost, and I think that the—you know, there was more voices of Arctic indigenous people, I think, at this COP, but I think that needs to be stepped up quite a bit more.

Mr. PHILLIPS. I thank you.

And I want to thank all our witnesses for elevating—helping us elevate this important issue and for all the work you do.

With that, Mr. Chair, I yield back.

Mr. KEATING. Thank you, Representative.

The chair now recognizes Representative Brad Schneider for 5 minutes.

Mr. SCHNEIDER. Thank you, Mr. Chairman. And I want to thank the committee for holding this important hearing. I want to thank the witnesses for making your time and sharing your perspectives and views on this important issue.

As I read the testimony last night, as I listened to the questions and answers today, it seems like we are facing a lot of dichotomies, not just the dichotomy of freeze versus thaw, but you have got the issues of climate change leading to challenges preserving a pristine wilderness versus utilizing the opportunities presented. You have challenges of opportunities presented, but the threats coming from both climate change and global competition, mutual shared interests of the countries bordering the Arctic and the challenges to sovereignty. And ultimately it comes down to the balance of stewardship, how do we preserve and deal with these threats versus global competition.

And I think those are some of the challenges, and I appreciate the input you all have had here.

If I can turn to Admiral Zukunft, and thank you for your service and the perspective you bring to this conversation. You know, given—if I take it even a step further, the biggest challenge, purpose of this hearing is to talk about climate change and the impact of security.

You have experience both in the Pacific, Atlantic, Gulf of Mexico. How will climate change affect not just the Coast Guard's ability, but our national ability achieving our mission, operating—you have touched on some of that, but at the end of this hearing, if you could just wrap it up very briefly.

Admiral ZUKUNFT. Well, thank you, Congressman. I think as we heard earlier, due to the challenges of just accessing the Arctic, to begin with, almost defaults to a military role, be it search and rescue, an oil spill response.

We have 31 villages, 12 of which are looking at moving to higher ground. All of those would fall under what we call the defense support to civil authorities, yet another mission for the Department of Defense to look at.

So often we just look at the Arctic as pure competition, but we also have a responsibility to the residents in the Arctic domain as well, to some of the most prescient threats that they face right now.

Everything I look at, as greenhouse gases go up, there is a linear relationship between that, temperature, and sea level going up. What happens when sea ice retreats, it is that natural breakwater for these coastal communities that no longer exist, and now they have harsh storms that are literally washing these villages into the sea.

The whale hunting, walrus harvesting, they have to go further offshore. The Coast Guard now seasonally places a squadron of aircraft in Kotzebue, which we never did before, because these villagers have to go much further and are at greater risk out there as well.

We did put three CubeSat satellites into space that pick up search and rescue transponders to improve our, you know, where are they, but the response times are still significant, hundreds of miles from the nearest deep water port, Dutch Harbor, to the north slope of Alaska. So challenges still remain in terms of any sustained presence in the high latitudes.

Mr. SCHNEIDER. Thank you. I appreciate that.

And maybe if I can turn to Dr. Natali. You know, from a preservation standpoint, the ecology of the Arctic, the idea of stewardship versus competition, how does that play out?

Dr. NATALI. Yes. I mean, I would prioritize stewardship. I feel like the long-term security risks are much higher, both in the Arctic and globally, if that is not prioritized.

In terms of the different interests in the Arctic, it seems to me—and I think the Admiral has brought up a couple times about remote sensing. I do think many interests can be met with increased prioritization of satellite remote sensing, both at increased spatial and temporal resolution in the Arctic, because, yes, there are some satellites now and we do have a lot of information that is coming out of them, but because the Arctic is so far north and it is dark and it is cloudy a lot of the time, I think there is a lot of information and increased information we can get for all of these security needs that have come up in this conversation so far.

So thank you.

Mr. SCHNEIDER. And in the last 2 seconds, Dr. Dorough, you represent the people living in this area. I would welcome your thoughts as well.

Dr. DOROUGH. Well, I think that there are a host of different perspectives. I just quickly wanted to point to some resources that may be helpful and, in particular, the Status of Tribes in Climate Change [STACC] report that has recently come out. I think this is a useful resource that helps to qualify the impacts of climate change.

I think, bottom line, inclusion of the voices of Inuit, I think this is a really, really important matter that hasn't been fully explored,

and potentially this Arctic Diplomacy Act and the opportunity for focused and coherent and coordinated efforts would really assist not only the U.S. Government and all of its branches, including all of the military branches, but inclusion of our voices in relation to all of these relevant and pertinent questions that have been raised in the course of this particular hearing.

Mr. SCHNEIDER. Well, thank you.

And, Mr. Coffey, I am sorry, I am out of time, but I yield back to the chairman. Thank you very much.

Mr. KEATING. Thank you, Representative.

I just want to have one question in conclusion for a brief answer as a followup, and that is this, that—particularly with Admiral Zukunft and with Mr. Coffey, from the security standpoint, the emphasis was the advantage the U.S. has in the Arctic is the strength of our allies.

So I want to ask Dr. Natali and I want to ask Dr. Dorough, what about the strength of our allies and our cooperation in dealing with the indigenous community and the scientific community, is that as strong as it has to be? Is that on par with what we have discussed in terms of our security alliances? Is that kind of cooperation and information sharing and coordination there for those important communities?

Just the two doctors, if we could.

Dr. DOROUGH. I think that more could be done in a substantive way. For example, the Inuit Circumpolar Council has become an observer to the Intergovernmental Panel on Climate Change. We are shaping ways in which we can coproduce knowledge through our understanding of what we see and feel and hear on an everyday basis out there and on the sea ice and on the land.

And I greatly appreciate Dr. Natali's reference to infrastructure and ice being infrastructure. This aligns with our perspectives. But I think that more could be done in order to recognize and respect our right of self-determination in research, meaning an embrace of indigenous knowledge holders, an embrace of indigenous knowledge generally.

And we presently have a project to identify the ethical and equitable fair and just engagement of Indigenous Knowledge holders, and we look forward to sharing the outcomes of that particular project with all of those interested, not just in the United States, but indeed in a host of different intergovernmental fora across the globe.

So we have much to contribute, including assessments and guidelines and protocols such as those emerging in this particular project. So more can be done.

Mr. KEATING. Great. Thank you.

Finally, Dr. Natali.

Dr. NATALI. Yes. I think because of the way scientific research is funded, there tends to be many, many individual projects, and there certainly is coordination amongst the scientific community, the permafrost world. The Permafrost Carbon Network is one of them. But there is no strategic plan for addressing some of these issues, and there is no strategic plan for Western scientists and indigenous scientists and knowledge holders to work together. So there is definitely examples of that happening, and there is defi-

nately examples of collaboration with U.S. and Russian scientists, say, but there is challenges, and they are challenges that individuals overcome.

But I feel like there could be some more top-down support if this is a priority to make this happen, and I think we can advance the science and advance the protection of the Arctic and sort of sharing of knowledge, of both Western and indigenous knowledge, if this was prioritized in some strategic way.

Mr. KEATING. Great. Well, thank you so much. I suspected in those two areas it is something perhaps in Congress we could try and encourage greater cooperation in those fields.

It is clear from our security standpoint, as the Admiral said, as Mr. Coffey said, shockingly so, we have a lack of assets to deal with these issues. And we have a great deal of work to do from the security front as well. But the cooperation with our allies, particularly our NATO allies, is there.

So thank you for this important testimony. We tried to make this one of our earlier hearings to highlight this and try and move the ball forward from this committee. It is an extraordinarily demanding time for our colleagues, and I just want to make note of the fact and thank, we had 11 congressional members participating in this subcommittee hearing at a time when we are all being pulled in all kinds of different directions.

And I think that speaks to the importance that we are placing on Congress and in this committee on the Arctic and the strategic and environmental when they all overlap. I failed to put it into—I failed miserably at trying to just categorize it, because I think our witnesses, as a whole, have demonstrated the comprehensive importance of this. So strategically we have a long way to go.

Thank you so much for your testimony. I thank the members of the committee for participating.

The members will have 5 days to submit statements, extraneous materials, and questions for the record subject to the length and limitations of the rules.

Again, thank you so much. Thank you for, you know, bearing out the time zone differences, many of you, and thank you for your important testimony. And you are welcome to continue to communicate with this subcommittee on this important matter.

With that, I would declare this hearing closed.

[Whereupon, at 11:51 a.m., the subcommittee was adjourned.]

APPENDIX

SUBCOMMITTEE HEARING NOTICE
COMMITTEE ON FOREIGN AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515-6128

Subcommittee on Europe, Energy, the Environment, and Cyber

William R. Keating (D-MA), Chair

November 16, 2021

TO: MEMBERS OF THE COMMITTEE ON FOREIGN AFFAIRS

You are respectfully requested to attend an OPEN hearing of the Committee on Foreign Affairs, to be held by the Subcommittee on Europe, Energy, the Environment, and Cyber via Cisco WebEx (and available by live webcast on the Committee website at <https://foreignaffairs.house.gov/>):

DATE: Tuesday, November 16, 2021

TIME: 10:00 a.m., EST

SUBJECT: National Security Implications of Climate Change in the Arctic

WITNESS: Admiral Paul F. Zukunft, USCG (Ret)
Former Commandant of the United States Coast Guard

Susan M. Natali, Ph.D.
Arctic Program Director
Woodwell Climate Research Center

Dalee Sambo Dorough, Ph.D.
Chairperson, Inuit Circumpolar Council

Mr. Luke Coffey
Director
Douglas and Sarah Allison Center for Foreign Policy
The Heritage Foundation

By Direction of the Chair

To fill out this form online: Either use the tab key to travel through each field or mouse click each line or within blue box. Type in information.

Note: Red boxes with red type will NOT print.

COMMITTEE ON FOREIGN AFFAIRS

MINUTES OF SUBCOMMITTEE ON Europe, Energy, the Environment and Cyber HEARING

Day Tuesday Date 11/16/2021 Room Cisco Webex

Starting Time 10:11 Ending Time 11:51

Recesses (___ to ___) (___ to ___) (___ to ___) (___ to ___) (___ to ___) (___ to ___)

Presiding Member(s)
William R. Keating

Check all of the following that apply:

Open Session Electronically Recorded (taped)
Executive (closed) Session Stenographic Record
Televised

To select a box, mouse click it, or tab to it and use the enter key to select. Another click on the same box will deselect it.

TITLE OF HEARING:
National Security Implications of Climate Change in the Arctic

SUBCOMMITTEE MEMBERS PRESENT:
See Attached

NON-SUBCOMMITTEE MEMBERS PRESENT: *(Mark with an * if they are not members of full committee.)*

HEARING WITNESSES: Same as meeting notice attached? Yes No
(If "no", please list below and include title, agency, department, or organization.)

STATEMENTS FOR THE RECORD: *(List any statements submitted for the record.)*
Admiral Paul F. Zukunft's Testimony
Dr. Susan M. Natali's Testimony
Dr. Dalee Sambo Dorough's Testimony
Mr. Luke Coffey's Testimony
Representative William R. Keating's Addition to the Record on behalf of Dr. Susan M. Natali

TIME SCHEDULED TO RECONVENE _____
or
TIME ADJOURNED 11:51

Clear Form

Note: If listing additional witnesses not included on hearing notice, be sure to include title, agency, etc.

Benjamin Cooper
Subcommittee Staff Associate

WHEN COMPLETED: Please print for subcommittee staff director's signature and make at least one copy of the signed form. A signed copy is to be included with the hearing/markup transcript when ready for printing along with a copy of the final meeting notice (both will go into the appendix). The signed original, with a copy of the final meeting notice attached, goes to full committee. An electronic copy of this PDF file may be saved to your hearing folder, if desired.

HOUSE COMMITTEE ON FOREIGN AFFAIRS
EUROPE, ENERGY, THE ENVIRONMENT, AND CYBER SUBCOMMITTEE HEARING

<i>PRESENT</i>	<i>MEMBER</i>
X	William Keating, MA
X	Abigail Spanberger, VA
X	Susan Wild, PA
	Albio Sires, NJ
	Theodore E. Deutch, FL
	David Cicilline, RI
X	Dina Titus, NV
X	Dean Phillips, MN
X	Jim Costa, CA
X	Vicente Gonzalez, TX
X	Brad Schneider, IL

<i>PRESENT</i>	<i>MEMBER</i>
X	Brian K. Fitzpatrick, PA
	Ann Wagner, MO
	Adam Kinzinger, IL
X	Brian Mast, FL
X	Dan Meuser, PA
X	August Pfluger, TX
	Nicole Malliotakis, NY
X	Peter Meijer, MI
	Claudia Tenney, NY

ADDITIONAL MATERIALS SUBMITTED FOR THE RECORD



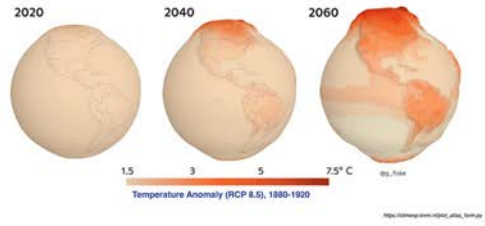


**Woodwell Climate Research Center
is a leading source of climate science
that drives the urgent action needed
to solve climate change.**

Originally founded as the Woods Hole Research Center in 1985, the organization was established to put the insights of climate science into the hands of decision makers.



In the coming years, Arctic temperatures will continue to rise and will exacerbate climate hazards.

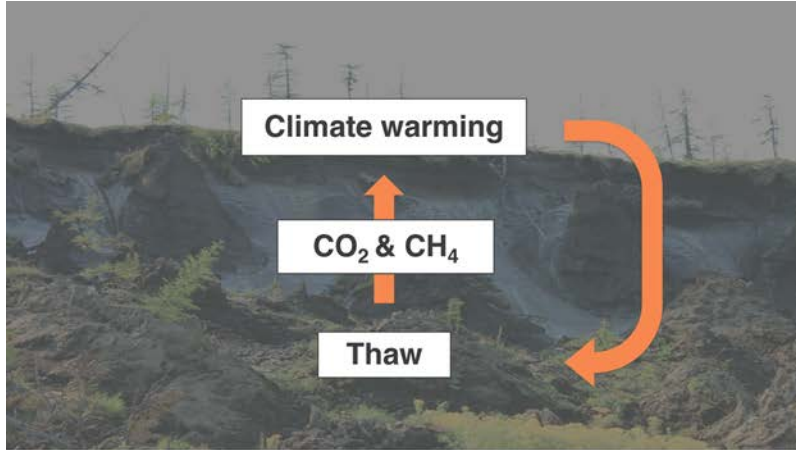









Permafrost contains twice as much carbon as is
in the atmosphere.





Permafrost carbon emissions are not fully accounted for in global carbon budgets.

Permafrost carbon emissions may 'use up' 25-40% of the allowable emissions to stay below 2° C.



Some Alaskan communities are having to make difficult climate adaptation decisions, including relocation, as a result of eroding, thawing and flooding lands.


The U.S. Government Accountability Office considered 31 Alaska Native villages under "imminent threat" due to erosion, flooding, and permafrost thaw (GAO 2009).

CLIMATE HOME NEWS https://www.climatehomenews.com/2019/07/23/there-is-no-coming-back-from-disappearing-coastlines/

'There is no coming back from disappearing coastlines'

Published on 23/07/2019 4:31pm

Sponsored content: Alaska Native communities working on the frontlines of 'tsiq' or land collapse are striving for recognition and emergency relief



Native Peoples in Alaska turn to camp storage on the coastlines (Photo: AP/WIDE)

By Climate Justice Resilience Fund

The landscape is changing drastically in Alaska, where the climate is warming at twice the rate of the rest of the planet.

[Facebook](#) [Twitter](#) [LinkedIn](#)

