Center for American Progress

Why a Melting Arctic Could Sink the Global Economy

By Cathleen Kelly March 19, 2014

> *[Climate change in the Arctic] is one of the most obvious shared challenges on the face of the planet today … Today, as Secretary of State, I come here keenly aware that the long list of [Arctic] challenges—acidification, pollution, ice melt, rising sea levels, disappearing species, and indiscriminate development practices—all of these carry even more challenges downstream, so to speak, to each of our economies, to our national security, and to international stability.*
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> *– U.S. Secretary of State John Kerry, Arctic Council Ministerial Session, Kiruna, Sweden, May 15, 2013*[1]

Normally shy in policy debates, the American Association for the Advancement of Science, or AAAS, released a new report warning Americans that "We are at risk of pushing our climate system toward abrupt, unpredictable, and potentially irreversible changes with highly damaging impacts." In addition to putting policymakers and the public on sharp notice of the consequences of climate change, the report makes clear that "the sooner we act, the lower the risk and cost. And there is much we can do."[2] U.S. Secretary of State John Kerry came to this same conclusion well before the AAAS report release, dating back to his days in the U.S. Senate, where he was an outspoken advocate of U.S. legislation to limit carbon pollution and strong international climate action. More recently, on March 7, Secretary Kerry called on diplomats around the world to make tackling climate change a top priority.[3] In his first Policy Guidance as secretary of state, Kerry directed ambassadors to lock in a new global climate treaty by 2015, expand multilateral and bilateral climate change partnerships, and mobilize resources to promote clean energy, halt deforestation, and increase community resilience.[4]

This is a welcome and much-needed step. According to the U.S. Department of Defense's 2014 Quadrennial Defense Review:

> *The pressures caused by climate change will influence resource competition while placing additional burdens on economies, societies, and governance institutions around the world. These effects are threat multipliers that will aggravate stressors abroad such as poverty, environmental degradation, political instability, and social tensions – conditions that can enable terrorist activity and other forms of violence.*[5]

Secretary Kerry has an immediate opportunity to implement his new climate change Policy Guidance as he begins setting priorities now for his upcoming leadership position as the 2015–2017 Arctic Council Chair.[6] In this role, he can drive an ambitious agenda focused on putting the brakes on climate change by cutting black carbon and methane emissions and promoting renewable energy use. As part of this agenda, Secretary Kerry should seek to conserve invaluable Arctic marine and coastal environments and promote sustainable Arctic development that will boost the resilience and prosperity of Arctic communities.

As the Arctic becomes more accessible and competition for resources and territory accelerates, the risk of oil spills and other catastrophic accidents, territorial disputes, and security challenges will rise. American capabilities to deal with these challenges lag far behind those of other Arctic nations. To ensure peace and safety in the region, Secretary Kerry must work closely with President Barack Obama, U.S. Department of Defense Secretary Chuck Hagel, and other agencies to build on the 2013 White House National Strategy for the Arctic Region and the Department of Defense 2013 Arctic Strategy.[7] Improving our understanding of the local and global effects of a warming Arctic must be among their top priorities. Together, these leaders must also develop a plan and secure the resources to expand America's oil-spill and other disaster-response capabilities in the Arctic, including our icebreaker fleet, navigation and communication satellites, ports, and other infrastructure needed to support emergency preparedness and response.[8]

Nowhere are the impacts of climate change more evident and staggering than in the Arctic. The region—which encompasses 17 percent of the globe and is almost one and a half times the size of the United States—is warming two times faster than any other region on Earth.[9] Furthermore, Arctic sea ice has shrunk by 75 percent since the 1980s, according to a recent analysis, with ice-free summers in the Arctic Ocean "very likely" by midcentury.[10] Another new study published in the *Proceedings of the National Academy of Sciences* forecasts a dramatic acceleration of global warming as the reflective surface of the snow-covered Arctic sea ice recedes and the dark, open Arctic waters absorb the sun's heat.[11] These and other effects of a warming Arctic not only directly threaten the health, safety, and prosperity of the 4 million people who live in the High North—but they also have tremendous economic, environmental, and security implications for the United States and the rest of the world.[12]

The risks and consequences of a melting Arctic far outweigh the opportunities

As Arctic sea ice vanishes, companies and countries are scurrying to set in motion plans to exploit natural resources in the region, including through oil and gas development, commercial fishing, and trade via new shipping routes.[13]

Of the Arctic's emerging industrial uses, oil and gas development is the most troubling. The rush to push fossil-fuel production offshore—despite a worrying dearth of oil spill cleanup knowledge, infrastructure, and response capacity in this harsh and remote area—may spell disaster for the region's sensitive environment and the indigenous communities and others who depend on it for their livelihoods.[14] Widespread fossil-fuel extraction in the Arctic and elsewhere will also exacerbate disruptive climate changes already underway in the region and globally—which have contributed to an increase in destructive storms, flooding, and heat waves—adding fuel to the fire of an already warming planet.[15]

Arctic warming is caused by carbon pollution from fossil-fuel-burning power plants, cars, and other sources all over the world. And super pollutants, or short-lived climate forcers—such as black carbon and methane—are driving up Arctic and global temperatures and eroding public health and agricultural productivity.[16] Black carbon from inefficient diesel cars and trucks, shipping, wood-fired stoves, burning agricultural waste, and forest fires is a dangerous air pollutant that coats Arctic snow like a heat-absorbing quilt, accelerating local warming and snow and ice melt.[17] Methane from oil and gas production, agriculture, and landfills is also a major driver of Arctic and global warming.[18]

In Alaska, the heat is on

Bold U.S. leadership to rein in climate change and protect valuable marine and coastal environments in the Arctic cannot arrive a moment too soon. Temperatures in Alaska are climbing at double the rate of the national average, and coastal communities are seeing the consequences.[19] As protective sea ice melts, the Alaskan coast is rapidly eroding, forcing the villages of Shishmaref, Kivalina, and Newtok to seek relocation to escape flooding from dangerous storm surge.[20] Some shorelines along Alaska's northwest coast are losing tens of feet each year.[21]

As Alaska's permafrost thaws, it is sinking unevenly, causing highways, pipelines, railroads, runways, and other infrastructure to buckle.[22] Repairing Alaska's crumbling infrastructure is neither cheap nor easy. According to the draft National Climate Assessment, public infrastructure in Alaska built on permafrost will cost 10 percent to 20 percent more to maintain over the next 20 years.[23] The draft highlights substantial new information revealing that "ocean acidification, rising ocean temperatures, declining sea ice, and other environmental changes are affecting the location and abundance of marine fish, including those that are commercially important, those used as food by other species, and those used for subsistence."[24] As sea and river ice thin, hunting and fishing in Alaska are becoming more dangerous, threatening the culture, livelihoods, and well-being of Alaska's native communities.[25]

'What happens in the Arctic does not stay in the Arctic'

People across the globe are already paying the price of Arctic warming. As University of Virginia scientist and National Oceanic and Atmospheric Administration Arctic Report Card author Howard Epstein put it, "The Arctic is not like Vegas. What happens in the Arctic does not stay in the Arctic."[26] For example, melting sea ice in the Greenland Arctic is accelerating global sea-level rise, increasing flood risks, and endangering infrastructure and communities in coastal cities such as Miami, New York, and many others.[27] The Greenland Ice Sheet—a 656,000 square-mile slab of thick ice that is roughly three times the size of Texas—has drastically declined during summer months over the past 30 years.[28] If the Greenland Ice Sheet disintegrates, the authors of a new study published in the journal *Scientific Reports* estimate that the sea level will rise by roughly 25 to 30 feet.[29]

A recent study in the journal *Nature* also ties Arctic sea ice melt to more severe summer heat and drought.[30] The authors further conclude that warming in the Arctic is destabilizing the Northern Hemisphere jet stream, the conveyor belt of fast-moving air that encircles the Earth, drives our weather patterns, and forms a boundary between cold air in the north and warmer air in the south.[31] A growing body of evidence suggests that as the jet stream weakens, pockets of Arctic air are seeping into the midlatitudes. This phenomenon—known as the polar vortex—has caused temperatures to plummet across much of the country this winter, one of several factors that caused energy prices to spike.[32]

In another *Nature* analysis, experts estimate that the release of 50 gigatons of methane from thawing permafrost beneath the East Siberian Sea will cause a crushing $60 trillion in damage from more extreme storms, floods, droughts, and other climate change impacts over the next 10 years, an amount approaching the annual value of the global economy in 2012—roughly $70 trillion.[33] The authors conclude that the total cost of climate change in the Arctic—including ocean acidification, melting permafrost on land, and weakening of the jetstream, which are factors the study does not address—will be even higher and will far exceed the expected economic gain of increasing Arctic oil, coal, and other mineral extraction. The economic potential of extracting these resources is highly speculative and is estimated to be $1.7 trillion in the Russian Arctic and to exceed $1 trillion in the U.S. Arctic.[34]

The United States must lead efforts to tackle Arctic warming

> *Over the long-term, as global warming accelerates, Arctic ice melt will lead to a sea level rise that will likely threaten coastal populations around the world … As the Arctic changes, it creates new opportunities—and new challenges—that will shape the region for decades to come.*
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> *– U.S. Secretary of Defense Chuck Hagel, Halifax International Security Forum, Nova Scotia, November 22, 2013*[35]

We have vital interests in advancing national and international security, pursuing responsible environmental stewardship, and strengthening international cooperation in the Arctic region, as detailed in President Obama's National Strategy for the Arctic Region, the White House's Arctic Strategy Implementation Plan, and the Department of Defense Arctic Strategy.[36] Consistent with these priorities, when Secretary Kerry takes over as chair of the Arctic Council in 2015, he should seize the opportunity to set an ambitious agenda to combat climate change. Such an agenda should aim to lock-in agreements from Arctic Council members—including Russia, Canada, and the Nordic countries, as well as observers, such as China, India, Japan, and South Korea—to reduce black carbon, methane, and other heat-trapping emissions.[37]

To promote sustainable development, the United States should lead an Arctic Council effort to expand renewable energy use in the region and establish baseline safety standards for Arctic energy development and advance transboundary coordination on disaster response. The United States should also champion an expansion of investments by Arctic Council members and observers in scientific research and data sharing on Arctic marine biodiversity, including the profound shifts in Arctic marine ecology and commercially valuable fish species driven by warming in the region. Until such research and data are readily available, the United States should continue to urge all coastal Arctic nations to ban commercial fishing in the Arctic Ocean; the United States adopted an Arctic commercial fishing moratorium in 2009.[38] This would build on the February 2014 agreement in Nuuk, Greenland, among the five coastal Arctic nations—Norway, Greenland, Canada, the United States, and Russia—to work toward the prevention of commercial fisheries in the central Arctic Ocean until more scientific research is completed.[39]

In addition, the United States should seek to protect invaluable Arctic marine and coastal environments and promote sustainable development by freezing U.S. Arctic offshore oil and gas development. The freeze should remain in place until safe and proven Arctic oil spill cleanup methods exist and sufficient infrastructure is in place to quickly and effectively respond to an oil spill. In addition, it should be held until the United States develops and implements an ambitious plan to reduce the role of public lands and offshore waters as a source of heat-trapping emissions.[40]

While the security threats in the region are currently low, as industrial activities expand, so will the risk of oil spills, shipping accidents, territorial disputes, and other potential conflicts tied to resource competition and more maritime traffic in the region. With only a single functional icebreaker designed to operate in the Arctic, as compared to the 18 operated by Russia, the United States is vastly underprepared to manage these future risks.[41] To keep pace with the rising safety and security challenges in the region, Secretary Kerry must work closely with Defense Secretary Hagel, Secretary of Homeland Security Jeh Johnson, and Commandant of the U.S. Coast Guard Admiral Robert J. Papp to promote a stable and secure Arctic. This requires the development of a comprehensive plan

to upgrade and expand American capabilities and infrastructure in the Arctic, including growing the U.S. icebreaker fleet and building ports and other key infrastructure needed to support oil spill cleanup and respond to other disasters. It also means vastly improving our understanding of the local and global effects of a warming Arctic.

The above actions are in line with President Obama's Climate Action Plan, in which he committed the United States to leading international action to tackle climate change. They are also consistent with Secretary Kerry's desire to be pivotal player in helping broker a 2015 climate deal.[42] With these actions, President Obama and Secretary Kerry can leave behind a strong legacy of protecting the well-being of the Arctic's people, wildlife, and marine and coastal environments—and the well-being of the planet.

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