Arctic Energy Development:

Preventing Transnational Insecurity

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ABSTRACT

Climate change warms the Arctic twice as fast as anywhere else on Earth.[1] This, in turn, causes ice to melt faster, exposing energy deposits and making shipping routes accessible for longer periods of the year. Scientists believe there are significant reserves of untapped hydrocarbons in the Arctic: in 2008, the United States Geological Survey (USGS) estimated that the Arctic contains 90 billion barrels of oil - 13% of undiscovered global stores - and 47.3 trillion cubic meters of natural gas - 30% of undiscovered natural gas.[2] Arctic littoral nations, other sovereign states, and private companies are taking notice of this opportunity and are experimenting with drilling in the region. But increased exploration and extraction in the Arctic pose risks to environmental and human security. Currently, the loose body of international law governing energy development in the Arctic is insufficient to mitigate these risks. The existing framework needs to be strengthened – not overhauled – in order to reduce the severity of threats that energy development in the Arctic poses to human and environmental security. At the same time, the United States needs to play a greater role in safeguarding this fragile region.

INTRODUCTION

Two years before the end of the Cold War, prominent Arctic scholars announced that the world had entered the "Age of the Arctic."[3] What once was a harsh global backwater, the Arctic has now emerged as a strategic region for security and economic interests. As global temperatures rise and polar ice recedes, new platforms, energy deposits, minerals, resources, and perennial transit routes

become exposed. Scientists believe there are significant reserves of untapped hydrocarbons in the Arctic: in 2008, the United States Geological Survey (USGS) estimated that the Arctic contains 90 billion barrels of oil - 13% of undiscovered global stores - and 47.3 trillion cubic meters of natural gas - 30% of undiscovered natural gas. [4] Revisionist great powers Russia and China look to the Arctic as an economic savior, and therefore consider it a vital strategic area to control. In the West, governments look to private companies to strike 'black gold' and extract precious hydrocarbons in the High North. For now, energy extraction in the Arctic is dangerous and economically irrational. But eventually, under the right geophysical and economic circumstances, energy extraction in the Arctic will become economically viable for the prescient actors who claim an early stake.

Energy extraction in the Arctic lacks comprehensive international oversight. While there is a shared sense of diplomatic cooperation among the eight states of the intergovernmental forum, the Arctic Council (Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States) on matters such as search and rescue, and emergency preparedness and response, there is no unitary international legal standard regarding onshore or offshore hydrocarbon extraction.[5] With previously inaccessible energy-rich areas becoming accessible, and no international framework to govern extraction, many questions remain.

This paper argues that the gravity of the threats to human and environmental security posed by increased energy extraction and exploration in the Arctic necessitates the development of stronger oversight frameworks. First, I will outline how the impacts of climate change on the Arctic land and sea-scape has opened up access to previously inaccessible hydrocarbon resources. Second, I will highlight the scale of the potential energy resources in the Arctic, and the motivations of Arctic and near-Arctic states to explore extraction. Third, I will explore the heightened risks of exploration and extraction specific to the Arctic. Fifth, I will consider the transnational threats to environmental and human security that are caused by energy exploration and extraction. These are the threats that transcend borders in the Arctic. They have implications far beyond the great power conflict taking place in the Arctic now and in the future. There has been significant study on the great power contest in the Arctic region, but little research on what this contest will mean for environmental and human security.[6] I will then outline the existing treaties and norms that regulate extraction and exploration in the Arctic, and highlight the gaps. Finally, I will offer recommendations on how to fill these gaps, to ensure the expansion of energy extraction and exploration in the Arctic does not jeopardize environmental and human security in the region.

CLIMATE CHANGE AND ITS IMPACT ON THE ARCTIC SEASCAPE

Climate change is causing Arctic ice to melt, which in turn is opening up access to the energy resources in the Arctic. In 2013, Geophysical Research Letters showed that Arctic temperatures now are as high as they were 44,000 years ago.[7] As ice melts it no longer reflects light. In its place the dark ocean absorbs light. This amplifies the warming trend because it lowers the ratio of outgoing solar radiation reflection to the incoming solar radiation incident.

With this phenomenon, the Arctic is experiencing unprecedented sea ice recession. This year, wintertime sea ice extent tied with 2007 levels as the seventh smallest extent in NASA satellite record.[8] The 2019 ice extent reached a maximum of 5.71 million square miles, 332,000 square miles less than the 1981 to 2010 level.[9] More astounding figures like these exist, and the general consensus is that the Arctic Ocean will be ice-free around the year 2030.[10] This phenomenon of ice melting is increasing access to the Arctic perennially. This enables actors to move into these areas without incurring the cost of expensive icebreakers, avoid navigational obstacles, and establish staying power through permanent infrastructure. Less sea ice over longer periods of time also means that the window for Arctic energy development is larger, increasing the chances of discovering new resource banks of hydrocarbons.[11]

ARCTIC ENERGY: EXTRACTION POTENTIAL AND INTERESTED STAKEHOLDERS

There is thought to be a lot of untapped energy in the Arctic. We have seen energy exploration and extraction increasing in the Arctic and we can expect it to continue. The Arctic states - and other interested states and private companies - are competing to have a stake in Arctic energy. Geologists believe that the Arctic "may be the last significant oil and gas frontier left" in the world.[12] According to a report from the Brookings Institution, interest in Arctic oil and gas increased around the turn of the twenty-first century for four primary reasons. First, as previously outlined, ice melt in the Arctic caused by climate change has made exploration and extraction possible. Second, the report points to the scale of energy potential in the Arctic. As outlined in the 2008 United States Geological Survey (USGS), Arctic energy potential is an estimated 90 billion barrels of oil, or 13% of undiscovered global stores, as well as 47.3 trillion cubic meters of natural gas, which is 30% of undiscovered natural gas globally.[13] Third, the report states that high energy prices around the world is causing countries to look for alternative sources of energy. Fourth, it

posits the Arctic as a politically stable region with nation states that adhere to international law and uphold oil and gas contracts.[14]

Multiple state and private sector actors are pursuing dominance in the Arctic. The Arctic littoral states, along with near-Arctic China, have motivations for energy extraction. For Russia, the only non-NATO state with Arctic oil, achieving energy dominance in the High North is of vital geopolitical strategic importance. Since Russian President Vladimir Putin came to power in 2000, he has tried to make Russia a great power, and to be recognized as one. Russia has sought to leverage its position as the main supplier of energy to the European Union (EU) in a series of negotiations. Russian energy dominance provides a high degree of relevance and power to the would-be fledgling state on the world stage. Exploitation of Arctic energy sources and Arctic hegemony would allow Putin to sustain Russia's global position and point of leverage with the EU for years to come.[15] Turning to the Arctic for energy is the logical and necessary next step for Russian energy development.

China is interested in utilizing the Northern Sea Route for easier trade access with Atlantic countries and moving resources in and out of the Arctic region. Using the Northern Sea Route as a primary trade route not only decreases the time and cost of shipping, but circumvents potentially hostile bottlenecks such as the Strait of Malacca, the Sea of Hormuz, and the Suez and Panama canals. China considers itself a "near-Arctic state" and has become an observer on the Arctic Council.[16] As Russia turns to China for capital to develop its Arctic energy capabilities, China not only gains favorable conditions when the Northern Sea Route become perennially accessible, but gains a political voice in Arctic affairs. China believes that development of Arctic oil capabilities is tantamount to the development of the Northern Sea Route. It currently has a 20% stake in Russian Yamal liquid natural gas (LNG) and receives three million tons of LNG per year.[17]

Like Russia, the United States has large reserves of oil and gas in its Arctic sovereign zone. According to the USGS, the total mean undiscovered conventional oil and gas resources of the Arctic is estimated to be approximately 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids.[18] Canada has a significant stake in the Arctic because it covers 40 percent of its territory, it has a 162,000-kilometer Arctic coastline, and it has stewardship of the Northwest Passage. The Canadian government has begun to make offshore oil and gas regulation a priority.[19]

Finally, Norway maintains its status as an energy superpower because it has offshore sources in the North Sea, Norwegian Sea, and parts of the Barents Sea - Norway's Arctic body of water. In 2009, USGS estimated the Barents Sea Shelf contains 11 billion barrels of oil, 380 trillion cubic feet of natural gas, and two billion barrels of liquid natural gas (LNG).[20] Though not part of the EU, Norway receives heavy funding from the EU to develop its offshore capabilities

to diversify the EU's energy market and move away from Russian dependency.

Although each state has different economic, domestic, or geopolitical reasons for developing extraction capabilities in the Arctic, there is one factor that each has in common. It is the idea that each Arctic littoral country has a legitimate sovereign right to extract energy from its territory. Every state can "utilize and benefit from their own natural resources as they see fit," and this has "become embedded in international customary law in the post-colonial period."[21] The challenge here is that while these countries may perceive that they would individually benefit from exercising sovereignty without having to abide by international regulations on energy extraction, transnational threats will only be mitigated if these countries can create policies through international bodies that curtail energy extraction to protect the fragile environment in the Arctic.

Furthermore, comprehensive and universal regulations are needed as a backstop, should energy politics escalate and threaten the Arctic environment. The great power struggle for economic dominance in the world drives revisionist powers, China and Russia, to invest in each other's efforts to make the Arctic economically viable.[22] Conversely, private investment drives Arctic energy exploration in the West. As discussed earlier, climate change has a spiraling effect in the Arctic. In the same way that climate change multiplies the rate at which the Arctic environment changes, mishaps in energy extraction aggravate climate change. Increased presence and human activity in this delicate region will threaten both environmental and human security.

RISKS OF INCREASED EXPLORATION AND EXTRACTION

Increased energy exploration and extraction poses risks to environmental and human security. The dangers of energy development in the Arctic are particularly consequential compared to anywhere else in the world due to several reasons: the physical makeup of the Arctic makes it extremely difficult for a rapid response to an oil spill; the lack of infrastructure in the Arctic - few permanent structures, runways, and roads - makes the Arctic hard to access; and thawing permafrost poses challenges to the stable ground.

The main danger posed by increased energy exploration and extraction in the Arctic is the chance of an oil spill. Most people today remember the environmental catastrophe caused by the 2010 Deepwater Horizon oil spill, which released an estimated 4 million barrels (over 168 million gallons) of oil into the Gulf of Mexico in 2010.[23] The accident had a spill-over effect into Arctic policy discussions: it prompted the National Commission for reviewing the Deepwater spill to reassess the implications of deep-water drilling in other sensitive environments, looking specifically to the Alaskan Arctic coast.[24] U.S. government authorities estimate that an oil spill off of Alaska's Arctic coast is about 30 - 50 percent likely: the question is not if an oil spill will occur in the

Arctic, but when it will occur.[25] The estimated maximum blowout volume of a spill in the Arctic is 1.3 million barrels of oil (58 million gallons).[26] The largest spill to date in U.S. Arctic waters is the 1989 Exxon Valdez spill in Alaska which released 11 million gallons of crude oil.[27]

Both the Exxon Valdez spill and the Deepwater Horizon spill can help predict what an oil spill in the Arctic might look like. However, the potential scale of a spill is estimated to be far larger than the Exxon Valdez spill. The key difference with Deepwater Horizon is the environment: the Deepwater Horizon Commission's report explicitly stated that the clean-up techniques used to remedy the Deepwater Horizon spill would not work in Arctic conditions.[28] Compared to other regions, the 'response gap,' a "period of time in which oil spill response activities would be unsafe or infeasible," is thought to be significantly higher in the Arctic.[29] This is primarily due to the remoteness of the Arctic, the lack of infrastructure (the closest Coast Guard airstrip is 1,000 miles from the northernmost point of Alaska, and the closest major port is 1,300 miles), lack of weather prediction capabilities, and lack of available vessels for proper spillage procedures.[30] Data on minor oil spills in Alaska's Aleutian Islands over the past 20 years present evidence that, "no oil has been recovered during events where attempts have been made by the responsible parties or government agencies, and that in many cases, weather and other conditions have prevented any response at all."[31]

Other factors also increase the chances of a major oil spill and will complicate clean-up, in addition to the difficulties of implementing a rapid response. Thawing permafrost in the Arctic poses challenges to the stability of the ground, and therefore destabilizes the extraction infrastructure on it.[32] Because the Arctic Ocean does not experience the same circulation as other bodies of water, oil sitting atop the water's surface tends to travel less. The Arctic Ocean is also far shallower than other oceans, which slows down dissipation.[33] In addition, the physical makeup of the Arctic Ocean provides spaces for oil to become trapped, either under the ice sheet itself or within the jagged landscape. Another factor that would make clean-up difficult is the lack of daylight hours for work to take place during the winter parts of the year. Practically speaking, in case of a major oil spill, it is unlikely that any oil will be removed from the Arctic Ocean.

Geopolitical concerns also increase the risks of Arctic energy extraction and exploration. When Russia invaded Crimea in 2014, Western powers, including the United States, Canada, and the EU, enacted heavy sanctions against Putin's government. The new sanctions regime that arose out of this conflict forced Western private energy companies to cut joint-investments with Russian state-controlled energy gas companies, most notably Gazprom and Rosneft. This reduced Russian companies' access to Western drilling technologies that enable safer energy extraction.[34] Russia has a long history in

the Arctic and considers itself the vanguard of Arctic exploration.[35] Realizing this Arctic dream by circumventing Western-imposed sanctions would not only be a major economic boost for Russia but would also be a domestic victory for Putin's political grasp on the country. In response to the sanctions, Russian officials stated they would "Russify" drilling services technology to use in the Arctic.[36] Another concern is that while Russia turns to China for investment, it may seek to partner up to develop energy extraction and exploration technology. [37] But with little Arctic experience, it could be argued that China may not be able to fully produce the same safe equipment that the West has. Geopolitical conflicts could lead to unsafe energy development methods in the Arctic. An event happening elsewhere, as in the case of the annexation of Crimea, can have a spill-over effect into the way geopolitical actors approach the Arctic.[38]

THE TRANSNATIONAL THREATS OF ARCTIC ENERGY EXTRACTION AND EXPLORATION

There are two types of transnational threats that Arctic energy development poses: to the environment and to humans in the region. These transnational threats are woven through the immediate effects of climate change. Climate change enables energy development, which only further exacerbates the threat that climate change poses on the region. In some cases, energy activities do directly threaten environmental and human security on their own, but in most cases, increased activity and climate change interact constantly, aggravating each other. For example, the thawing of onshore permafrost not only releases carbon itself, but undermines extraction infrastructure. This could lead to cracked pipelines or other complications.

THREATS TO ENVIRONMENTAL SECURITY

Energy extraction and exploration have the potential to worsen the effects of climate change on the Arctic environment. There are unavoidable impacts on the environment at each phase of energy development, including seismic explorations, exploratory drilling, pipelines, offshore and onshore terminals, and tankers. First, the acoustic disturbance to marine mammals such as seals, whales, and walruses as a product of seismic exploration would negatively affect the mammals' migration patterns, feeding, mating, and communication. But this is just the beginning. In the likely case of an oil spill, this spill would "undoubtedly cause extensive acute mortality in plankton, fish, birds, and marine mammals ... [and] there would also be significant ... physiological damage, altered feeding behavior and reproduction, and genetic injury that would reduce the overall viability of populations."[39] Because oil persists in the Arctic for longer periods of time, there is no telling how long an oil spill would

cause damage in this fragile environment. It is also known that Arctic flora and fauna do not quickly adapt to a changing environment, making recovery of species nearly impossible.[40] With the increase in global population, food demand will increase. An oil spill in Arctic waters would not only disrupt fish stock sustainability, but would have second and third order effects on global demand for food, especially for China, which has the world's largest population of people, and is the world's top fish consumer.[41] On a more local level, an oil spill in the Arctic would seriously harm the Arctic natives' food sources and lifestyle.

THREATS TO HUMAN SECURITY

Out of the eight Arctic countries, seven have surviving indigenous people. Their cultures are highly diverse, but all depend on the natural Arctic environment for their sustainment. The Arctic wildlife and environments form the foundation of the Arctic natives' survival and cultures.[42] An oil spill in the Arctic would certainly change the way that these people operate every day. The presence of energy infrastructure also contributes to the loss of pasture lands for reindeer herds, pollution of lakes, pollution of groundwater, and to a disruption of animal migratory patterns. One serious concern caused by both climate change and an increase in energy development infrastructure is a threat to water security in the Arctic. Persistent organic pollutants created by the energy industry also threaten Arctic communities, because they now exist in the tissues of marine mammals which these communities hunt. Oil leaks also pose a perennial threat. Thawing permafrost destabilizes the ground, which not only threatens Arctic communities' infrastructure, but also threatens the stability of energy industry infrastructure which sits close to Arctic communities.

Map 1: Circumpolar coastal human population distribution.[43]

Other hazards include deadly diseases that can resurface after hundreds of years under permafrost. For example, in 2016, a deadly outbreak of anthrax spontaneously broke out among a community of local Yamal Siberians.[43] Furthermore, the attitude of the pilots contracted by CMS greatly contributed to the mission creep. Pressure on pilots to deliver results was constant because of the CMS practice of obfuscating contract lengths.[44] The cause was thought to be a rotting reindeer carcass underground that transmitted the disease to

grazing herds. There are many other organisms buried under permafrost close to the surface. The hazards that could be unearthed due to continually thawing permafrost are unknown, but have the potential to threaten human security across the globe.[45]

GAPS IN INTERNATIONAL LAW AND REGULATIONS

With environmental and human security at risk from these Arctic energy interests, it is essential that there are comprehensive laws in place to mitigate these risks. However, international law is currently insufficient to regulate Arctic energy and mitigate damage. As mentioned before, "there is no law that pertains solely to hydrocarbon extraction or solely to the Arctic. There are no dedicated international legal standards on hydrocarbon development, either on or offshore."[46] Instead, energy development is governed by a mosaic of hard and soft law principles and the rights and obligations of states. The Arctic is a region where sovereignty rights and cooperation to mitigate the risks of energy development must be delicately balanced.

INTERNATIONAL TREATIES ON ARCTIC ENERGY DEVELOPMENT

There are three main hard law treaties that address Arctic energy development, but they have no impact on prevention of oil spills. These are, in chronological order, the UN Convention on the Law of the Sea (UNCLOS), the International Convention on Oil Pollution Preparedness, Response and Co-operation (ORPC), and the Agreement on Cooperation on Marine Pollution, Preparedness and Response in the Arctic (MOSPA).

UNCLOS (1982) is "the most comprehensive treaty regulating maritime areas."[47] It is the guarantor of sovereignty for the Arctic states and provides the basis for freedom of energy development. It provides a general framework for environmental protection and provisions that demand each state uphold the duties to protect and preserve the marine environment. But these are just guidelines - UNCLOS falls short of enforcement and instead relies on Arctic states cooperation to figure out regulations on their own.[48]

ORPC (1990) and MOSPA (2013) are similar treaties. Both were created by the Arctic Council, and they regulate offshore oil installations in the Arctic. These treaties mandate that Arctic states prepare for and cooperate on readiness for oil spills. But yet again, these treaties do not have enforcement mechanisms. In sum, although these treaties are crucial for protecting Arctic waters, they do not address prevention, only cooperation post-spill. This is further complicated by the response-gap in the Arctic as previously mentioned.

SOFT LAW AND NORMS

The most comprehensive set of non-binding soft law principles is the Arctic Council's Offshore Oil and Gas Guidelines (2009).[49] These guidelines are the soft law complement to the hard law body. They address spill prevention, preparedness, and response. Although these guidelines are well respected and commonly used by the Arctic states' as Arctic strategies, they have no enforcement mechanisms and do not provide regular evaluation procedures to assess the preparedness of Arctic states. Another soft law institution is the Arctic Council's working group, Protection of the Marine Environment (PAME), which also has non-binding guidelines called the Arctic Marine Strategic Plan 2015-2025 (AMSP), approved in 2015. These guidelines are designed to encourage Arctic states to find the highest standards available for environmental protection: they promote sustainability for the environment, and in the interests of indigenous communities. They also attempt to monitor operating practices of energy development.[50]

Underlying all these hard and soft laws is the principle of 'no harm.' It is the idea that an activity in one country should not have a negative effect on another country.[51] The lack of protective measures for energy development in the Arctic would surely violate the body of laws in place today. An oil spill or any mishap related to energy development in the Arctic could have effects on the environment and human security in more than one country. The Arctic environment is not well understood. While there has never been a significant energy development mishap in the Arctic, scenarios indicate that the effects would be transnationally devastating. Though the Arctic region appears to be a far-away frontier, climate change, compounded by an energy mishap, could speed up the rate that the entire world is warming. Without one comprehensive, international law in place, there is no guarantee that a mishap would be prevented. That is why serious policy reform is needed to ensure that proper enforcement mechanisms are in place to strike a balance between sovereignty and regulation.

RECOMMENDATIONS

The most obvious solution to this problem is for countries to adopt stricter laws on climate change that would require the diversification of their energy resources away from hydrocarbons. Of course, this is highly unlikely and will take decades to achieve, if at all. The threat to the Arctic posed by exploration and extraction is too time-sensitive to wait for changes of that magnitude. Instead, the focus should be on strengthening frameworks to mitigate the risks of hydrocarbon extraction to environmental and human security. At the same time the United States needs to take greater individual responsibility for this

safeguarding, as it has the most leverage and financial resources.

There are two possible ways to approach the challenge of mitigating risk of energy disasters through regulatory means. The first is to create a new framework with a 'one-size-fits-all' approach to streamline regulation at the international level. The second is to build upon the existing framework in place. Given the critical time restraints in the Arctic, a completely new organization of legal instrument "could take time and resources to establish, thus undermining the goal of ensuring that such a vital area as offshore oil and gas exploration is addressed in a timely and comprehensive way."[52] Arctic specialists laud the work that the Arctic Council has done since its inception in 1996, despite their outputs being non-binding. They also state that the rush for Arctic resources predicted in the past twenty years has not materialized, citing international cooperation as the reason why. Scott Borgerson, an Arctic specialist, asserts that "none of this cooperation required a single new overarching legal framework. Instead, states have created a patchwork of bilateral and multilateral agreements, emanating from the Arctic Council and anchored firmly in UNCLOS.[53] From this consensus, it is wise to take the second option: to build a policy that specifically addresses mitigating energy disasters on top of existing Arctic laws and guidelines.

As seen previously, the patchwork of laws and guidelines that pertain to energy development in Arctic governance is largely focused on post-spill collective response. The patchwork provides standard procedure evaluation, but these evaluations are rarely performed. The major gap is in prevention and readiness in case of an oil spill. To remedy this gap, I propose that a new task force be included under the Emergency Prevention Preparedness and Response (EPPR) working group of the Arctic Council . This would largely focus on increasing awareness on readiness in case of an oil spill, and would coordinate joint exercises between the coast guards of the Arctic littoral states, increasing interoperability within these coast guards to ensure that communication equipment works properly. It would also incorporate private energy companies into its exercises to ensure coordination with these key actors. The task force will develop standard procedures that will apply uniformly to all actors. As part of these efforts, it would be essential to incorporate the views of the Arctic indigenous communities. This task force will involve those communities in their exercises to understand where the most fragile areas are and how to best prevent an oil spill or similar disaster from impinging on their human security.

Perhaps the most imperative measure that can be taken is for the United States to take a greater leadership role in protecting the Arctic environment and inhabitants from unregulated hydrocarbon exploration and extraction. Out of all the Arctic littoral states, it has the most leverage and coin to do something about putting preventative measures in place in case of an oil spill. It could start by signing on to UNCLOS to show this initiative. In sum,

enhanced cooperation through the creation of an oil-spill readiness task force could lead to striking the balance between respecting Arctic states' sovereignty and improving regulation of this transnational issue.

CONCLUSION

The Arctic region is undergoing unprecedented changes due to climate change, giving state and private industry actors greater access to hydrocarbon energy resources in the High North. But increased exploration and extraction in the Arctic are high risk, and could pose significant threats to human and environmental security. Currently, there is no comprehensive international standard in place to mitigate the risks of expanded energy development. The current framework regulating the Arctic needs to be built upon by adding a task force to the Arctic Council that will coordinate oil-spill response regulation among all stakeholders. The United States can also take a more assertive role in this region, to ensure that the Arctic remains a safe and prosperous region.

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