



Unconstrained Foreign Direct Investment: An Emerging Challenge to Arctic Security

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A handwritten signature in black ink, appearing to read 'Mark E. Rosen', followed by a horizontal line.

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Senior Vice President General Counsel

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Executive Summary

The Arctic Ocean is a vast maritime region which is bordered by six states that are now coming to appreciate their enormous hydrocarbon, mineral, and other natural resource potentials. Other states outside of the Arctic have also taken note of the Arctic's vast and unexploited deposits, especially China. The Arctic is essentially a closed-sea and all human activity, even environmental accidents on land, can have serious environmental impacts on the other littoral countries because of ocean currents and climatic conditions. This fact is compounded by the aggressive pace of climate change in the Arctic. The changes in the Arctic environment due to climate change are accelerating the rate at which these resources are becoming accessible for exploitation and by ship as the ice recedes.

Exploitation of these resources carries the risk of oil spills, ship casualties, chemical runoff from mining and smelting activities, and more. The Arctic littoral states are not equal in terms of their ability to appreciate these risks and mitigate them. It is in the interests of all of the Arctic states, indeed the world as a whole, to develop regional cooperative mechanisms to ensure that development takes place using state of the art technology, with suitable infrastructure in place, and substantially enhanced disaster response capabilities.

The opportunities of rapid development also carry socio-economic risks to countries that are less economically resilient, such as Greenland, Iceland, Russia and, perhaps tribal regions. Special care

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needs to be taken to ensure that development takes place in a responsible manner and ensures that the states or regions that are the recipients of foreign direct investment (FDI) are capable of monitoring it, regulating the underlying activity, and enacting safeguards if a project goes bankrupt and the foreign owners cannot be held financially responsible. Care must also be taken to

safeguard the rights of indigenous populations to ensure that they are not displaced from their lands because of resource degradation or social conditions.

The report takes stock of the current FDI patterns — at the transactional level — with a particular focus on Chinese activity as a case study. This case study explores China's natural resource strategy and its past FDI activities in South America and Africa.

This study also makes detailed comparisons of the FDI laws of the six main states that border the Arctic Ocean. This study is limited to the littoral states of the Arctic Ocean because those six states would, under the current legal system, have to bear the brunt of any type of industrial accident.

Based on the findings of the transactional and legal review of FDI in the Arctic, the authors suggest three approaches that could be pursued independently or in tandem, to monitor and indirectly regulate inbound FDI. Those approaches include establishing a set of multilateral Arctic FDI review criteria administered by each nation; an Arctic Development Code; and the formation and funding of an Arctic

Development Bank. The Arctic Development Bank would provide private developers with access to local capital (vs. Beijing sourced) to finance infrastructure and resource extraction projects. These three approaches seek to eliminate the potential that one state could, by enacting low standards, stimulate a race to the bottom in terms of the environmental or labor standards associated with resource extraction.

Unregulated FDI is a significant, multifaceted security issue. It must be addressed before the influx of unregulated investments, and the soft power politics that come from those investments, makes it impossible for the U.S. and other states to adopt complementary policies that favor responsible Arctic development.

Introduction

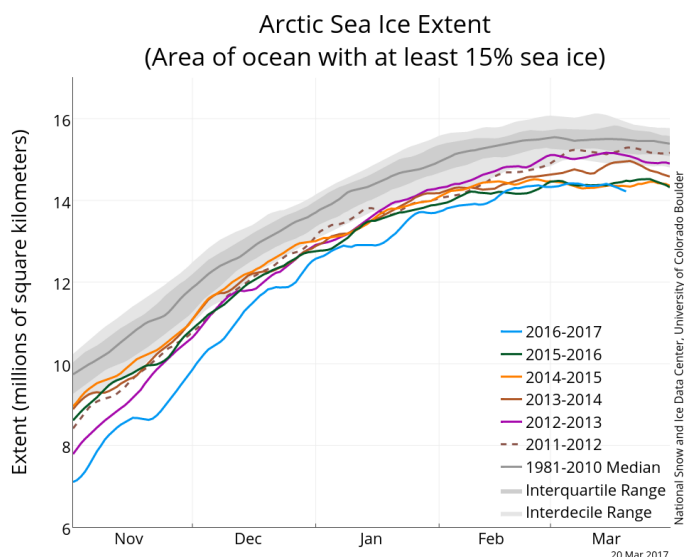
The earth's polar environments are often thought of as barren, desolate regions ruled by polar bears and covered in ice. And while certainly cold, the Arctic region is far from a valueless waste. Rich in mineral, metal, oil, and gas deposits, as well as vast, unexploited fisheries, the Arctic contains resources estimated to be worth many billions of dollars. About 70 percent of these resources fall within the exclusive economic zones (EEZs) of the Arctic littoral states: Canada, Greenland, Iceland, Norway, Russia, and the United States. Much of history's interest in the Arctic has been confined to the explorer's curiosity and the admiral's desk. However, we are entering a new era for the Arctic, in which interest in the region and its resources is at an all-time high. Outside states, such as China, have made substantial investments with the strategic intent to do more. The question remains whether the legal and regulatory environment is capable of dealing with significant new foreign direct investment while at the same time protecting the Arctic Ocean and surrounding environment.

The Arctic can be defined using many different sets of criteria. For the purposes of this paper, the Arctic refers to territory above 60 degrees north in the littoral states of the Arctic Ocean, which are: Canada, Greenland, Svalbard (Norway), Russia, and the U.S. We also included Iceland and mainland Norway. We extended our analysis below the traditional 66 degree north line that denotes the Arctic Circle because the impact of activity happening in areas adjacent to the Arctic can flow into the Arctic.

The Arctic is opening up to economic opportunity

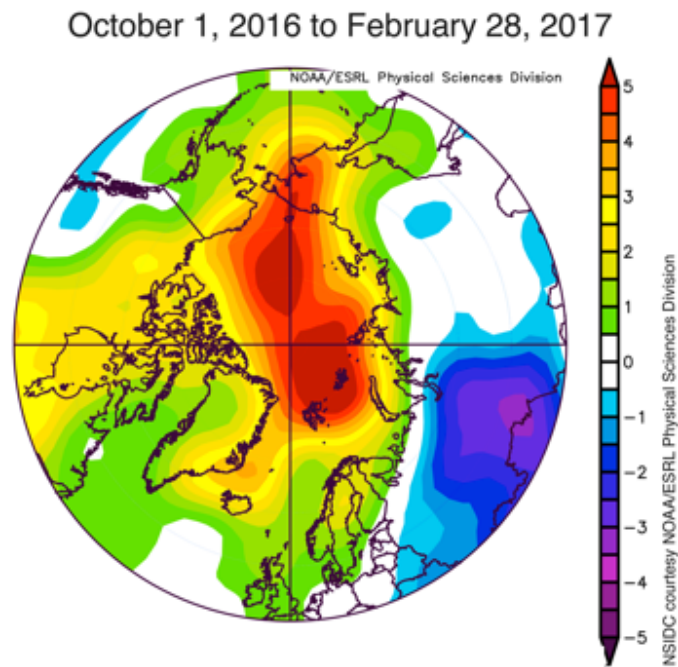
There are four major trends that are driving the increased level of interest in the Arctic: climate change; technological innovation and increasing accessibility of abundant resources; the potential opening of desirable shipping routes; and outside financial investment. As a result of these trends, the Arctic is opening up to economic opportunity.

Figure 1. Arctic Sea Ice Extent, credit: NSIDC.



The influence of climate change on the Arctic is undeniable and irreversible in the short term. There is very little uncertainty; for the medium term, the Arctic will continue to warm rapidly. Monitoring conducted by the National Snow and Ice Data Center demonstrates robust ice regression in the Arctic (see Figure 1) due to rising average air temperatures (see Figure 2). The 2016–2017 winter was a record breaker for the lowest average sea ice extent. Temperatures ranged from 11 to 14 degrees Fahrenheit over the 1981–2010 average [1]. The general trend of warmer conditions and less sea ice is almost certain to continue. More

Figure 2. Arctic Air Temperature Difference Relative to 1981-2010 Baseline, credit: NSIDC



than any other factor, climate change is responsible for dramatically altering the physical aspects of the Arctic environment and the accessibility of Arctic resources.

These changes have not gone unnoticed. A former U.S. Coast Guard Commandant and State Department representative to the Arctic described the situation as follows:

“...the impacts of climate change are plainly evident and undeniable: coastal erosion is causing homes to fall into the sea or other waterways; thawing permafrost is affecting infrastructure; and unstable ice and changing migration patterns are preventing people from obtaining the food sources they have relied upon for tens of thousands of years”[2].

The second megatrend is an increased demand for innovation in polar capable technology. Pressure from regulators and civic groups has resulted in a high-risk environment for operators in Canada, the United States, Iceland, and Norway. These pressures have driven well-capitalized, large operators to invest in developing new technologies that promise greater safety, efficiency, and measures for environmental protection appropriate to the higher-risk environment of the Arctic. For operators in United States’ territory, these risks seem to outweigh rewards, for now. As seen in Royal Dutch Shell’s drilling operations in the Alaskan offshore Arctic, several missteps involving the rigs they had selected had heavy consequences. Ultimately, Shell determined that the risks were not sufficiently offset by potential profits and withdrew from the region.

Shell’s foray into the Alaskan Arctic was challenged from the start. The drill ship *Noble Discoverer* was blown off site by a fairly typical storm and nearly ran aground. It is clear that Shell had not properly calculated how heavy an anchor the rig would need to prevent the rig from dragging its anchor in a routine storm [3]. Fortunately for Shell, *Noble Discoverer* drifted towards the coast but stopped short of running aground and sustained no damage. In this case, Shell was not prepared. Shell was lucky. But the problems did not end there. An oil containment dome worth \$400 million failed during a trial. When the dome was recovered, federal inspectors described the wreckage as a “crushed beer can” [3]. Shell recovered and geared up the *Discoverer* to drill. However, a day after the drill began to spin, a 30 mile long by 10 mile wide ice floe was on a crash course for the rig [3]. *Noble Discoverer* was forced to retreat. In harbor, the *Discoverer*’s exhaust system exploded, its propeller shaft experienced critical malfunctions, and the ship was impounded when inspectors found 16 safety violations during a routine inspection [3].

Shell’s second drilling ship, the *Kulluk*, also experienced major challenges in the Arctic. The *Kulluk* was able to partially drill a well in the Beaufort Sea, but by this time it was October and the ice was creeping south. It was time for the *Kulluk* to sail south from its location at 70 degrees north. But there were problems. By the

time Shell was ready to tow the *Kulluk* south, it was late November, 2012. The next leg of the *Kulluk*'s journey, where it would cross the Gulf of Alaska, would be disastrous for the *Kulluk*. Several failures with the *Kulluk*'s tug boat engines, the tow line, the shackles that connected the tow line, and a myriad of other factors would result in the order to cut the *Kulluk* loose [4]. It ran aground on Sitkalidak Island on New Year's Eve, 2012 [4].

Many read Shell's challenges and failures as the fault of a corporate carelessness, the anxiety of regulators to prevent disaster, and the economic constraints of low oil prices which together put the risk of Shell's work firmly beyond the reach of any reward. However, the technology that Shell chose to bring north played a major role. Shell took conventional technology and found that it was, in some respects, outmatched by the conditions of the Arctic. Shell geared up for another try in 2013 and later in 2015 but between meager oil finds in the Chukchi and the drop of oil prices from \$100 a barrel to \$55, and Shell decided to withdraw in September of 2015.

Under different circumstances, it is easy to imagine how a few small missteps could have ballooned into a disaster. If oil prices had remained high, there would have been more pressure to deliver oil to the market. It is worth noting that Shell had been exceedingly careful through its operations. As one of the most experienced, well capitalized, and well respected oil giants, it is unlikely that others could have faced the same challenges as Shell and fared better. Furthermore, there was nothing exceptionally unique about the challenges that Shell faced in the Arctic.

Future operators will need to bring technology and operational techniques capable of coping with the Arctic environment north before they can hope to bring oil safely south

The weather was challenging, but it very often is in the Arctic. From Shell's experience, it is clear that future operators will need to bring technology and operational techniques capable of coping with the Arctic environment north before they can hope to bring oil safely south.

The third Arctic megatrend, shipping, is one that has several sides. A more open Arctic Ocean is a more transitable Arctic Ocean. Although great challenges remain because of the lack of good charts, icebergs, straits that can become clogged with ice both at and below the surface, and almost no infrastructure to support transiting ships. While no one anticipates a completely open Arctic Ocean, changes to the thickness, extent, and timing of Arctic Sea ice cover has made destination shipping (where ships will go to port to load/offload cargo) and perhaps transit shipping (where ships pass through the Arctic en route to their final destinations) through the Arctic Ocean more appealing. Climate models suggest that the Northern Sea Route (NSR) will change from being technically open for transit roughly 40 percent of the year today to between 94 to 98 percent by 2040-2059 [5].

Since the advent of commercial shipping activities, companies and countries alike have searched for faster and safer routes to move goods from production to consumption. In a world where services such as Amazon Prime are changing consumer expectations of the global transit speeds, more transactions are taking place online, and the general paradigms of commerce and consumerism are adapting to a changing market. Given this, additional demands could be placed on the Arctic. Shipping from the production sites of Asia to the consumption centers of Northern Europe in particular could realize time and distance benefits from Arctic

shipping lanes. Similarly, it is beyond question that there will be increases in destination shipping to oil and gas and mining sites along the Arctic's coastline. And while debate over the true viability of Arctic transit shipping is present and reasonable, the fact remains that the window of opportunity to craft meaningful policy to take advantage of increasingly ice-free routes is closing fast. Negotiations to regulate shipping would become much more complicated were transit shipping to become a *fait accompli*.

The window of opportunity to craft meaningful policy to take advantage of increasingly ice-free routes is closing fast

Extractive industry has also paid keen attention to these trends, which has driven the fourth major Arctic trend: investment. Exxon Mobil has 90 years of experience with Arctic drilling, with plans to “build on our almost one century of experience and technology development as we go forward and continue to work in the Arctic” [6]. Similarly, BP has several decades of U.S. Arctic experience, offshore exploration, and a 19.75 percent stake in Rosneft, Russia's Arctic operator [7]. In Russia, new gold, coal, and diamond mines are coming online. On Baffin Island, Canada, one of the world's largest iron mines is preparing to expand operations [8]. General trends indicate that the number and scale of these operations will increase in the future, with the rate of growth dependent upon price and alternative investment opportunities.

For all of the potential Arctic industries, the most significant limitation is that there is insufficient or completely absent infrastructure. This will require operators to invest in more than just resource extraction. They will need to be partners in building up the infrastructure required to make extraction possible. In some regions, there are no roads that link one remote community to another; there is no rail system to carry high volumes of ore; and internet connectivity remains limited, slow, and unreliable. The community infrastructure required to support a workforce is often absent. There are few staging points for search and rescue, and very limited resources for protecting the health and welfare of workers in the Arctic. For example, the hospital in Barrow, Alaska, has only four emergency beds.

Additionally, for many parts of the world, local populations play a key role in monitoring resource extraction activities for any mishaps that result in environmental damage. The Arctic, with its small and dispersed populations, is a remote part of the globe where the public's ability to monitor activity through community reporting is significantly diminished. This low visibility increases the possibility that should an accident occur, it may not be reported for quite some time to governmental bodies with the capacity to respond. Low visibility due to small populations — combined with volatile weather and extreme remoteness from disaster management resources — sets the stage for small miscalculations to become major disasters that risk lives, assets, and the Arctic environment.

Because of the limited infrastructure and small populations of the Arctic, resources in the Arctic will require more investment to extract. High operating costs, higher than usual risks, and high infrastructure requirements means that even the best-capitalized operators will need to seek partnerships to get operations off the ground. Whether those partnerships are established between industry and government, a development bank, or foreign partner will depend on the unique circumstances of the project. But in most cases, the risk often comes with the potential for a big reward. A considerable share of the world's unexploited resources has been out of reach in the Arctic. Some of the largest deposits of iron, diamonds, oil, and natural gas are located in the Arctic.

As the physical and technological limitations decrease, the question must be asked: Are the Arctic nations ready to manage increased pressure for extraction activity? In this analysis, we asked: Which operators that have their eyes on the Arctic? Where do their partners come from? What are the risks to the physical Arctic environment? What regulations protect the Arctic environment and its residents from the long-term effects of an accident? What kind of implementable solutions will help to mitigate the risks associated with resource development?

These trends have the potential to benefit American prosperity. However, the Arctic is a long-neglected policy area for the United States, even though the White House, DOD, and other agencies have recently published Arctic strategies.¹ These glossy documents have yet to identify budgetary resources or offer concrete policies that support coherent growth in the Arctic. This is much to the detriment of the United States, which was once a leader in Arctic development, with eight icebreakers and surging private-sector investment. The reality is that U.S. engagement in the Arctic today is reflected in the degree to which the United States has allowed its capability to lag behind. Now, the U.S. icebreaker fleet is limited to two vessels, with significant gaps in investments in infrastructure, defense capabilities in the Arctic, and community development.

Especially troubling is that, in many respects, the Arctic represents one of the last remaining pockets of global resource reserves in terms of access to mineral, hydrocarbon, and fishery resources. According to the U.S. Energy Information Administration, the Arctic holds an estimated 13 percent (90 billion barrels) of the world's undiscovered conventional oil resources and 30 percent of its undiscovered conventional natural gas resources [10].

As U.S. national vigilance in the Arctic has lapsed, global interest has accelerated. Littoral and non-littoral states alike are staking claims, making large investments, and pursuing research opportunities that could give hints to the type and quantity of resources beneath the Arctic ice. Now, more than ever, it is important that the U.S. turn its attention northward to the Arctic and to work with its Arctic partners to develop policy and protocols that will advance the resilience of the Arctic.

As interest in the Arctic has expanded, concerns over management of resources, protection of the marine environment, respect for indigenous groups, and some disputes over boundaries (mostly now settled) have emerged. The governance of the Arctic is managed through nonbinding agreements brokered within the Arctic Council. While these agreements outline procedures for response to vessels in distress, environmental accidents, and more, these arrangements do not commit countries to a legal course of action or make resources available. There is also no framework for compensation between states for costs incurred from responding to accidents, bailing out vessels in distress, or damages from an environmental mishap [11]. Many factors, such as sparse response infrastructure, volatile weather, ice, currents, and cold temperatures challenge the response protocols now used in warmer waters. For example, in the aftermath of the 2010 *Deepwater Horizon* oil spill, booms, oil eating microbes, dispersal agents, and in situ burning were all used

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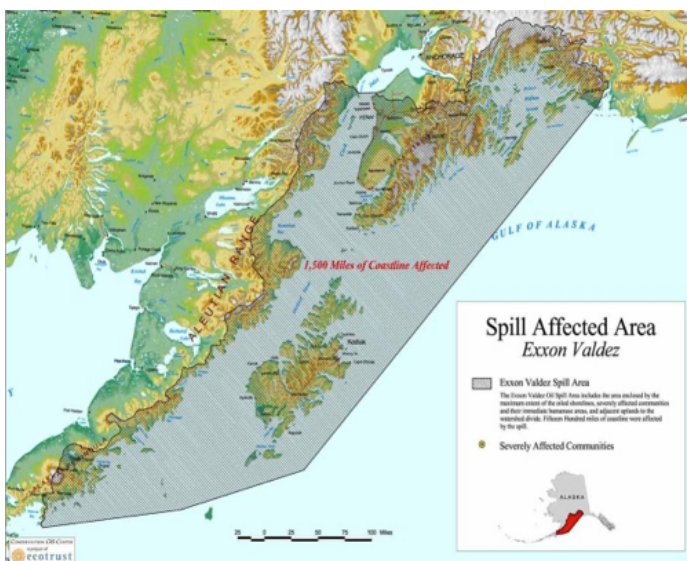
¹ On May 10, 2013, the Obama White House released the *National Strategy for the Arctic Region*, emphasizing three areas: advancing U.S. security interests, pursuing responsible Arctic region stewardship, and strengthening international cooperation [9].

to attempt to contain and remove the 4.9 billion barrels of spilled oil [12]. Despite over \$14 billion dollars spent on clean up, between 50-75 percent of the *Deepwater Horizon* spill was never removed from the Gulf of Mexico [12-13]. Clean up efforts were hampered by a shortage of booms. Using the booms available proved to be ineffective because wind and wave action was sufficient to push the oil over or under the booms and beyond the containment zone. Burning efforts were also only marginally effective because the oil emulsified quickly. The approximately 265,000 barrels that were burned came at the cost of releasing toxic dioxins [13]. Finally, the use of hydrocarbon consuming bacteria proved to be effective on removing dissolved natural gas, but not oil.

Compared to the 1989 *Exxon Valdez* spill, recovering the spilled oil in Prince William Sound was much less successful than *Deepwater Horizon*. *Exxon Valdez* spilled more than 260,000 barrels of crude oil into Prince William Sound, Alaska, and clean up costs and claims exceeded \$7 billion, and less than ten percent of the oil was recovered [14]. The U.S. Coast Guard employed many of the same technologies: in situ burning, mechanical clean up, and chemical dispersants. However, unfavorable weather, the lack of readily available skimmers, and the lack of application equipment for spreading chemical dispersants meant most of the oil remained in the sound [14].

In both cases, the majority of the oil spilled has remained in the aquatic ecosystem, having legacy impacts on species from the bottom to the very top of the food chain, local economies, and the health of surrounding populations. The varying degrees of effectiveness in clean up and recovery operations between *Deepwater Horizon* and *Exxon Valdez* can be attributed to several factors. The first and most obvious is time; in the 20 intervening years between the two spills, we have developed better methods of containing and cleaning up oil spills. Regulations have also advanced, reducing the likelihood of spills. However, the fact remains that oil and water do not mix. Once oil is introduced to the aquatic environment, the process of removing it is difficult, even under the best conditions. Ironically, as bad as *Exxon Valdez* was on the Alaskan coastline, it should be remembered that only one very financially responsible company (Exxon Mobil) and one country (the United States) were affected (see Figure 3). In the Arctic Ocean, it is more likely than not that more than one country would become involved because of currents (see Figure 4) and the drilling company will not be as well capitalized (and therefore able to fund cleanup) as Exxon.

Figure 3. Impact of the Exxon Valdez Spill, credit: Dorsett 2010



In the Arctic, oil response plans cannot rely on low winds and minimal wave action, nor can they rely on having the necessary equipment, supplies, and trained personnel close by. In the case of *Deepwater Horizon*, 126 crew members were on board the drilling rig at the time of the explosion, 11 employees were killed in the explosion and the remaining 115 needed to be evacuated and treated for injuries. In most Arctic communities, the sudden influx of 10 critically injured patients is enough to overwhelm regional medical facilities.

A study completed by the Research Council of Norway examined the effects of oil and gas drilling on the Arctic Ocean over a ten year period and found that oil moving under ice can be transported over long distances before surfacing from below ice floes [15]. Once pollution is beneath the ice, it is inaccessible to clean up crews and will be dispersed by the powerful currents in the Arctic Ocean (see Figure 4.) Low temperatures mean that the chemical breakdown of contaminants is much slower and the ability of the Arctic Ocean to naturally buffer the impacts of pollution is much lower than in warmer climates [15]. Lastly, the soot, aerosols, and other contaminants that are emitted by ships using high sulfur fuels reduce the albedo of the Arctic, which drives a positive feedback loop where more solar radiation is absorbed by the ice, causing more ice to melt, reducing the albedo of the region, and warming it faster as more radiation is absorbed [15]. This could be catastrophic for indigenous communities that heavily rely upon the Arctic Ocean for food and their livelihood.

Figure 4. Arctic Sea Currents, credit: AMAP



The cost of clean up operations, even for a smaller spill, are estimated to be much higher in the Arctic due to the extreme weather, sea ice, low visibility, and other factors unique to the Arctic. The removal equation in the Arctic is much more complex since under ice oil cannot be remediated via in situ burning or chemical dispersants. There is also no framework that would ensure that affected states are compensated for cleanup and residual damages from a spill to fisheries and other interests. The absence of these legal frameworks puts the entire Arctic region at risk and demands attention.

The Arctic Sea is a nearly closed environment with powerful currents that increases the risk that pollutants will quickly disperse in Arctic waters and remain there for a very long period of time. Navigation and communications resources are far less reliable than in other regions, enhancing the dangers to mariners and airmen. These factors result in a challenging operating environment for shipping, transportation, natural resource extraction, and national defense activities. Even though there is broad agreement that these challenges exist, little has been done to mitigate the risks associated with the inevitable development that is now present in the Arctic and the associated geostrategic security risks associated with new sources of resources, transit routes, and other activity [11]. In a written response to a questionnaire from Senator Dan Sullivan (R-AK), Secretary of Defense James Mattis stated:

“The Arctic is key strategic terrain. Russia is taking aggressive steps to increase its presence there. I will prioritize the development of an integrated strategy for the Arctic.”

This paper will examine non-military security issues in the Arctic. Specifically, this study will look at risks to the region from a soft-power perspective; such as risks that result from outside investment in real estate, mining, fishing, and oil and gas in the six countries bordering the Arctic Ocean: Russia, Greenland, Iceland, Canada, Norway and the United States.² Risk in this context comes in many different forms. Those to be explored in this paper include the risk of a large maritime pollution incident from an offshore platform; air pollution from mining, smelting or oil and gas activities; the risk of groundwater pollution from mining or chemical spills; the risk of political upheaval as a result of the inflows of large numbers of foreign workers or the inflows of large amounts of capital that will upset traditional political or economic relations or the current legal regime. Arctic politics are often described as “High North, Low Tension,” but as human activities increase due to the allure of access to new resources, the risk of an incident increases. Right now, the Arctic states lack the mechanisms or infrastructure to respond to an incident and the cooperative nature of politics is vulnerable to fracture. Because the risk of physical, environmental, and political losses is so great, this study will seek to accomplish the following tasks:

- Define Arctic security in both a military and non-military context and identify U.S. security policies towards the Arctic
- Discuss how foreign direct investment (FDI) patterns and other development can affect security, based on past case studies
- Describe the current legal and regulatory climate in the Arctic and its capacity to deal with security issues—including those that relate to FDI and development activity
- Document actual patterns of FDI
- Document the capacity of the Arctic littoral states to have an awareness of FDI and the authority and will to properly regulate it
- Explore various legislative and financial options to moderate the adverse effects of FDI in the Arctic region

² An argument can be made that Finland and Sweden should be included in this discussion since they are charter members of the Arctic Council; however, we have chosen to limit our inquiry to those countries that have an Arctic Ocean coastline since those countries with a physical coastline are directly at risk if an incident were to occur.

Arctic Security in Context

The Arctic used to be a very “hot” national security domain. The United States and Canada operated a network of early warning radar stations based in the far north, including the Distant Early Warning (DEW) Line, to give early warning of attacking Soviet bombers. The DEW Line comprised the uppermost constellation of radar stations that were situated north of the Arctic Circle, primarily on Canadian territory. The Arctic seas were also a venue for interaction and competition between U.S. and Soviet submarine forces. To this day, both the United States and Russia routinely operate in this region because of its proximity to strategic bases and navigational choke points.

Military competition in the Arctic has cooled down since the Cold War days of *Ice Station Zebra*, but President Putin has been gradually increasing the size of the Russian military contingent in the Arctic. Shortly after sending the scientific mission to the Arctic Ridge, Putin ordered the resumption of regular air patrols over the Arctic by strategic bombers and anti-submarine patrol aircraft, and Russia is investing scarce capital in additional icebreakers, special anti-aircraft missile systems, and modernization of its naval units based in and around the Kola Peninsula (near Murmansk)[16-19]. There have been similar announcements that the Russian Navy is increasing its naval deployments in its claimed continental shelf areas.³ By contrast, U.S. investments by DOD and the U.S. Coast Guard have been extremely modest; and by most accounts, insufficient.⁴

Changes in the Arctic, a paper by the Congressional Research Service, discusses how the United States, Canada, and Denmark have continued their annual Arctic exercises. NATO, to some extent, has followed suit [21]. Yet a schism remains within NATO regarding whether the Arctic is a theater of NATO operations. The text of the 1949 NATO Mutual Defense Treaty can be easily read to include the land territory, territorial sea, exclusive economic zone (EEZ) and continental shelf (CS) areas of the United States, Canada, Greenland, Norway and Iceland. There is, however, no consensus within NATO that the Arctic should be an area of military concern. Some states recognize that the six Arctic littoral states could be the site of future conflicts and would like to have a more robust military presence in the Arctic [22]. Others, like former NATO Secretary General Jaap de Hoop Schefféer, have urged that NATO member countries should go to great pains to not allow the Arctic to become an area of military competition [22]. As of this writing, NATO continues to be a forum for discussions of Arctic affairs, but Russia

³ In October 2012, Russia conducted a major command post exercise that included a significant Arctic component. As part of this exercise, coastal defense forces engaged in a sea-borne landing on Kotelny Island in the Novosibirsk Archipelago in order to conduct reconnaissance and to field test military equipment in Arctic conditions. This was the first Russian military exercise focused on protecting civilian facilities in the Arctic. The Russian Navy is also participating in exploration work along the Arctic continental shelf. The submarine Losharik, was involved in the Arktika-2012 exploration mission that collected samples for use in Russian efforts to prove that the Lomonosov and Mendeleyev Ridges are part of the Russian continental shelf.

⁴ In 2010, the Coast Guard commissioned an independent review of its statutory and national defense missions in relation to its force structure. That review, entitled the *USCG High Latitude Regional Mission Analysis*, concluded that the Coast Guard requires six ice breakers to fulfil its legal responsibilities and another four icebreakers to maintain it “continuous presence requirements of the Naval Operations Concept. This is in addition to one additional high endurance cutter and multi-range helicopters[20]. However, Congress and successive administrations balked at the \$1 billion price tag that comes with each icebreaker. But there are signs that a change in thinking about the Arctic and U.S. national security may be occurring. The 2017 Defense Appropriations Bill does include \$1 billion in procurement funds for a new USCG icebreaker.

has made it clear that it will not cooperate with NATO on Arctic matters. Canada has also maintained that it does not believe that NATO has a role in Arctic matters [23]. Norway, by contrast, has voiced increasing concerns in various settings about what it regards as a troubling increase in Russian military activities in the Arctic, and expressed its position that NATO should play a role in seeking to check those increases [22].

On November 22, 2013, DOD unveiled its strategy for the Arctic. The DOD strategy complements the May 2013 policy issued by President Obama and does not dwell on security threats or issues. In a press conference held in conjunction with the rollout, DOD senior defense officials asserted that there is “no assumption of an emerging military threat...and the strategy seeks to...keep the region as peaceful as it already is” [24]. But former Secretary of Defense Chuck Hagel said that given the rush by nations to exploit the Arctic’s substantial oil and gas reserves, the DOD cannot rule out the possibility that a greater military presence will be necessary to ensure the peace as mankind discovers this “next frontier.” As Hagel put it: “Throughout human history, mankind has raced to discover the next frontier. And time after time, discovery was swiftly followed by conflict. We cannot erase this history, we can assure that history does not repeat itself in the Arctic” [25].

The DOD’s 2013 Arctic Strategy, and its 2016 Report to Congress, state that DOD will continue to build on its strategic partnerships to increase its regional expertise and obtain “small footprint” cold-weather operational experience. The later document also recognizes the increased human activity in the region due to resource extraction, fishing, and tourism. Given that, the combatant commands need to plan for contingencies associated with this increased activity in addition to military events [26]. The 2016 Report to Congress discusses continued exercises in the Arctic to maintain a deterrence posture.⁵ The report also recognizes the increasing geopolitical importance of the region and the need to evolve DOD Arctic infrastructure. The refurbishment of Thule Air Base in Greenland and recent improvements to a hangar at the former U.S. Naval Air Station at Keflavik, Iceland, were cited as examples of increased DOD commitments to modernizing the small amount of existing infrastructure [27]. These policy statements should also be read in the context of a credible U.S. Coast Guard, Air Force, and Army Corps of Engineers footprint in Southern Alaska.⁶

The U.S. Navy Arctic Roadmap 2014–2030 projects an increased U.S. Navy role in the Arctic in forecasting, maritime domain awareness, information sharing and hydrographic charting. That Roadmap does not propose increases in the number of combatant ships either based in the Arctic or transiting through the Arctic. The Navy and U.S. Northern Command have also been planning for an increased DOD presence in the Arctic and more infrastructure to support that presence [28]. But, the Navy has been careful to state that apart from its continued submarine operations, it will continue to play a supporting role in the Arctic. Some areas of Navy expertise include such areas as international science and technology (S&T) cooperation, disaster and emergency response, regional maritime domain awareness (MDA), ice and weather forecasting,

⁵ In general, the 2016 strategy document portends a slightly more robust DOD role in the Arctic and speaks more critically of Russian military activities [27].

⁶ The U.S. Coast Guard has a significant budgetary footprint in the Arctic to implement its traditional fisheries enforcement, search and rescue, safety of navigation (and maintenance of navigation aids), and oil spill response. The Coast Guard’s 17th District consists of roughly 2,500 personnel posted at bases and air stations the 17th District also includes medium- and high-endurance cutters, buoy tenders, 12 helicopters and four C-130 aircraft. The Department of Defense has a number of major bases in Alaska and funds a variety of research activities. Most of the Arctic research funding has historically been done by various Navy components and the Army Corps of Engineers (headquartered on Fort Wainwright). The Corps has responsibility for various military construction projects as well as sizable number of civil public works projects to build and maintain harbors along Alaska’s coast, restore former DOD lands, provide flood and erosion control, and construct facilities on tribal lands.

and hydrographic charting and mapping; and are noted as areas in which the Navy could play a more active role. Engagement of Russia in these cooperative activities, and the role of NATO in Arctic affairs, are not directly addressed in the Navy Roadmap or DOD's two policy statements [29].

The Roadmap and DOD's two policy statements also clearly state that DOD's activities in the Arctic will have to compete with other budget priorities, particularly because U.S. defense planners would like the Arctic to remain free of military competition or an arms buildup. This is also representative of the views of the former Commandant of the Coast Guard, Robert Papp, (formerly the United States' Special Arctic Representative) who opined that there are U.S. strategic interests in the Arctic that justify a modest military presence, including S&T missions. However, those interests are not "yet prominent enough to support anything but outreach, planning and small-scale summer deployments" [22].

Some independent analysts, such as Siemon Wezeman, point to recent Russian military activities (force buildup and base improvements) as causes of concern that there could be future armed competition over access to resources [22]. However, the authors are of the view that that competition over resources is not likely to cause a conflict because the territorial disputes in the Arctic are either comparatively benign or are being adjudicated (see Figure 5). The United States has two disputes with Canada that involve delineation of their adjacent boundary in the Beaufort Sea and a longstanding disagreement over the status of Canada's Northwest Passage. There is small dispute between Canada and Denmark over the status of Hans Island. Russia and Norway still have to delineate their Exclusive Economic Zones in the Barents Sea around the Svalbard Islands. And, Russia has been fully complying with the process to lay claim to an extended continental shelf in the Arctic. The UN Commission of the Limits of the Continental Shelf (CLCS) will probably take years to help the parties demarcate the outer limits of their extended continental shelf. In the 2016 DOD Report to Congress, DOD stated that it "respects the process" that Russia is following to delineate whether it is entitled to an extended continental shelf [27].

All of the six countries are largely in agreement that UNCLOS governs the exercise of their international rights in common areas. This does not rule out a future scenario where outside states that wish to upset the status quo, or where littoral states would increasingly deploy land and air forces to patrol their EEZ and continental shelf areas for instances of illegal fishing, environmental incidents, piracy, and criminal acts at sea. But at this point, there does not seem to be any compelling evidence that any of the six Arctic states that are the subject of this study are likely to go to war with one another because of a territorial dispute. The imposition of sanctions against Russia from 2014 for the Russian intervention in Ukraine by the United States and European Union (EU) may have heightened political tensions between the various countries,⁷ but those political tensions have had no visible influence on disputes in the Arctic Region over access to resources or territory. Political tensions over Eastern Europe may result in some increase in military patrols and spending by all sides in force modernization and infrastructure, but there is no evidence that there is a new "arms race" in the Arctic, or a compelling reason for one to develop.

⁷ There have been multiple rounds of sanctions culminating in sanctions directed against the Russian energy firms Rosneft and Novatek and two large banks. Both of those firms are active in Arctic resource development activities. The third round of sanctions beginning in the summer of 2014 was broad based and included the U.S., EU, Norway, Canada, Japan, Switzerland. The sanction on the oil companies seek to ban co-operation with Russian oil firms on energy technology and services and include such companies as Exxon Mobil Corp. and BP Plc. [30]. According to recent press reports, Exxon Mobil is seeking a waiver of some of those sanctions as respects the joint venture which is established with Rosneft in 2012. The waiver request reportedly does not cover any Arctic blocks.

Legal Structure: Antarctica vs. the Arctic

Analysts often make the mistake of lumping the Arctic and the Antarctic into a “polar” policy basket, even though the regions are completely different from a variety of perspectives. In the broadest possible sense, Antarctica is a land area that is not under any single state’s control and is off-limits to any activity beyond the scope of academic interest. The Arctic is, for most purposes relevant to this study, a maritime region and mostly under the control of individual states.

Antarctica is a continental land mass that is roughly twice the size of Australia. There are no permanent human residents, but anywhere from 1,000 to 5,000 people reside throughout the year at research stations scattered across the continent. In contrast, the Arctic region is essentially a maritime region. The Arctic Ocean is the smallest and the shallowest of the five major oceans. Because of its size and the fact that it is nearly surrounded by Eurasia and North America, some classify the Arctic as a sea. This small size and the close proximity of land in all directions means that coastal countries have significant legal interests in the water column due to the entitlements of states under the 1982 UN Law of the Sea Convention (UNCLOS). This relationship is shown in Figure 5; all areas outside of the red dotted line are unquestionably under the legal and resource jurisdiction of coastal countries. The shallow depth of the Arctic Ocean means that the countries are entitled to claim a continental shelf in excess of 200 nautical miles. As a consequence, the actual amounts of sea space that is classified as “international waters” and clearly beyond the jurisdiction of any coastal country is estimated at about 15 percent. Put another way, because of the broad continental margins in the Arctic Ocean,

Figure 5. Arctic Ocean Territorial Claims, credit: University of Durham



most of the Ocean’s seabed and water column belongs to single states versus being part of a “Global Commons.”

Antarctica is entirely different legally. Like outer space and the deep seabed, its entire area is classified as “Global Commons” because it is not under the jurisdiction of any single country. Antarctica’s special status as part of the global commons was established in the 1961 Antarctic Treaty that shelved the claims of seven countries.⁸ No country can make sovereignty claims to either the land or waters on the continent, and they may not introduce personnel or equipment onto Antarctica except for scientific

⁸ 12 UST 794, TIAS 4780, December 1, 1959. Entered into Force in 1961. Prior to the conclusion of the 1961 Treaty, seven nations - Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom - claimed sovereignty over areas of Antarctica, on the basis of discovery, exploration, or geographic propinquity. The ’61 Accord did not expressly renounce those claims; however, the agreement did declare (Art IV) that “No acts or activities taking place while the present treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present treaty is in force” [31].

research purposes. Also, management of the affairs of Antarctica is handled by various treaty organizations that regulate offshore fishing, the science program, and other activities; however, all forms of mineral resource extraction are banned for the foreseeable future.⁹ Save for UNCLOS, there is no overarching, legally binding treaty that addresses Arctic affairs or a treaty organization that has mandate to exercise regulatory authority over Arctic activities.

There is no evidence that there is a new “arms race” in the Arctic, or a compelling reason for one to develop

The Arctic Regulatory Scheme

The Arctic is governed by a small collection of legal arrangements including national domestic laws, bilateral agreements, global treaties (such as UNCLOS), customary law, and a variety of international maritime conventions negotiated under the auspices of the International Maritime Organization (IMO). With the exception of the recently concluded Polar Code, the various maritime laws that affect the Arctic do so because the Arctic is a maritime region, rather than because there are special Arctic rules. Consequently, the rights and entitlements of states to make claims to territory in the Arctic Ocean, or use its resources, are derived from UNCLOS. To a limited extent, UNCLOS establishes policies that require states to ensure that their activities on land do not adversely affect the marine environment (Part XII) and provisions that enables states to establish special protective measures to prevent vessel-source pollution in waters that are ice covered (Article 234).

Though there is no overarching regional management organization (like the European Union or Organization for Economic Co-operation and Development (OECD)) to addresses common issues; the Arctic Council is the closest thing to a regional governance body. The Arctic Council is an intergovernmental forum for promoting cooperation, collaboration, and integration between Arctic nations, indigenous communities, and other Arctic inhabitants. Founded in 1996 by the Ottawa Declaration, the Arctic Council is made up of eight member nations and six permanent indigenous groups. The Arctic Council has been responsible for brokering some coordination regimes relating to oil spill response and search and rescue.

In 2008, the five states bordering the Arctic Ocean, affirmed in the Ilulissat Declaration that sovereign rights in the Arctic are predetermined by UNCLOS and that the affected states remain “committed to the legal framework” of UNCLOS [32]. The Declaration also stated that the five Arctic littoral states would work together through the IMO “to strengthen additional measures and develop new measures to improve safety of maritime navigation and prevent or reduce the risk of ship based pollution in the Arctic Ocean”[32]. Over time, the Arctic Council has assumed greater prominence in Arctic affairs as well as expanded its membership to eight states plus six observer nations, including China, Japan, and India. The Council, as noted, has been responsible for brokering two international instruments: a 2011 Agreement on Cooperation in Aeronautical and Maritime Search and Rescue in the Arctic (SAR Agreement) and a 2013 Agreement on Marine Oil Pollution Preparedness and Response in the Arctic. These agreements help identify regional goals and points

⁹ Fishing is regulated by a treaty-based Commission for the Conservation of Antarctic Marine Living Resources (CCMLR) which is based in Tasmania. The 1991 Protocol on Environmental Protection to the Antarctic Treaty (known as the Madrid Protocol) enacted a ban on all “mineral resource activities” for at least 50 years [31].

of contact for cooperation but they do not commit any of the states to regulatory activities or any funding. Nor do these agreements empower the Arctic Council to act as a policy broker or regulatory authority [32].

UNCLOS and the Polar Code

Since the Arctic is mostly a maritime area, UNCLOS establishes most of the normative rules regarding activities in the Arctic region. And, since the Arctic Ocean is the anchor for most economic activities in the Arctic region, the first step in the analysis of the legal framework of the Arctic is to determine what UNCLOS provisions apply.

First and foremost, UNCLOS establishes important resource and legal jurisdictional zones, including territorial seas, exclusive economic zones, and continental shelves (UNCLOS Article 56). UNCLOS also establishes important jurisdictional lines between flag states, the state under whose laws a commercial vessel is registered, and coastal states. This demarcation is an especially important matter since, under UNCLOS, coastal states have limited powers over most aspects of ship operations including design, construction, and most operations because of the principle of flag-state control. In contrast, under UNCLOS Articles 58, 60, and 76, each Arctic coastal nation's domestic laws govern hydrocarbon development, fishing, aquaculture, and port operations, as well as mining and industrial operations that impact the marine environment. In this latter respect, the extent to which the eight countries regulate these activities is not uniform.¹⁰

There is a wide difference of opinion as to whether UNCLOS is sufficiently prescriptive to stop one country from interfering with another country's authorizing activities that pollute the marine environment. Similar concerns exist whether UNCLOS provides a sufficient legal foundation to hold another country financially responsible for pollution from its territory that harms another state or for damage to the marine environment generally. UNCLOS requires that states adopt domestic laws to control marine pollution resulting from vessels and shore-based facilities,¹¹ but the provisions lack specificity and is probably beyond the scope of many mandatory dispute settlement procedures established in UNCLOS or other treaties.¹² Because of these gaps, some sort of reciprocal standards and methods of resolving disputes and claims is strongly urged by the authors.

¹⁰ Both Canada and Russia have enacted regulations that govern shipboard passage in their respective polar areas. Canada's NORDREG establishes a mandatory ship reporting system and a zero-discharge rule for all ships in the Canadian Arctic. The Russian Federation has developed an elaborate regulatory regime governing the passage of ships through its Northern Sea Route. Apart from rules respecting oil and gas activities, the U.S. has very few Arctic specific regulations.

¹¹ Article 192 states that "States have the obligation to protect and preserve the marine environment." There are also specific provisions dealing with pollution from land-based sources (Article 207), vessels (Article 211), seabed activities (Article 208) and atmospheric pollution of the marine environment (Article 212).

¹² Articles 286 and 287 confers jurisdiction on UNCLOS related disputes to four bodies but exempts (in Article 297 and Article 298) certain categories of disputes such as those relating to military matters and fisheries. Environmental protection matters are fair game. With the possible exception of the recent dispute between the Philippines and China that was decided by an UNCLOS Arbitral Panel in 2016, UNCLOS' dispute settlement mechanisms have not been effectively used in the past to enforce environmental norms. One possible reason for this is that the obligations in UNCLOS are so broad as to be unenforceable and, for this reason, bilateral and multilateral trade agreements usually offer states a better option (and remedies) so long as the matter can somehow be linked to trade [33]. Of note, in the 2001 Mox Plant Case Ireland sought to get the International Tribunal for the Law of the Sea (ITLOS) to issue an injunction to forbid the UK from permitting further release of radioactive waste from a MOX plant into the Irish Sea. ITLOS ultimately determined that there were other European Treaties that had dispute settlement provisions that took precedence over UNCLOS and it declined to exercise jurisdiction [34].

One effort that increased governance in the Arctic was the IMO's recent enactment of the Polar Code. The Code entered into force on January 1, 2017, and applies to all passenger ships and any other ships above 500 tons operating in latitudes above 60 degrees north. Like most IMO instruments, enforcement of the Polar Code rests with the flag states, but there is the possibility that states could enforce vessel standards via so-called "port state control measures" [35]. The Code contains a number of operational and safety restrictions—including zero or limited discharges in polar waters—and requires ship owners to ensure that their crews have specialized training and safety equipment and have in their possession a polar certificate before entering polar waters [35]. For new ships that will operate in the polar region, there are special hardening requirements (dependent on ice conditions), a mandatory reporting scheme for ships entering the Barents side of the Arctic Ocean, and hull/tank separation requirements for ships carrying oil and noxious liquids.

Unquestionably the Polar Code (which went into effect in 2017) is a major step in the right direction. In February 2017, the ship-safety certification company, DNV GL and the Danish Maritime Authority, made the first certification of a ship's compliance with the new Polar Code: the anchor handling tug *Magne Viking* [36]. But as discussed in "*Addressing the Gaps in Arctic Governance*" there are numerous exceptions to the Polar Code that could be problematic and shift most of the operational and financial risk of an accident from ship owners to coastal states [11]. First, the Polar Code does not apply to ships below 500 tons—notwithstanding the fact that many smaller coastal craft carry noxious materials. The Code says nothing about increased ship-owner liability under IMO conventions for response and cleanup costs or increases their insurance limits, despite the fact that the costs of responding to and cleaning up a shipping accident or oil spill would be far more technically complex and expensive than in warmer waters. Lastly, the Code preserves exemptions (under SOLAS, Chapter V) for fishing vessels, warships, naval auxiliaries and government-owned ships on non-commercial service from the scope of its coverage. This exemption is very problematic because some states own and operate merchant vessels that could potentially evade legal responsibility by claiming sovereign immunity.¹³ Likewise, if the current projections (discussed later) of new high-seas fisheries materialize, fishing by exempt vessels will take place far from the existing shipping channels, charted areas, and rescue infrastructure.

Some academics and the U.S. Department of State's Advisory Board are starting to take note of outside investments in the Arctic, particularly in the oil and gas field, but as of yet no concrete measures have been enacted to address the issues associated with resource exploitation in and near the Arctic coastline and the likely transboundary impacts of an incident [37]. While it is in theory possible for one or more states to legally confront another state over a particular incident that has deleterious impacts on the marine environment by using the UNCLOS dispute-settlement mechanism, that mechanism is deficient. The recent South China Sea arbitration, *Philippines v. China*, establishes an important precedent that the duties of states to protect the marine environment is "fair game" in an UNCLOS dispute settlement action [38]. Even though the *Philippines* case was very far-reaching, the ability of one state to enjoin the action of another state from imprudent practices or to recover money damages for the costs of damages to the marine environment is not

¹³ The large Chinese shipping company COSCO is a state-owned conglomerate of separate shipping companies. Even though these ships are ultimately owned by state, these ships are engaged in commercial service and should not normally be entitled to sovereign immunity under IMO instruments and UNCLOS. However the word "should" is not a satisfactory state of affairs if it means that coastal states that are adversely affected by a PRC incident have to dodge PRC lawyers who erect barriers to payment or require that the affected communities have to sue in Chinese courts.

yet clearly established in law and precedent.¹⁴ This means that absent some sort of multilateral instrument that creates a claims process and a liability fund, states that are adversely affected by a transboundary pollution incident would be left suing the offending entity in the country where the incident occurred or seeking collection against an insurance policy, assuming one was available. Because of the difficulties of doing this, it is fair to say that in most cases, a country that incurs damage to its Arctic coast — as a result of an industrial accident in another country — would likely have to absorb the costs of cleanup and the compensation of its injured citizens.

¹⁴ There are an increasing number of cases in which the Provisional Measures (UNCLOS 290) are being discussed. UNCLOS related litigation is not yet at the point where one state can go to an UNCLOS body and get an injunction under Article 290 or sue for money damages; although, the law seems to be slowly evolving in that direction. That would be a good development in Arctic governance if the coastal states are unable to come up with a process or forum for dealing with the extreme costs (and liability) associated with a large industrial or shipping incident that affects the Arctic marine environment

Resource Availability in the Arctic

Hyperbolic analyses of the resources in the Arctic foretell of a 21st-century gold rush in the planet's northernmost region. Much of this rhetoric was triggered in 2007, when Russia planted its national flag on the seafloor at the North Pole. Immediately, responses from the global community were vocal and furious. Canada's minister for foreign affairs protested, "This isn't the 15th century; you can't go around the world and just plant flags and say 'we're claiming this territory'" [39]. Then U.S. Secretary of State Condoleezza Rice responded to the event by directing John Bellinger, the State Department's chief legal advisor, to go before the Senate to urge the ratification of UNCLOS [40]. Scholar Scott G. Borgerson predicted in *Foreign Policy*: "Without U.S. leadership to help develop diplomatic solutions to competing claims and potential conflicts, the region could erupt into an armed mad dash for resources" [41].

Fortunately, there is no modern-day Arctic gold rush. Much has changed in the time that has intervened between the resource grabs of the colonial era and today, making such actions unlikely in the future [41-42]. All of the Arctic states have permitting processes that review resources from the standpoint of value, risk, and profitability. While these processes vary in duration and stringency, they are uniform in that they prevent unlicensed operators from engaging in large projects.

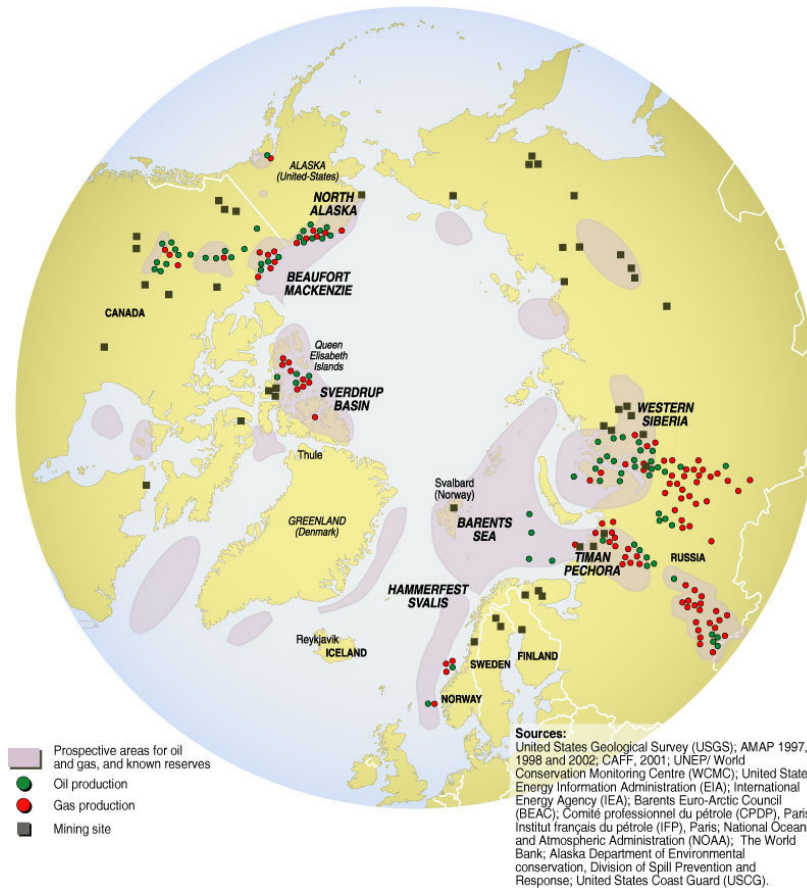
The overwhelming theme of resource availability in the Arctic is uncertainty. For a long time, industry was simply uninterested in coping with the high-risk environment of the Arctic. With very few exceptions, there have been better, more profitable options elsewhere. But as resources in other parts of the world dwindle, the vast resources of the Arctic become more and more appealing to investors, developers, and governments. At the same time, Arctic communities are seeing the environmental cycles shift due to climate change, just as globalization creates more worldwide demand for food, goods, and services. In a speech at CSIS Washington, D.C., on July 19, 2017, Alaskan Senator Lisa Murkowski described the situation as "extraordinary potential limited by access" [43]. Natural resource development remains a divisive issue in the Arctic, however, many Arctic communities are warming up to the idea of development as the pressures of climate change and globalization increase.

Oil Resources

The availability of hydrocarbon resources in the Arctic is one of the most widely published facets of resource availability above the 66th parallel. And for good reason: oil is one of the pillars that allow modern society to function as we know it. In the Arctic, oil and gas extraction is already underway in some regions (see figure 6).

A 2008 resource appraisal by the U.S. Geological Survey (USGS) estimates that 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids could lie in the Arctic, waiting to be proven by further exploration. An estimated 45 percent of these resources are located in Alaska [44]. While still unproven, 84 percent of these reserves are anticipated to be located offshore [44]. The USGS Circum-Arctic Resource Appraisal (CARA) used geology-based probabilistic methodology to estimate the likelihood

Figure 6. Mining, Oil, and Gas Activity, credit: Philippe Rekacewicz; Hugo Ahlenius UNEP/GRID-Arendal



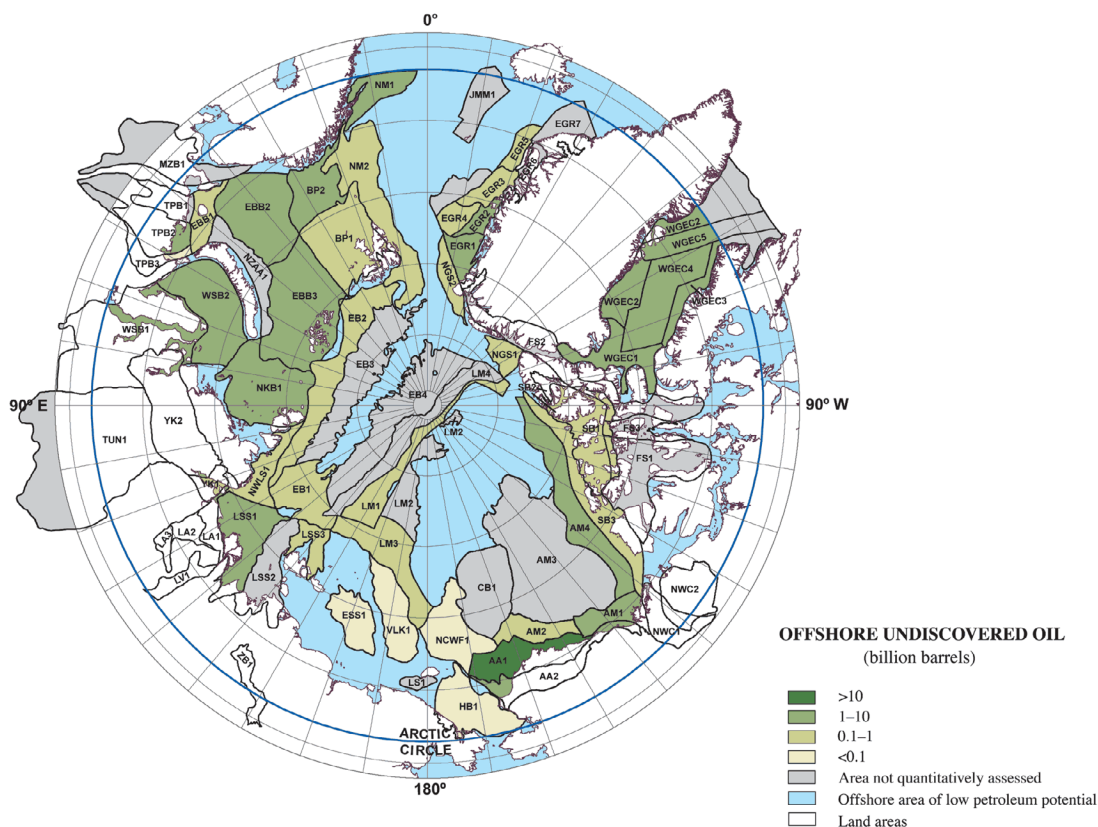
of undiscovered oil and gas resources in 33 geologic provinces with geological structures conducive to petroleum deposits (see figure 7). The petroleum-potential areas considered were those that had a 10 percent likelihood of containing at least 50 million barrels of oil or natural gas equivalent [44]. These estimates are speculative until proven by exploration.

In a number of onshore Arctic areas, exploratory drilling for oil and natural gas has already been carried out; 117 billion barrels of oil equivalent (BBOE) have been extracted as of 2015 [45]. According to the most recent data, there are 290 BBOE in reserves and discovered potential, unproven resources make up the remaining 426 BBOE of conventional Arctic fossil fuel endowments [45]. In percentage terms, 19 percent of anticipated Arctic fossil fuel endowments have been extracted, reserves and discovered potential make up 35 percent, and 51 percent of anticipated hydrocarbons have yet to be proven [45].

These resources are not evenly distributed among nations. Excluding natural gas liquids, the Alaskan Arctic contains 94 BBOE, Canada has 34 BBOE in resource potential, Greenland's endowment is estimated to be 39 BBOE, Norway is anticipated to have 25 BBOE, and Russia has the largest endowment by far with an anticipated 287 BBOE in conventional oil and gas (these figures do not include resources that are outside of littoral states' EEZs) [45].

Even though Iceland does not figure prominently in the large resource projects, the small nation is actively exploring two different offshore sites. The Dreki Area, east of the Icelandic coast, on the Jan Mayen ridge,

Figure 7. Undiscovered Oil Estimates by the USGS Circum-Arctic Resource Appraisal, Credit: USGS



is thought to have the potential for significant hydrocarbon resources, though exploration has yet to prove reserves[46]. Similarly, the Gammur Area off the coast of north-central Iceland is also expected to hold gas, but the variety and quantities have yet to be determined [47].

Mineral Resources

The Arctic holds vast quantities of minerals: nickel, zinc, diamonds, iron, bauxite, copper, phosphate, palladium, platinum, rhodium, cobalt, and gold. Resources vary from state to state in terms of type, size, quality, and quantity. Each nation also has vastly different histories and experience with mineral and metal extraction. Regulatory restrictions and national attitudes toward mining affect the perceptions of the significance of various deposits in each country. Consequently, the quantities of commercially viable resources in the Arctic vary not only in terms of distribution but also in terms technological accessibility, legal restrictions, economic viability, and proven size of reserves.

Alaska's commercial mining history began in the late 1880's, when the discovery of gold in the Klondike and on the beaches of Nome triggered a gold rush that brought as many as 20,000 people to Alaska[48]. In the 1950s, zinc and lead were discovered in the Brooks Range in northwestern Alaska. The discovery would be developed into the world's second largest zinc mine, Red Dog mine, located about 100 miles north of the Arctic Circle. Red Dog has produced more than 1 billion tons of zinc concentrate to date [49-50]. There are two other large zinc and lead deposits in Alaska's Arctic: the Aqqaluk deposit, currently being mined, and the Qanaiyaq deposit, which has yet to be mined [51]. Given Alaska's vast expanses of unexplored wilderness, it is possible that more large deposits of other metals or minerals exist.

The Canadian Arctic is rich in mineral deposits. Gold, copper, nickel, iron, uranium, rare earth elements (REE), and diamonds are located in the Canadian Shield [51]. To the west, in the Canadian Cordillera, numerous deposits of zinc, lead, gold, silver, copper, molybdenum, and tungsten have either been discovered or predicted by geologic probability models [51]. The number of known deposits in the Canadian Arctic are too numerous to list, so they are summarized in table 1. Mines of notable size are: Mary River iron mine on Baffin Island; Izok Lake copper, zinc, lead, and gold mine near the Coronation Gulf; the Giant gold mine on Yellowknife Bay; the Ekati diamond mine in the Northwest Territories (see figure 8), and the Nechalacho REE deposit in the Blatchford Lake Complex [51].

Figure 8. BHP Billiton's Ekati Diamond Mine (Yellowknife, Northwest Territories, Canada), credit: Jason Pineau



Table 1. Prospective, Active, and Closed mines in the Canadian Arctic, adopted from Boyd et al., 2016

Deposit	Status	Metal	Tonnage (Mt)
Andrew lake	Not Exploited	Uranium	7.67
Casino	Not Exploited	Copper, Molybdenum, Gold, Silver	2752.6
Coffee	Not Exploited	Gold	92.95
Con Mine	Closed Mine	Gold	10.7
Courageous Lake	Exploration	Gold	156.448
Crest	Not Exploited	Iron	3200
Diavik	Active Mine	Diamond	46 million carats
Ekati	Active Mine	Diamond	105.4 million carats
Faro Mine	Closed Mine	Zinc, Lead, Gold, Silver	58
Ferguson Lake	Not Exploited	Nickel, Copper, Cobalt, Platinum, Palladium	46
Gayna River	Not Exploited	Zinc, Lead, Gold, Silver, Gallium, Germanium	50
Giant Mine	Closed Mine	Gold	15.5
Golden Revenue	Not Exploited	Gold, Silver, Copper, Molybdenum	231.96
Goose	Not Exploited	Gold	24.76
Hackett River	Not Exploited	Zinc, Lead, Copper, Gold, Silver	82
Hasselberg	Not Exploited	Zinc, Lead, Silver	4.1
High Lake	Not Exploited	Zinc, Copper, Lead, Gold, Silver	14
Howards Pass	Not Exploited	Zinc, Lead	388.5
Izok Lake	Not Exploited	Zinc, Copper, Lead, Gold, Silver	14.6
Keno Hill Silver	Active Mine	Gold, Lead, Zinc	7.214

Kudz Ze Kayah	Not Exploited	Zinc, Lead, Copper, Gold, Silver	14.55
Logtung	Not Exploited	Tungsten, Molybdenum	424.6
Lupin Mine	Closed Mine	Gold, Silver, Copper, Molybdenum	12.83
Mactung	Not Exploited	Tungsten	44.886
Mary River 1	Active Mine	Iron	631
Mary River 2 & 3	Not Exploited	Iron	362
Meadowbank Mine	Active Mine	Gold	27.407
Meliadine	Not Exploited	Gold	48.273
Minto	Active Mine	Copper, Gold, Silver	110.144
Nanisivik Mine	Closed Mine	Zinc, Lead, Silver	17.525
Nechalacho	Not Exploited	REEs	304.63
Nickel King	Not Exploited	Nickel, Copper, Cobalt	44.172
Nunavik Mine	Active Mine	Nickel, Copper, Cobalt, Platinum, Palladium	27.146
Pine Point	Closed Mine	Zinc, Lead	100.96
Polaris Mine	Closed Mine	Zinc, Lead	20.107
Prairie Creek	Not Exploited	Zinc, Lead, Gold	11.67
Raglan Mine	Active Mine	Nickel, Copper, Platinum, Palladium	42.03
Red Mountain	Not Exploited	Molybdenum	187
Roche Bay C	Not Exploited	Iron	567.3
Tom and Jason	Not Exploited	Zinc, Lead, Gold	30.99
Wellgreen	Exploration	Nickel, Copper, Platinum, Palladium, Cobalt, Gold	461.28
West Raglan	Not Exploited	Nickel, Copper, Platinum, Palladium	10
Wolverine	Active Mine	Zinc, Copper, Lead, Gold, Silver	6.154

As Greenland's ice sheet retreats, new resources are being discovered. At present, Greenland holds multiple deposits of zinc, lead, coal, molybdenum, gold, platinum, palladium, copper, iron, REEs, and precious and semiprecious stones [51]. Current extraction is summarized in the table below. As with Alaska, it is possible that Greenland contains many more deposits than those that are currently known. The geology of Greenland suggests that many resources are still trapped beneath the Greenland Ice Sheet [51]. Greenland's major deposits are listed in table 2.

Table 2. Active and Prospective Mines in Greenland, adopted from Boyd et al., 2016

Deposit Name	Deposit size (in tons)	Material	Corporate Owner (2016)
Isua	1,107	Iron	General Nice Development Ltd
Black Angel	13.6	Zinc, Lead, Silver	Black Angel Mining A/S
Kvanefeld	673	REE, Uranium, Zinc	Greenland Minerals and Energy A/S
Kringlerne	4,300	REE, Niobium, Zirconium	Tanbreez Mining Greenland A/S
Motzfeldt	340	REE Niobium, Tantalum, Zirconium	West Melville Metals Inc
Sarfartoq	14	REE, Niobium	Hudson Resources Inc
Citronen	132	Zinc, Lead	Ironbark Zinc Ltd
Skaegaard	202	Palladium, Gold, Platinum	Platina Resources Ltd
Flammefeld	200	Molybdenum Sulfide	21st North
Malmbjerg	329	Molybdenum	KGHM

Iceland, in contrast to its Arctic neighbors, does not have large mineral deposits. The geologic environment is distinct from North America, Greenland, Scandinavia, and Russia due to its recent formation as a result of tectonic rifting and volcanic activity. Some gold exploration has occurred, but thus far no profitable gold deposits have been found in Iceland.

Since as early as the 12th century, silver deposits have been exploited in what is now Norway. In the 1600s, silver and copper were mined in the areas south of Trondheim. Some of these mines were active until the 1970s, spanning almost three centuries of near-continuous resource extraction. Modern Norway has three large metal mines: the Tellnes ilmenite mine, and two iron mines at Rana and Sydvaranger. Permits have recently been awarded to three new mines that will extract rutile and copper. Finally, there are large deposits of iron, copper, coal (Svalbard - Figure 9.) cobalt, silver, zinc, rutile, molybdenum, nickel, gold, arsenic, and the platinum group elements (PGE), which include ruthenium, rhodium, palladium, osmium, iridium, and platinum. Most of Norway's deposits are concentrated in the north.

Figure 9. Russian Coal Mine in Ny Alesund, Svalbard, credit: Anna Henly



Russian geology across the Arctic varies widely, leading to a diverse allocation of mineral resources spread across various geologic zones. There are seven major regions of the Russian Arctic that produce significant quantities of minerals and metals. They are: Kola Peninsula, Maimecha-Kotui Udzhinskoyw, Taimyr-Norilsk, Taimyr-Severnaya, Tomtor, Yaana-Chukotka, and Yakutia-Anabar. Their resources are summarized in table 3.

Table 3. Russian Deposits by Arctic Region, adopted from Boyd et al., 2016

Region	Resources
Kola Peninsula	PGE, Copper, Titanium, Tantalum, Niobium, REE, Iron, Phosphorus, Flerovium, Chromium, Manganese, Gold
Maimecha-Kotui Udzhinskoyw	Phosphorus, Iron, Niobium, PGE, Diamonds
Taimyr-Norilsk	Nickel, Copper, Cobalt, PGE
Taimyr-Severnaya	Gold, Molybdenum, Tungsten, Chromium, Vanadium, Copper, Nickel, Lead, Zinc
Tomtor	REE, Niobium, Iron, Aluminum, Phosphorus
Yaana-Chukotka	Tin, Gold, Mercury, Tungsten, Copper, Molybdenum, Silver, PGE, Nickel, Lead, Zinc
Yakutia-Anabar	Diamonds, Tin, Iron

There are also several sub-Arctic mining regions of particular importance due to their proximity to the Arctic environment. The Ural Mountains and surrounding area are rich in iron, chromite, gold, molybdenum, tungsten, copper, gold, and platinum [51]. In Siberia, deposits of nickel, copper, and PGEs are among the largest in the world. Additionally, Siberian geology includes smaller deposits of gold and silver.

Future mineral extraction in the Russian Arctic is almost certain. Vast deposits of cobalt, copper, diamonds, gold, iron, nickel, PGEs, high-value REEs, titanium, vanadium, and zirconium have been proven but are not yet being extracted on a commercial scale [51].

Fisheries

The availability and profitability of fish stocks in the Arctic vary dramatically across the region. Very little is known about fish stocks in the Arctic Ocean itself. In some of the inlets to the Arctic, such as Baffin Bay, the Barents Sea, and the Bering Sea, extensive studies have traced the size and migration patterns of fish stocks. According to the Inventory of Research and Monitoring, conducted by the Alaska Fisheries Science Center—a research branch of the National Oceanic and Atmospheric Administration's National Marine Fisheries Service—data is most dense in areas that contain active fisheries or are adjacent to them. However, in areas with historically permanent ice, there is very little information available [52].

Given these many unknowns, it is difficult to make precise projections about the future of commercial fishing. However, in areas that already have commercial fishing activity, changes due to climate change, including decreasing ice coverage and changing migration ranges, are impacting the industry. Currently, commercial fishing in the Arctic is concentrated in a few regions. There are 59 marine fish species (or “stocks”) that are targeted by commercial fishing [53]. Of these, 30 are in the Bering Sea between Alaska and Russia [53]. The Norwegian and Barents Seas, which together form the Atlantic-Arctic gateway, contain between 21 and 24 of the desirable species [53].

Even though the inlets to the Arctic are monitored by two very professional coast guards (U.S. and Norway), illegal, unreported and unregulated (IUU) fishing in the Arctic is a growing concern. The great distances involved and harsh environment makes detection, monitoring, and apprehension difficult. And wherever IUU fishing is feasible, the Arctic is an attractive lure because of the serious declines in most fishing areas worldwide. According to a report by the World Wildlife Fund, IUU fishing remains a problem, mostly in

Russian waters in the Bering Sea and Sea of Okhotsk [54]. This problem is reportedly getting worse as sea ice retreats, exposing more of the large, 1.1 million square mile “donut hole” in the central Arctic Ocean that is not under the management of any single country’s EEZ [55].

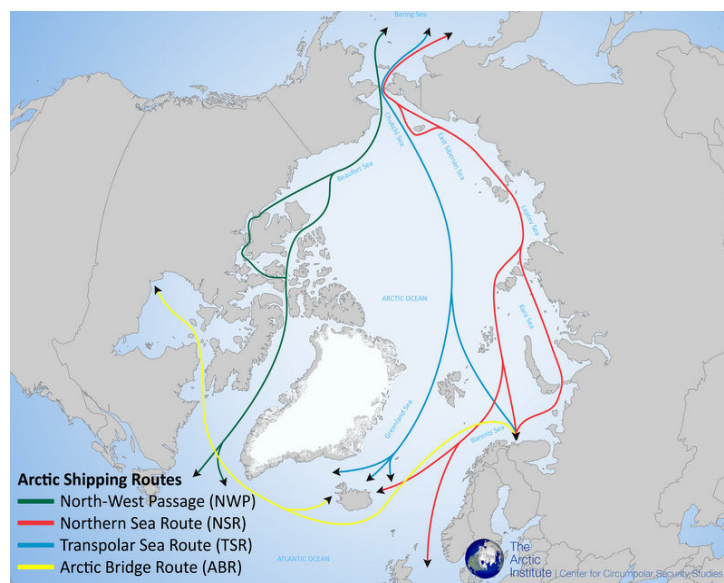
Unlike the 50,000 square-mile donut hole beyond the reach of the coastal EEZs of Alaska and Russia in the Bering Sea, which is under the purview of the Straddling Stocks Convention, no such agreements cover the areas of the Arctic Ocean that are beyond the 200 nautical mile EEZs of the coastal states. Already fishing vessels from various countries have “tested the waters” of this unregulated area [55]. However, recent meetings between Canada, Greenland, Norway, Russia, and the United States produced a temporary moratorium on fishing in the Arctic Ocean that was signed on July 16, 2015. The non-legally binding agreement, called the Declaration Concerning the Prevention of Unregulated High Seas Fishing in the Central Arctic Ocean, halts all commercial fishing until scientists can collect information on fish stocks and assess how environmental changes in the Arctic are impacting fish species [56-57]. Now, the original signatories are bringing other countries, such as China, Iceland, Japan, South Korea, and the EU, together to discuss ways of expanding the temporary moratorium [58].

Shipping

The dream of a passage through the frozen waterways of the Arctic has been alive since the 1400s, when European traders longed for a route to the Pacific Ocean without sailing around Africa or making a land trek across Asia. And while shipping has grown infinitely safer and more efficient in the past six centuries, shipping routes have remained mostly the same, with the notable exceptions of the Suez and Panama Canals. Shipping operators continue to look for ways to reduce transit time and distance, as well as reduce the risks posed by choke points in the world’s current shipping lanes. A transit lane through the Arctic could achieve all of these goals.

Due to climate change, the Arctic Ocean is as open as it has ever been in human history [59]. Recent ice forecast models predict that open-water vessels¹⁵ could feasibly transit the Arctic as early as 2040, while Polar Class 6¹⁶ vessels are already safely transiting the Arctic Ocean in summer and fall [5]. Additionally, the available window for transit is increasing from about five months per year to possibly year round by moderately ice-strengthened vessels by late century [60]. More troubling from the perspective of safety of navigation, with further ice regression ships will gravitate towards the “over the top” shipping

Figure 10. Arctic Shipping Routes, credit: Malte Humpert, The Arctic Institute



¹⁵ No hull ice strengthening

¹⁶ Medium hull strengthening

route versus the Northern Sea Route (NSR) or Northwest Passage (NWP), since they could shave an additional four to five days off a journey from East Asia to Rotterdam (see figure 10). This is a problem because the limited Arctic response and safe-refuge capacity is found along the routes that hug the coastline, and because of uncertain nautical charts.

According to a 2016 report by the Copenhagen Business School, the NSR could reduce the transit shipping distance from Asia to Europe by 40 percent, compared to the contemporary route through the Suez Canal [61]. Because of declining summer ice, a general uptick in summer vessel traffic has been observed, although increases have not been steady from year to year. In 2012, 46 vessels carrying a total cargo volume of 4 million tons transited the NSR [61]. In 2016, the total cargo volume exceeded 6.9 million tons [62]. For the first time, China sent five vessels—including container vessels—through the NSR as a proof of concept [62].

Figure 11. Arctic Sea Ice Alongside Icebreaker, credit: Chris Linder



Most experts expect vessel traffic to increase, especially in destination and possibly commodity transit shipping. Vessel traffic associated with the cruise industry and tourism is also expected to increase; raising the probability of some sort of marine casualty that will require a complex search-and-rescue mission that would strain the region's limited capability. However, the Arctic Ocean is unlikely to become the world's new superhighway for intercontinental container and other transit shipping because there are too many weather and ice uncertainties associated with

passage through the Arctic Ocean. These risks, especially of delays, are anathema to the just-in-time delivery requirements for most cargo container shipping companies.¹⁷ While ice coverage and thickness is declining, no one is anticipating an ice-free Arctic. Ice or no ice, vessels will need to contend with the ferocity of Arctic weather. For the near term, Arctic shipping will remain riskier, more difficult, and, if icebreaker escorts are required,¹⁸ more expensive than traditional routes. Still, the gaps in cost and time are shrinking as ice recedes.

¹⁷ In addition to the issue of delay, the movements of cargo containers has become more or less a commodity, and the margins are not sufficient to sustain the costs of delay or, worse, vessel stranding due to weather, bad charts, etc [63].

¹⁸ In doing background research for the Gaps in Arctic Governance, (see [11]) risk managers at two large Norwegian maritime insurance firms were asked about how they mitigate the risk of ships transiting the Arctic – above and beyond Polar Code compliance. As a general matter, the insurance companies require their policy holders to only make transits through the Arctic via the Northern Sea Route (NSR) and to do so with an icebreaker escort. This increases the cost(s) of the transit but the presence of an icebreaker is invaluable to provide tow and rescue services if a ship suffers a casualty. Most such casualties are the result of the collision of a vessel (or its propeller) with free-floating ice.

The Forward Look

Despite the vast quantity and value of resources in the Arctic, this analysis does not predict that a resource “rush” will occur in the next few years. There are several reasons for this.

First, while Arctic resources are becoming more accessible due to technological advancements and climate change, that doesn’t mean they are as profitable as resources elsewhere. At present and for much of the foreseeable future, the impact of climate change will make some resources (such as offshore hydrocarbons) more accessible due to retreating glaciers and less sea ice, but it will not make them completely accessible. Profitable extraction of certain resources will require technological development, such as new drilling technologies and systems that can withstand strong Arctic storms and infrastructure that remains stable as melting permafrost shifts below it. Wherever regulations require that resources must be extracted and transported in an environmentally responsible manner, companies will need to develop or adopt adequate (and expensive) technology or face steep consequences. Such regulations apply in the United States, Canada and Norway but less so in Russia and, perhaps, Greenland, which have lower standards and less monitoring.

As the permafrost melts and refreezes, infrastructure dilapidates at a much faster rate than in lower latitudes

Second, the emerging freeze-thaw cycles of the Arctic permafrost pose serious challenges to development in the Arctic. As the permafrost melts and refreezes, infrastructure dilapidates at a much faster rate than in lower latitudes. Climate change is making the problem worse by increasing the depth of soil thawing and by melting ice roads. In 2007, the University of Alaska estimated that melting permafrost from climate change would add \$5.6–7.6 billion dollars to the anticipated costs of replacing worn out infrastructure in the state, representing a 10–12 percent increase [64]. Water and sewer systems are expected to account for the largest share of extra costs, with roads and airport runways following close behind.

This trend is also observed elsewhere in the Arctic. Russia is acutely vulnerable to warming permafrost due to the urban design of Russian Arctic cities. Most urban infrastructure consists of standard design — five-to-nine-story buildings with concrete pile foundations. Recent analysis of the impacts of warming permafrost projections conservatively anticipate that by 2040, the Russian cities of Salekhard, Norilsk, Yakutsk, and Anadyr will experience critical (<55 percent) reductions in the load bearing capacity of the standard pile foundations that underlie the majority of built infrastructure [65]. If the rates of warming due to climate change are more rapid, this deterioration can be expected to occur sooner, perhaps as early as the mid-2020s. Such significant reductions in load bearing capacity would exceed the safety factors incorporated into the building designs by Soviet engineers, leading to potentially catastrophic building failure and collapse. In addition to building new infrastructure to support development, the current structures in the Russian Arctic will need to be evaluated and either retrofitted or rebuilt to sustain the impacts of melting permafrost, requiring even greater investment.

Melting permafrost will complicate development of natural resources at every step of the process. In the extraction phase, seasonable variability in the stability of the permafrost will cause extraction equipment to shift, sometimes unexpectedly. Buildings such as offices, housing, and community infrastructure will also face

challenges due to instability in the permafrost. Transporting extracted resources, whether through the sparse pipeline, road, or rail systems, will also be more difficult and dangerous with melting permafrost. Foundations of pipelines could shift, causing leaks that damage the Arctic environment. Road and rail infrastructure can rapidly deteriorate from season to season, increasing the risk of accidents.

Third, the Arctic lacks infrastructure (see figure 12). Before the vast mineral, fossil, and food resources can be exploited, developers will need to construct the infrastructure that will facilitate extraction, processing, transport, export, and housing for operators and their families. Inconveniently, the melting of the permafrost on land, high rates of erosion, and severe weather pose severe and costly challenges to the larger engineering projects that would be needed to support resource extraction.

On the U.S. side of the Arctic, there is very little infrastructure north of the Bering Strait.¹⁹ Shortly after Shell pulled out of its exploratory oil and gas project in the Chukchi Sea, the U.S. Army Corps of Engineers postponed efforts to study the creation of U.S. Arctic deepwater port. This means that any ores that are mined would have to transit out of the U.S. Arctic before they could be offloaded for processing. Norway's Tschudi Shipping, by contrast, is building a major bulk commodity handling port in the vicinity of Kirkenes to service a nearby iron ore mine as well as to serve as a receiving and transshipment port for other minerals. The nearby Russian Port of Murmansk also has significant bulk cargo handling capabilities[66].

Fourth, commodity prices do not currently encourage the development of some mineral resources, especially oil and gas. The low market price of hydrocarbons does not encourage a high-risk, infrastructure-intensive resource exploration in a climatically turbulent and distant part of the world. For these resources to be appealing to large, well-established, and well-capitalized oil operators, the global market price of oil will need to rise.

While there is no "gold rush" in the immediate offing, strategic investments will continue to be made to lock up future sources of supply since investing in assets in the form of land or leases is the ultimate hedge against future price increases. World commodity prices cannot be expected to be low for forever. Therefore, it is important that we assess the state of foreign investment in Arctic resources, whether those investments are being responsibly managed, and whether new regulations are needed to prevent harmful FDI trends from developing.

¹⁹ Dutch Harbor and the Red Dog Mine's shipping facility (known as the Delong Mountain Terminal Port) on the Chukchi Sea are the only two sites that the authors could locate in the U.S. Arctic that could serve as a commodity handling facility. The Delong Mountain Terminal does not load materials pier side; rather, ore is sent by conveyors to cargo ships or barges that are anchored offshore Dutch Harbor, which is located in the Aleutians. Delong Terminal does not have any current capacity to do large-capacity ore handling.

Figure 12. Towns and Industrial Activity in the Arctic, credit: Riccardo Pravetto, UNEP/GRID-Arendal



Foreign Direct Investment (FDI)

General Policies and Definitions

A main thrust of this study is an examination of current rules governing foreign direct investment in the resource and industrial sectors of any of the Arctic littoral countries. This first entails an examination of whether there are prevailing international laws or standards that either should shape foreign direct investments in the Arctic or would need to be implemented for the protection of the Arctic physical and cultural environment. We also look at past foreign investment patterns of China in developing countries to assess what sort of laws and regulations might be necessary in the Arctic. Finally, we look at what local laws are currently in place.

A discussion of FDI needs to begin with definitions since there is a lack of uniformity in the ways that countries regulate FDI. The United States has a formal process, discussed below, for examining the acquisition of equity in a business enterprise, as well as a variety of separate rules that restrict foreign ownership of certain activities, such as publishing and broadcasting. Other countries take a more comprehensive approach. Because national legal systems regulate FDI differently, for purposes of this analysis, the OECD definition will be used^[67]. The OECD²⁰ considers the following types of transactions to be forms of FDI:

A cross border investment made by a resident in one economy (direct investor²¹) with the objective of establishing a lasting interest in an enterprise that is resident in one economy other than that of the direct investor. The direct or indirect ownership of 10 percent or more of the voting power of an enterprise is evidence of such a relationship. Direct investment enterprises are corporations (or their subsidiaries) or they may be quasi-corporations.²² FDI encompasses direct investment positions (debt and equity) and direct investment financial flows (debt and equity).

Legal promotion of FDI has been the foundation of international trade and monetary policy for three-quarters of a century. The 1944 Bretton Woods agreements were designed to rebuild the international economic system after World War II, including regulation of the international monetary system, sovereign access to capital (through the establishment of the IMF and IBRD—the forerunner of the World Bank), and elimination of trade warfare. The 1944 Articles of Agreement of the International Bank for Reconstruction and Development (IBRD) recognized that a purpose for the bank was to promote “private foreign investment”

²⁰ The OECD has tracked FDI trends for all member states since 1983 so that states had a reliable way of measuring FDI and reporting on country specific barriers to FDI

²¹ Direct investors can be individuals, a group of business-related individuals, an incorporated or unincorporated enterprise, a public or private enterprise, a consortium of related enterprises, a government body, estate or any single combination of the preceding.

²² According to the OECD Benchmark Document a quasi-corporation is an unincorporated business that operates as if it were an entity separate from its owners including branches, land ownership, partnerships (LLCs and general), trusts, and resident portions of multi-territory enterprises (branch office).

in the reconstruction and development of the economies that were destroyed or disrupted by World War II and to promote (Article, cl. (iii)) “long term balanced growth and equilibrium in balances of payments by encouraging international investment for...development”[68]. These basic principles were carried forward in the GATT/WTO system. In the World Trade Organization (WTO), foreign investment issues are dealt with in a number of WTO agreements²³ that, in general terms, assure entry and equal treatment of foreign enterprises, the national treatment of foreign enterprises, and the protection of intellectual property rights [70]. Finally, FDI is extensively dealt with in bilateral trade and investment agreements. For example, Chapter 5 of the North American Free Trade Agreement (NAFTA) states in that each party shall accord to investors of another party:

treatment no less favorable than it accords to its own investors in respect to the establishment, acquisition, expansion, management, conduct, operation and sale or other disposition of investments[71] and ...fair and equitable treatment and full protection and security [72]

NAFTA and most other bilateral trade and investment agreements do allow states to establish restrictions on direct investments to protect national security and certain specified strategic industries [73].²⁴ In the case of Mexico (a NAFTA member), the government can ban private equity investment in certain types of projects or condition market access on passive financial participation with a Mexican entity. Only passive investment (with a Mexican partner) is allowed in the areas of petroleum; basic petrochemicals; electricity generation or transmission; nuclear power; satellite communications, telegraph and radiotelegraphic services; postal and railroads; issuance of coins and currency; and the control of ports, airports and heliports [75]. Canada and the United States have made similar reservations to the NAFTA treaty to protect their domestic industries in specific fields [77]. However, neither NAFTA nor other free trade agreements include much discussion about how FDI is to be regulated once it is determined that it is not from an industrial sector that is reserved for nationals. “National treatment” means that a foreign entity can invest or “set up shop” in another party’s country and be subject to the same rules as other legal entities within that country. NAFTA does allow parties to establish measures—including environmental measures—to ensure compliance with local laws and regulations, protect human health or safety, or to conserve national resources, but those measures cannot be used as a method to exclude their market entry [78].

Past Criticisms of Chinese FDI in Developing Countries

While FDI is generally encouraged, there are instances where FDI can —and does— go bad. A careful reading of the Bretton Woods language supporting FDI is that direct investments are encouraged to promote capital flows to areas in need of funds for development. Such capital flows are regarded as positive so long as the investor and the receiver derive mutual benefit and that the investor respects the sovereignty and domestic laws of the receiver. But, there have been cases in which FDI is not benign. For better or worse, China’s recent

²³ The General Agreement on Trade in Services (GATS), the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), and the plurilateral Agreement on Government Procurement [69]. WTO policy continues to support FDI because it assures efficient movements of capital, reduction of trade barriers, promotes economic growth in underserved areas, stimulates competition and efficiency in the world economy, and helps to increase the efficiency by which the world’s scarce resources are used.

²⁴ Under Mexico’s 1993 Foreign Investment Law, there are still exceptions to the rule of national treatment in so-called strategic industries including petroleum, basic petrochemicals, the generation of electricity and nuclear energy, radioactive materials, telegraph and radiotelegraphy, and the control and surveillance of ports, airports and heliports. NAFTA Article 1108 and Annexes III and IV contain exceptions to Most Favored Nation Treatment in specified industrial sectors [74-76].

FDI activities in the Arctic are significant in overall dollar value, and could be larger than any other country's Arctic FDI. They have also drawn the greatest amount of attention in the press and in academic circles. For that reason, they will be the focus of this analysis. Although this paper focuses on specific Chinese activities, the underlying analysis and policy recommendations are intended to be universal.

In *“By All Means Necessary”*, Elizabeth Economy and Michael Levi of the Council on Foreign Relations; chronicle Chinese investment in South America, Asia, and Africa to obtain access to raw materials to fuel China's economic expansion [79]. In most cases, the FDI that is being conducted by China is perfectly legal. It is worth noting that it is not appropriate to restrict these observations to China alone, since investment capital—regardless of its country of origin—will frequently move to the venue where it can help its owners earn the greatest return on investment and otherwise meet their corporate objectives. Economy and Levi have prepared a dossier of some of the negative impacts of Chinese FDI.

The book documents two types of externalities from FDI: impacts that do not violate any particular local laws but have a negative impact, and those that entail a disregard of local environmental and labor standards. Regarding negative impacts that do not violate express laws and policies, Economy and Levi cite these examples:

- A Zambian minister of trade favored investment by China in local industry because the “World Bank can't outbid the Chinese,” and Chinese investments do not have the same sort of political strings that are present in World Bank lending [79]. Those “strings” are important since they help developing countries to adopt modern labor, accounting, and environmental protection principles.
- Chinese trade and investment in rare earth elements (REE) mining and development will potentially enable China to control worldwide supply of these important elements that have ubiquitous uses in hybrid and electric cars, wind turbines, guided missiles, smart phones and other technologies [79].
- Chinese direct investment of large amounts of cash in certain developing countries has led to institutional corruption and tax evasion in the receiving country [79].
- Chinese investors seek to use Chinese labor to the maximum extent possible rather than enter into ventures with local firms and train local workers²⁵.
- Large Chinese real estate and agricultural purchases in Argentina and Africa have led to extensive clear cutting of timber and the clearing of land for agriculture, causing negative environmental impacts and destruction of small-scale farming [79].
- Many Chinese investments abroad have gone bankrupt or failed to make a profit, creating all sorts of difficulties for the host country if or when the money dries up. Even though countries like the fact that there are frequently few strings associated with Chinese FDI, and a minimum of red tape, there are no measures in place to “securitize” the projects to ensure their long success. Similarly, many of these deals are based on personal relationships with individuals in power rather than the local business community. This helps to keep elites—often corrupt—in power and makes these states more resistant to reform [79].

²⁵ Economy quotes one Chinese Ministry of Foreign Affairs official who explains that the motivating factor for China importing Chinese labor into Africa is that such labor will “work seven days per week on longer shifts at lower pay. The official also justified this practice because African workers “have unions,” “they want to go to church,” “they refuse to work on weekends,” and “they like to sing and dance” [79].

In addition to some of the systemic issues associated with “legal” FDI, Economy and Levi note that Chinese FDI in the locations that were studied resulted in considerable violations of local labor and environmental standards. China frequently secures political concessions to “look the other way on environmental and safety regulations and, when they do hire, pay local workers considerably less than rates paid by multinational companies” [79]. In one case involving Shougang Group’s acquisition of the Marcona mines in Peru, Economy and Levi reported the mineworkers were among the lowest paid in Peru and in 2010, workers struck on five separate occasions to protest low wages and poor working conditions (see figure

Figure 13. Marcona Copper Mine, Peru, credit: Geoeye-1, Digital Globe



13) [79]. In Zambia, mineworkers gravitate toward mines owned by Canadian and Australian companies but avoid mines owned by Indian or Chinese firms because of unsafe working conditions and low-wages [79]. Finally, Economy and Levi cites cases in oil and gas extraction in Zambia, Ghana, and Mozambique, where “environmental protection has taken a back seat to rapid economic development” because Chinese investors have used bribery and offers of investment to ignore environmental and safety standards.

Perhaps one of the most extreme examples of the lengths to which Chinese firms will go to secure access to resources can be observed in the Sudanese oil industry during the Darfur conflict. Chinese oil companies and investors have been involved in Sudan since exploration started in 1980. As demand for resources, particularly energy, boomed in China, Beijing went looking beyond its borders to meet the demand that domestic resources could not satisfy. Because oil prices were high and global competition was fierce, Chinese firms were forced to look for partners in regions that were deemed too risky by the majority of Western firms. Under these conditions, Beijing partnered with Khartoum, where agreements on economic, technical, scientific, and cultural cooperation have existed since the 1960s. By the 1990s, Sudan was benefiting from numerous interest-free loans for building up infrastructure and agriculture, particularly for rice products that were ultimately exported to China. Since 2000, much of this funding has shifted from infrastructure and agriculture to oil extraction. It is estimated that the China National Petroleum Company has invested more than \$15 billion in Sudan and owns about half of Sudan’s oil refineries [80]. When South Sudan became independent in 2005, more than 75 percent of the oil resources that China had invested in were located in South Sudan. During the civil war that concluded with the separation of Sudan and South Sudan, Beijing played an active role through various venues to divert attention from the conflict. At the United Nations, China threatened to veto a Security Council Resolution that would have initiated an oil embargo on Sudan. China frequently used its influence at the UN Security Council to dilute language of resolutions regarding the

Darfur conflict and frequently abstained from voting [81]. While Beijing refused calls from the African Union and the United Nations to send peacekeeping forces to Darfur, China did send 400 soldiers to guard the oil wells in Sudan. The line between Beijing's oil interests and its role in Sudan is clear. Results from an analysis by Phillip Manyok demonstrates a clear correlation between military arms sales from China to Khartoum—despite an UN arms embargo—and oil exports from Khartoum to China [82]. This further illustrates the lengths that Beijing was willing to go to in order to protect its Sudanese oil interests.

Recent Chinese investment in Djibouti to develop China's first commercial and naval port in Africa suggest that China's economic interests have shifted from "primarily resource extraction to feed its factories to direct investment and money-lending for infrastructure projects" [83]. These infrastructure projects have seen some benefits for local labor, but mostly the benefits are employment for Chinese engineers and Chinese construction companies. And reports persist of corrupt businessmen taking advantage of weak laws and enforcement mechanisms [83].

It is unlikely that what has happened in parts of South America and Africa would play out exactly the same way in the Arctic, where countries are more prosperous and have more robust governance structures. Still, it would be foolhardy to think that outside oil and gas and mining investors will not actively seek—and obtain—environmental and safety concessions from landowners and licensing officials in countries that are thirsty for outside capital. Also, given the remoteness of many of the drilling and mining sites in the Arctic, there is an element of "out of sight, out of mind" when it comes to the ability of the national regulatory systems of all of the Arctic states to effectively monitor and regulate inbound investments or enterprises that are foreign owned and operated.

Given the relatively small and dispersed population of the Arctic, the potential use of imported labor also becomes a concern. In South America and Africa, imported staff occupy most of the management positions and receive more compensation than local labor. Often, Chinese imported laborers make their relocation permanent. All told, more than "one million Chinese citizens reside in Africa and... give Beijing a vested interest in... many African nations" [83].

International Standards

The 2016 OECD Code of Liberalization of Capital Movements is the only multilateral framework in force that addresses international FDI flows. Under the code, countries bind themselves to agreed measures liberalizing FDI and other capital movements [84]. Moreover, under the OECD Declaration on International Investment and Multinational Enterprises, the 35 OECD countries and 13 non-OECD adhering countries have committed to accord "national treatment" to foreign enterprises operating in their territories and to encourage their multinational enterprises to engage in responsible business conduct in a variety of areas.

The United Nations Conference on Trade and Development (UNCTAD) is charged with tracking global FDI trends and assisting developing countries to formulate plans to accommodate FDI that is most beneficial to their long-term development [85]. Among other things, UNCTAD is charged with helping developing countries find the "sweet spot" that enables them to realize the benefits of a globalized economy while at the

same time equipping these countries to find the correct balance that will foster their sustainable development. Some of the relevant goals²⁶ in this overall process include:

- Encouraging countries to diversify their economies in order to make them less dependent on commodities
- Limiting countries' exposure to financial volatility, which is endemic in commodity-based economies, and to debt
- Seeking investment that is development friendly and promotes entrepreneurship and innovation
- Helping local firms to move up the value chain
- Adapting to climate change and using natural resources efficiently [86]

There is no overarching policy document such as the UN Universal Declaration of Human Rights that articulates exactly what standards states and other governance bodies should follow when assessing FDI [87]. The closest thing to a universal declaration is the 2008 Accra Accord, which was intended to establish some benchmarks in terms of the role of investment in sustainable development and the “centrality of trade and development in the world economy and in meeting the challenges of globalization” [88]. This includes ensuring that countries—and, we would argue, semi-autonomous regions like tribal areas—that are “structurally weak and vulnerable small economies” do not suffer the ill effects of globalization. As relates to FDI, the Accord states that countries, as well as regional and international organizations, need “active and well-sequenced policies to maximize the development benefits of investment flows” to include generation of employment, transfers of technology and know-how, and access to international markets.²⁷ The Accra Accord also notes that properly functioning trade and investments flows will: be transparent and governed by a predictable and effective regulatory regime, be well aligned market-oriented policies, and demonstrate an overall commitment to a “just and democratic” society. The Accord states that despite many positive benefits from FDI, potential risks include:

Crowding-out local investments, anti-competitive practices, transfer pricing, and environmental and social impacts. Countries should therefore consider both the quality and quantity of FDI [89]

The policies cited above also promote regional economic diversification and over reliance upon commodity based economic growth. This has direct applicability to the Arctic since many of the local communities depend on development and export of a single commodity; setting the stage for so-called “Dutch Disease,” a term that describes the process by which the rapid influx of wealth due to some natural resource causes an economy to become less diversified as domestic industries become less competitive internationally. Thomas Friedman writes, “Dependence on natural resources always skews a country's politics, investments, and educational priorities, so that everything revolves around who controls the oil tap and who gets how much from it—not how to compete, innovate and produce real products for real markets” [90]. The issue of “Dutch Disease” in the Arctic has been explored in academic and media circles as relates to the economies of Greenland and parts

²⁶ This is derived from UNCTAD's mission to help lift countries to adapt to globalization.

²⁷ See, Articles 11 and 13. Article 13 of the Accra Accord elaborates that FDI that promotes sustainable development is that which includes investments in infrastructure, development of human resources, and strengthening of the host nation's institutional capacities.

of Canada [91-93]. An OECD paper noted evidence of this in the Province of Newfoundland and Labrador, specifically a “decline in the level of activity of the functioning Public Accounts Committee and the growing influence of the province’s energy corporation in provincial politics and its lack of public accountability” [93]. Given this problem, we would argue that inbound FDI should also be assessed from the standpoint of whether it will foster diversification of the recipient’s economy or create a “Dutch Disease” condition.

Security Controls on FDI Under International Trade Law

Many countries have restrictions on FDI in key industries that are related to food production, broadcasting, nuclear energy, defense production, and natural resource extraction. As discussed in detail below, U.S. law restricting FDI is mostly focused on preserving the defense industrial base for U.S. national security needs and preventing potential adversaries from gaining access to technologies that could be used against U.S. forces. In the United States and many other countries, the concept of national security has been broadened to include such things as restricting access to certain dual-use technologies such as encryption, semiconductors and unmanned systems, as well as seaports and real estate in proximity to military bases.

From the standpoint of international trade law, national security controls on FDI are permissible. The legal support for most countries’ security controls can be traced back to Article 21 of the 1947 General Agreement on Tariffs and Trade (GATT), which provides that the various free trade commitments are subject to a nation’s “essential security interests” relating to “fissionable materials, war materials, or measures taken in times of war or emergency” [94]. Article 21 was carried forward in the “reissuance” of the GATT in 1994 but considerable criticisms have been voiced because there are no standards for what permissible national security situation could justify imposing trade or FDI restrictions. The 2016 OECD Code on the Liberalization of Capital Movements outlines a broader list of justifications for restricting FDI. For example, member states can take measures to restrict inbound FDI or other movements of capital for: (a) the maintenance of public order or the protection of public health, morals, and safety; (b) the protection of its essential security interests; and (c) the fulfillment of its obligations relating to international peace and security.²⁸

Other trade agreements have focused on barriers to the free flow of capital, emphasizing when it is wrong for a state to prohibit FDI rather than when is it wrong to permit it. When the WTO came into being in 1995, there were no special agreements that regulated trade and investment or addressed Article 21 of the GATT [95-96]. Rather, The Agreement on Trade-Related Investment Measures (TRIMs)—one of the four principal legal agreements of the WTO trade treaty—included the objective of eliminating trade-distorting measures [84].

Relevant Arctic Littoral State Regulations on FDI

All of the six Arctic states have concluded free trade agreements that are intended to implement the basic WTO and OECD norms that countries should not, except in specified areas, enact restrictions on FDI. Put another way, these bilateral trade agreements seek to grant inbound FDI and the enterprises that are created

²⁸ An example here would be an agreement between the United States and one or more NATO partners to establish a cooperative weapons development/deployment program rather than rely upon “free and open competition” to acquire the defense capability.

by FDI, “national treatment” or “most-favored-national treatment.” The United States, a party to both WTO and OECD, has 38 bilateral investment treaties that reciprocally grant most-favored-national treatment to investors from the other state when investing in the United States [97]. Other Arctic states are at various stages of free trade negotiations with China: Iceland has free trade agreements with China; Norway is now in the process of negotiating one; and Greenland appears to be in active discussions with China on various bilateral trade and investment matters [98-99].

Domestic Laws and Regulations

The legal and regulatory structures of the six Arctic states vary considerably. Some nations rigorously protect specified industries (defense or high technology) and others focus more ensuring the natural resources rely in domestic hands. Some states have a legal and regulatory climate which can be best described as laissez-faire and others like the U.S. and China intensely regulate inbound investments. The tables which follow summarize our analysis of the relevant laws and regulations. For comparative purposes, we have also included the laws and regulations (and an assessment thereof) of China. Table 4 is a summary of the key differences in the ways the Arctic states and China approach FDI. Table 5 provides a qualitative assessment of how these countries approach FDI in terms of whether FDI is welcome or not and whether the review processes are restrictive or not. A detailed explanation of each nation’s regulatory and legal system follows the tables.

The legal and regulatory structures of the six Arctic states vary considerably.

Table 4. Comparison of FDI Legislation

	Canada	Greenland	Iceland	Norway	Russia	United States	China
Review of National Security Connected Entities	Yes – including critical infrastructure—of “net benefit” to Canada	Only under General Danish Law. May not apply	Not addressed	No specific provisions found.	Yes – likely to be very strict	Yes, heavy emphasis – is the project “harmful” to US nat’l security.	No – off-limits if state-owned. Otherwise, mandatory review
Review of Mining/Minerals	Generally no except for uranium mines.	No clear restrictions except small-scale mining.	No special restrictions	Foreigners need a “concession” to operate a mine	Foreign entity can’t own >25%.	Yes, mining on leased public lands	Depends on mine type. Most prohibited
Oil and Gas Rules Review	Mostly managed through licensing	No restrictions	No restrictions if developed for local market. If for export, must notify.	No restrictions	Foreign entity can’t own >25%.	Yes. Plus restrictions on leases on public lands	No – off limits except in oil shale and coal bed gas.
Review of Raw Land Purchases	None – but some provinces regulate	No restrictions	No restrictions	No, but need concession for certain land uses (waterfalls, forestry, tilled land, mines)	Agricultural lands regulated.	None, unless near military base	No data
Need a local partner?	No	No. Can import labor if local labor insufficient.	Yes, for energy (geothermal), fishing or air transport.	No	Strongly encouraged	No	Yes for permitted mining
Sectors Off limits?	Telecommunications, uranium, banks, transport, and insurance	None	No.	None. But concessions needed for financial, postal services, hydropower, marine transport, fishing and alcohol sales.	Natural resources, media, defense, state owned industries plus misc. others dairy and vodka	Nuclear energy, brokerage firms, mass media, US flag vessels, federal banks	Large number of ventures on prohibited or restricted list. Many restrictions on agriculture, pharma, and large retailing
Clear Delegations of Authority to an Agency to Adjudicate an proposed FDI transaction?	Yes	No – under Greenland Law.	Yes	Yes....goes to specific Ministries.	In theory, yes	Yes	Yes, but relevant government agencies may lack actual power
Advance Notice by prospective purchaser Required?	Yes	No	Mostly no except for fisheries, energy, and air transport.	Similar to U.S. system. No per se requirement but gov’t can order divestiture	Yes	Not statutory but great risk if not done in advance	Yes
National Treatment Assured?	Yes- if under a FTA	Probably	Yes, if there is a FTA or part of EU	Yes	In theory, yes.	Yes	Only if government has approved the FDI

Mandatory Filing if foreign Government is purchaser?	Yes, for regulated areas. (oil sands a new area of inquiry).	No special provision found	No special provisions found	No special provision found	No special provision found.	Yes, under Exon-Florio	No specific provision
Filing Thresholds for review.	\$369m. for WTO members. Lesser sums for non-WTO members (depending on nature of control)	\$7 million under Danish Law	None found.	None except that 10% of voting stock in financial institutions triggers a review	Must file if involves strategic sector or >50% of voting stock	10% of voting stock	Done by sector....if on the Foreign Investment Catalogue, a request must be filed
Comments	Canada has only turned down three applicants under the Investment Canada Act process (started in 1985). Canada a major foreign mine owner.	Greenland Self Rule Act establishes Greenland (vs. Denmark) as responsible for natural resource development. Some overlap likely.		Norway has passed considerable legislation over the past 20 years to make Norway more accessible to FDI.		Critical infrastructure a new focus area. Ag. and Mass Media likely next.	A 2006 law introduced the concept of filing when a "controlling interest" is being proposed. That seems to be ignored in practice.

Source: See references [101-150] and the accompanying text and footnotes below.

Table 5. Assessment of Legislation

	Canada	Greenland	Iceland	Norway	Russia	United States	China
Clear Standards for Review	No	No	No	Yes	Yes, but no way to corroborate practices/standards	Yes	No – “national security” or harms “social interest” of PRC
Country policies tolerate or welcome FDI?	Welcomes	Aggressively Welcomes	Welcomes	Welcomes	Aggressively Welcomes	Tolerates	Heavily restricts
Clear Evaluative Criteria	No	No	No	Yes	Yes	Yes	Yes but quite broad.
Transparent Decisions	No	No- but so few cases, can't extrapolate	No	No data	No	No	No
Environmental protection safeguards on mines/oil and gas?	Very strict for oil and gas. For mining, Environmental Review Panels gaining favor	Parliament Acts 4 and 7 do require environmental planning and worker safety plans.	Quite positive and advanced.	Done via the licensing process.	Done as conditions of an oil and gas or mining (mineral) license. Plus must do an Env. Impact Statement. Enforceability unknown.	Yes	Unknown
Overall Assessment	Moderate controls.	Greenland actively courts FDI. Almost no restrictions. Decisions probably ad hoc.	The sparse legal coverage is likely due to the fact that this has not been an issue before	Norway welcomes FDI and has few restrictions. But, if a proposed activity requires a concession, that process is rigorous.	Russia actively courts foreign investments but restricts outright foreign ownership in a wide variety of key areas.	Strict.	China is still mostly closed to foreign investment – except for a very few sectors where they want access to inbound technology.

Source: See references [101-150] and the accompanying text and footnotes below.

United States

The United States has a mixture of statutes and regulations which impose controls or, in some cases, ban certain types of foreign direct investment. The U.S. has had administrative procedures in effect since 1975, when President Gerald Ford established the interagency Committee on Foreign Investment in the United States (CFIUS); however, the process of reviewing inbound FDI wasn't codified in statute until 1988 when Congress enacted the Exon-Florio Amendment to Section 721 of the Defense Production Act of 1950 [100-101]. The CFIUS process has been the subject of significant changes and now includes numerous improvements in internal CFIUS procedures.²⁹

The U.S. law restricting FDI is mostly focused on preserving the defense industrial base for U.S. national security needs³⁰ and preventing potential adversaries from gaining access to technologies that could be used against U.S. forces. The definition of national security was designed to be read in a broad and flexible manner, and the regulations create the presumption that foreign control of 10 percent of a target company's equity is the acquisition of control [102]. There have been numerous amendments to the CFIUS process, including a 1992 amendment requiring a CFIUS investigation of any proposed takeover in which the acquirer is acting on behalf of a foreign government and increases in the membership of the CFIUS Committee to include the National Security Advisor and the Department of Homeland Security [103-105].

In 2007 Congress passed the Foreign Investment and National Security Act of 2007, which reshuffled the membership of CFIUS—removing White House officials—and sought to reverse the “decision” by CFIUS of the Dubai Ports World transaction. Most importantly, it required CFIUS to examine proposed purchases of U.S. critical infrastructure, energy suppliers, or critical technologies [106]. The law also required CFIUS to look beyond the terms of the deal to examine the foreign-investor country's compliance with counterterrorism and non-proliferation norms[107]. Under the authority of this statute, President Obama set aside a proposed placement of wind turbines by Ralls Corporation, owned by the Chinese Sany Group, near a naval weapons test facility in 2012. Later in 2016, the Obama Administration blocked the sale of a \$2.6 billion U.S. based subsidiary of German semiconductor company Aixtron, which is involved in the manufacture of gallium nitride chips, to a Chinese investment fund [107-108].

These examples strongly suggest that United States controls over FDI have become increasingly stringent. Controlling transactions are now closely monitored. The addition of critical infrastructure and to the scope of CFIUS review and the addition of the Department of Homeland Security to the CFIUS Committee has, at least during the Obama administration, resulted in these quite aggressive actions vis-à-vis Chinese

²⁹ The improvements include the enactment of FINSA in July 2007, amendment of Executive Order 11858 in January 2008, the revision of the CFIUS regulations in November 2008, and publication of guidance on CFIUS's national security considerations in December 2008.

³⁰ U.S. law does not define “national security” but sets out certain factors, including the capacity and capability of domestic production to meet national defense requirements that the President or his designee may consider in determining the effects of a foreign acquisition on national security. Restrictions on FDI also exist in energy, mining, broadcasting, and fisheries. The Atomic Energy Act of 1954, for example, prohibits the issuance of licenses to engage in operations involving the use of atomic energy to any entity that is owned or controlled by aliens, foreign corporations, or foreign governments. The Mineral Leasing Act of 1920 makes public lands available for leasing only to citizens of the United States, or corporations organized under the laws of the United States.

investment efforts. Such actions never would have occurred 25 years ago, when CFIUS approached proposed transactions in the aviation and technology sectors in a very laissez-faire manner [109].

Beyond Exxon-Florio, there are other federal statutes which restrict foreign persons or entities from owning U.S. flag merchant vessels or brokerage houses; from having a controlling interest in mass media companies or federally chartered banks; or from operating aircraft in U.S. commercial service or electricity generation facilities [110]. Land is not off limits to foreign purchase except to the extent that it affects U.S. critical infrastructure or productive capacity. In addition to national legislation controlling foreign investments in the United States, there is also a plethora of statutory restrictions within the 50 states on foreign persons wanting to obtain certain licenses; such as a commercial fishing licenses [110].

As this pertains to the Arctic, the combination of statutory requirements of advance reporting of transactions and recent behavior by CFIUS suggests that the United States is very protective of its infrastructure and is not a good target for uncontrolled FDI. It is similarly beyond dispute that the United States has extensive licensing regulations for those in the oil and gas and mining sectors, including numerous environmental reviews by a variety of federal and state entities; a system of fines and penalties, capital and bonding requirements; and access to a legal system that empowers persons who suffer damage as a result of projects gone bad [111-112].

Canada

While the WTO agreements do not address FDI in a comprehensive manner, the general policy of Canada is to encourage FDI and national treatment for inbound investments. The WTO also sanctions the establishment of bilateral and regional free trade agreements. The largest such free trade agreement is the North American Free Trade Agreement, which includes Canada, the United States, and Mexico. According to the Congressional Research Service, total FDI from the United States into Canada was over \$350 billion in 2015 [71, 113]. Canada has many other free trade agreements³¹ that extends national treatment to inbound FDI; including the Trans-Pacific Partnership. In 2014, Canada concluded an agreement with China concerning the “Promotion and Reciprocal Protection of Investments,” which reciprocally grants national treatment (Article 6) in both financial products and investments in enterprises and commits each country (Article 3) to “encourage investors” to make investments in the other’s country [115-116].³² The only real restriction on foreign investors establishing a business (outside of certain restricted industries) is that they provide notice within 30 days of the business’s establishment. There are no restrictions on foreign purchasers acquiring Canadian land, either by purchase or lease, but development restrictions may be imposed [117].³³

Canada has an FDI process, but its review processes seem a bit less prescriptive than the U.S. CFIUS process. Canada’s Investment Canada Act (ICA) is the primary law, although there are separate legal provisions restricting foreign investments in telecommunications, banking, transportation, uranium, and insurance companies [117]. The Investment Canada Act requires that non-Canadians purchasing existing businesses,

³¹ Canada has 88 trade and investment agreements of various types. Canada has also signed the Trans-Pacific Partnership Agreement (TPP), which includes, for example, Australia, Japan, Malaysia, Singapore, New Zealand, and Vietnam [114].

³² Of note, there has been recent legislation to increase the allowable amount of foreign investment in these sectors. The maximum foreign stake in the transport sector was increased by 29 percent to 49 percent.

³³ Major amendments to the Investment Canada Act were made on March 13, 2015 pertaining to the review process

or establishing new ones, to seek review and approval when a proposed acquisition could be “injurious to national security.” Those reviews are normally conducted by the Minister of Industry, who is responsible under Part IV.1 of the ICA (as amended) for consulting with all relevant agencies and providing a review within 45 days to the Governor in General in Council for final action [118]. Direct investors are required to provide notice to the relevant government office if the dollar value exceeds a certain limit, or if certain sectors (cultural business and media) are implicated, or state owned industries are involved as a purchaser [119]. Canada’s guidelines on National Security Reviews list investments in Canadian defense industries and critical infrastructure as among those categories of investments subject to review [120]. Under Section 20 of the ICA, the Minister of Industry is required to assess whether the FDI will have a “net benefit” to Canada taking into account both socioeconomic and security considerations. If the ministry makes a finding there is no issue with the proposed investment, it notifies the Federal Cabinet of that action and the Cabinet has 15 days to set aside that finding. If there is a finding that national security is implicated or that “net benefits” to Canada are not present, the National Cabinet has 45 days to assess the matter and either accept or reject the proposed investment or order mitigation measures.

Since the cases are filed and reviewed on a confidential basis, there is not much data on how this process is working. However, in 2004, China Minmetals (a state-owned enterprise) sought to acquire Noranda, which was then Canada’s largest mining company and the world’s third largest zinc producer [116]. Even though the case did not result in a formal order by the Minister of Industry the purchase was ultimately abandoned because of a public outcry. This type of case would have likely gone through a full national security review under the ICA’s new national security regulations, which, like the recent expansion of the U.S. CFIUS rules, require a review when defense industries or critical infrastructure are implicated. Canada is sending mixed messages when it comes to Chinese investment, including those by state-owned enterprises. Through various public pronouncements and its recent conclusion of the free trade agreement, Canada has signaled that it welcomes Chinese investment. The impact of FDI on tribal areas remains a mystery (due to lack of data) and individual provinces can impose conditions on purchases of land [121]. Canada is a very attractive country for international mining companies because, apart from uranium, there are no special restrictions on foreign ownership of mines [122-123].

As a final matter, Canada has an extensive regulatory licensing network for both the oil and gas and mineral sectors. For example, the National Energy Board (NEB) has plenary authority over oil and gas production in the frontier areas offshore, and shares jurisdiction with the Canadian Environmental Assessment Agency and the Department of Fisheries and Oceans [124]. An environmental impact assessment is also required under Canadian law for new onshore or offshore oil and gas, and flaring and venting are strictly limited. Also, the NEB has the authority to impose conditions on wells, pipelines, and other facilities to ensure that the licensee has sufficient assets to fund remediation in the event of an incident or for decommissioning. If necessary, the NEB can require additional security deposits to be posted if the corporate assets are insufficient. While the NEB and other regulatory bodies have been criticized for specific cases in the media, there is nothing in the literature to suggest that Canada does not have a responsible and effective licensing system in place to ensure that licensees are properly capitalized and can pay for their mistakes and the costs of decommissioning. A 2002 OECD report on Canada’s environmental program concluded that Canada has made significant improvements in its environmental policies and has “comprehensive compliance and enforcement policies and strong public reporting mechanisms” [125].

Russia

President Vladimir Putin told foreign investors in June 2015, “Russia always wants to be an open and friendly country to all those who want to run their business here” [126]. Russia’s primary approach to attracting foreign direct investment has been to pass a variety of measures intended to induce companies to localize their production in Russia [126]. As a consequence, levels of FDI have increased [127]. Russia has various preferences for Russian-made products and those made by its state-owned enterprises (SOE), but Russia does allow foreign companies to register in Russia, and it established the Russian Direct Investment Fund (RDIF) in 2012 to provide equity capital to local businesses seeking foreign investors in their enterprises [128].

Russia’s principal law for regulating inbound FDI is the 2008 Strategic Sectors Law (No. FZ-57).³⁴ The law is quite clear and well structured. It regulates two types of foreign investors: private investors and public foreign investors including foreign SOEs [129]. Article 6 of the Strategic Sectors Law regulates 45 types of activities that have been deemed of strategic importance. They generally fall into four broad groups: natural resources, defense, media, and government monopolies in communication and railways. There are also some unusual restrictions on investments in the manufacturing of “dairy, pharmaceuticals, juices, media/broadcasting, medical devices and vodka” [129]. The law contains special restrictions on foreign purchases of subsoil strategic entities contained on an official list and, in general, imposes a cap on total foreign ownership of entities on the Strategic Sectors list to 25 percent [130]. The law also requires prior approval for any “control” transactions, defined as greater than 50-percent control—25 percent in the case of a foreign government or SOE investor—of the voting stock, board membership, or management. The Russian Federal Anti-Monopoly Service (FAS) is responsible for administering the law, but if the FAS feels that a case requires high-level review, the matter is elevated to the Commission on Control over Foreign Investments, headed by the Prime Minister. The applications are quite detailed, but the initial application can be approved after a few weeks if only modest outside purchases of a controlling interest is proposed: less than 5 percent in the case of a Subsoil Strategic Entity, 25 percent in other cases. Other routine cases are decided by the FAS—with advice from relevant agencies—in about two to three months. Commission cases can take an additional month or two.

The Russian law is a model of clarity, but most legal analysts criticize the implementation of the law, because the decisions do not seem to follow predictable patterns [129]. Also, most foreigners trying to do business in Russia complain of graft and corruption and difficulty navigating the approval process.³⁵ Lastly, the U.S. Department of State describes the FDI climate in Russia as subject to “political interference” and in those cases where disputes arise, the mechanism is described as “non-transparent and unpredictable” [126].

It should be finally noted that Russia does have a licensing scheme for extraction industries where, in theory, licenses are awarded on the basis of competitive auction. For example, the oil and gas sector is governed by the Federal Law on Subsoil of February 21, 1996, and is under the jurisdiction of three Russian ministries. All licensees must adhere to production targets and are subject to significant penalties if they violate those targets or

³⁴ Full title: “On the Procedure of Making Foreign Investments in Companies of Strategic Importance for National Defense and State Security”

³⁵ William Pomeranz reported that in February 2009, a Russian newspaper reported that the FAS had received 45 applications and that only two cases had been approved [127]. The U.S. International Trade Administration, in contrast, reported that as of March 2016, that 195 applications were reviewed by the Commission and 183 were approved (with conditions) and 12 rejected. About 38 percent of the initial applications were decided by the FAS as outside of the scope of their regulation and 11 percent were withdrawn by the purchasers.

other license terms or environmental requirements [131].³⁶ Licensees for all extractive industries are expected to keep environmental contamination to specified limits and provide for the costs of decommissioning. They must also prepare an independent environmental impact statement pursuant to Federal Laws 7-FZ and 174-FZ of 2001 and 1995, respectively. There are no specific requirements for bonding to ensure availability of sufficient funds to pay for the cleanup and remediation of sites when extractive facilities are decommissioned.

The laws on the book are state-of-the-art in terms of their content, but there is not much evidence regarding the effectiveness of the agencies that implement those regulations and whether the regulatory entities enjoy any real power. The closest thing to an authoritative statement came from a 2006 OECD report:

A very intense extraction of mineral resources, primarily hydrocarbons, has been accompanied by a decrease in the level of protection of subsoil, a widening number of offences and corruption, lacking access to information on the use of mineral resources and distribution of profits, etc. The regulatory framework is subject to frequent change and, therefore, the costs of environmental compliance are often unpredictable thus increasing the investment risks [132].

Iceland

Iceland's FDI policies are governed by its obligation under the WTO and in its domestic legislation. Iceland has been a member of the WTO since 1995. In its last internal review of its WTO obligation in 2012, Iceland certified that it had been fully compliant with its WTO obligations and noted its membership in the European Free Trade Association/European Economic Area. It also asserted that it offers a favorable policy on FDI and few restrictions on foreign ownership [133]. In addition, Iceland has entered into free trade agreements (FTAs) with Denmark and Greenland. Iceland concluded an FTA with China in 2013 [134]. The free trade agreement with China reaffirms the rights of the parties—established in an earlier agreement—to make direct investments in the other country and allows for free movements of persons from one country to the other to provide a services (Annex VIII).

The major law governing foreign investment is Act No. 34/991 (1996) on Investment by Non-residents in Business Enterprises, which extends national treatment to non-residents of the European Economic Area, including U.S. citizens [135]. Foreign investment in the fisheries sector (Article 4) and air transport sectors remains restricted, especially when it comes to investing in fishing companies that possess transferable quotas. Article 4 states that only Icelandic citizens are permitted to own energy exploration rights and geothermal energy. Investments by foreign states—presumably to include SOEs—require approval from the Ministry of Commerce. The law affirmatively grants the right to foreign entities to purchase and hold title to Icelandic real estate (Article 4) associated with a business enterprise. Non-residents may also operate a business in Iceland (Article 6); however, those with “unlimited liability” require approval by the Ministry of Commerce. All foreign entities must notify the Ministry of Commerce when a “contract or decision” to invest is made. Iceland's 1996 Act establishes a five-person committee to monitor and enforce the provisions in Icelandic law noted above concerning inbound investments in the aviation, fishing, or energy sector.

³⁶ Extractive industries are considered Hazardous Activities under Russian Law and are covered by three main regulations: (a) Safety Regulations for Oil and Gas Industry, adopted by Rostekhnadzor in 2013; (b) Safety Regulations in Exploration and Extraction, adopted by Gosgortekhnadzor in 2003; and (c) Industrial Safety Regulations for Oil Processing Works, adopted by Gosgortekhnadzor in 2003.

According to the U.S. Department of State, “There is broad recognition within the Icelandic government that foreign direct investment (FDI) will be a key contributor to the country’s economic revival after the 2008 financial collapse” [136].³⁷ Iceland’s growing tourism sector is expected to supply ample investment opportunities, but much work remains to identify investment-ready projects. According to Santander Trade Portal, Iceland is especially anxious for foreign investment; has a low corporate tax rate; very few restrictions on direct investment; and a very simple process for establishing an enterprise [137].

Iceland’s rules on development seem well-crafted. According to Iceland’s Orkustofnun, the National Energy Authority, exploration for oil and gas in Icelandic waters is regulated by Act No. 13/2001 on prospecting, exploration, and production of hydrocarbons — the Hydrocarbons Act [138]. The Act applies to the Icelandic territorial sea, exclusive economic zone, and the Icelandic continental shelf. Petroleum activities are subject to general Icelandic laws and regulations on taxation, environmental protection, health and safety. As an example, the Icelandic Regulation No. 884/2011 states that exploration and production licensees will only receive an authorization to engage in prospecting if they “have the requisite expertise, experience and financial capacity to undertake these activities” [139]. This includes the tender of an insurance policy sufficient to cover possible losses or damage cause by the activities of the licensee, safety plans, and a plan for the decommissioning of offshore facilities (Article 38). Despite the fact that the laws appear to be well-crafted and comprehensive, there is very little publicly available information on how well these systems are working.

Denmark/Greenland

Assessing the state of laws governing both FDI and development in Greenland is difficult because the Danish central government purports to assert jurisdiction over FDI, yet the Act on Greenland Self-Government of 2009 states that the Greenland Self-Government Authority (Naalakkersuisut) is empowered to exercise “legislative and executive power” over most issues that pertain to the extractive industries and marine environmental protection [140]. Article 7 of the Act stipulates that revenues from mineral resources in Greenland accrue to the Greenland Self-Government authorities. Interestingly, Chapter 4 of the Act states that the Naalakkersuisut may negotiate and conclude agreements under international law with foreign states and international organizations that exclusively concern Greenland. This would appear to include any agreements respecting access to and use of any natural resources and the regulation of those activities. But the government in Copenhagen does retain the right to manage those international affairs relating to “defense and security policy,” which, as has been seen in other states, can include the regulation of foreign FDI in certain industries and sectors.

According to the U.S. Embassy in Denmark, foreign companies are able to establish an enterprise through either a subsidiary, registered affiliate, or a taxable entity. These establishment costs are very modest, and foreign entities can also obtain exploration licenses with few regulatory requirements other than the payment of tax like a regular company [141]. So far as can be determined, Greenland does not have a process for reviewing foreign acquisitions of either land or enterprises, although, under the Danish Competition Act,

³⁷ One can reasonably question the accuracy of this observation, since Michael Lewis’ 2011 book *Boomerang* — on the causes of the 2008 financial collapse in Iceland (and the failure of its banks) — lays a good portion of the blame on an unsustainable and a highly leveraged financial system in comparison to Iceland’s economy. Lewis also identifies that much of the collapse was caused by foreign lenders that offered Icelandic entities unlimited credit. Obviously, there are differences between equity and debt financing but the point remains that plentiful outside money/credit was a major problem for Iceland and lead to the collapse of its economy.

Danish competition authorities require notification of a merger if the “combined turnover value” in the transaction exceeds \$7 million. In 2012, the Greenland Parliament passed the controversial Large Scale Projects Act which allows for the importation of foreign labor when local labor sources are insufficient [141].

Greenland has previously not been very accessible for either mining or hydrocarbon activities because it was covered by icepack and was complicated by extreme climatic conditions and very short drilling windows. According to the U.S. Embassy, things are changing. “In the mineral sector, two mines (ruby and anorthosite respectively) are expected to come online in 2016, while two other companies have applied for permission to extract REE in southern Greenland, in one case combined with extraction of uranium. The current government is also maintaining the previous government’s relaxation of a ban on uranium mining... however, the issue of uranium mining in Greenland is still contentious” [141].

Greenland’s Mineral Resources Act of 2009 establishes a regulatory apparatus for those wishing to engage in oil and gas or mining activities[142]. Licensees must comply with Greenland Parliament Act No. 4 (June 4, 2012) and Parliament Act No. 7 (December 7, 2009), which require licensees to protect mineworker safety and social sustainability and have an oil spill preparedness and response plan. Greenland does protect small-scale mining operations from foreign investment, but the recent “open door” tenders in the oil and gas field do not contain any restrictions that prevent foreign entities from bidding [143]. Recent regulations by the Mineral License and Safety Authority establish new requirements for entities wishing to engage in exploratory activities, including the requirement for environmental impact assessments. Obtaining a true gauge of the effectiveness of Greenland’s environmental protection and worker safety protocols is difficult because there are so few reported cases and the small sample size restricts our ability to make generalizations about the effectiveness of these regulations.

Norway

Norway is a very modern, developed state with one of the highest average per capita incomes in the world. It is an easy place to do business according to the World Bank. Norway welcomes FDI as a general matter under principles of reciprocity, and as a member of the European Economic Area (it is not part of the EU). Norway has liberalized its standards to conform to European Union standards of free access and national treatment [144-145]. According to the U.S. Department of State, “foreign oil companies report no discrimination” in the award of petroleum exploration and development blocks in Norway [145]. The OECD has similarly reported that Norway has a favorable track record on welcoming inbound FDI [146]. Norway does maintain traditional controls on industries monopolized by the government, including postal services, railways, hydropower, and the retail sale of alcohol [147]. There are no prohibitions on foreign ownership of Norwegian real estate, but foreign companies have to obtain a “concession” to purchase forest land, mines, tilled lands, and waterfalls [147].

Norway’s Ministry of Petroleum and Energy has responsibility under Act No. 16 over the foreign acquisition of mines, waterfalls—for hydroelectric generation purposes—and real estate [148]. Under the Act, all mining activities have to be licensed, but section 13 of the legislation allows for purchase of mining lands or licenses by foreign nationals and limited liability companies [148].³⁸ The issuance of a license is predicated on a

³⁸ Sec. 66. Limited liability companies owning greater than 20 percent of a venture have special requirements to ensure that the individual’s or corporate assets are at risk in the event of a default.

showing that the applicant has sufficient capital for the “acquisition, development and operation” of real estate that will be used in mining. The regulation also prescribes a two-year post-decommissioning period for a licensee to mitigate any environmental impacts after the mine has closed.

FDI unrelated to the acquisition of mines or real estate is regulated by the Ministry of Trade and Industry. Specific authorizations are required for purchases of greater than 10 percent of the capital stock of banks and media companies. The Norwegian Financial Institutions and the Media Ownership Act of 1997, for example, prohibits a foreign buyer from acquiring greater than one-third of an ownership stake in a national newspaper, radio or television market without a concession.

China

A heavy focus of this paper is on China and it will suggest increased control over the FDI from China and other countries. Given that reciprocity is the cornerstone of international law, it is important to finish this comparison of the FDI laws of the Arctic littoral states with an assessment of the FDI laws of China.

According to Bath, the Chinese system of FDI is based on classification by industry, and unless a particular industry is listed on the Foreign Investment Catalogue of “encouraged, restricted, and prohibited” investments, the investment is permitted. However, “regardless of its classification, a foreign investment project must be reviewed and approved by the relevant government authority” and any contracts by a foreign firm that requires government approval are not enforceable in Chinese courts until the government agency has given its approval [149].

Unlike the U.S. system in which there are specific agencies that have responsibility for clearing proposed FDI based on the type of FDI, China mostly regulates FDI based on the value of the investment. There are prohibitions against foreigners taking a majority interest in infrastructure projects such as “power grids, basic telecommunications services” or in most types of non-residential real estate [149]. Similarly, “defense, electricity, telecommunications, and oil and gas” are reserved for “state control” [149]. In general, the process is still—despite some recent reforms—described as non-transparent in that there are few published guidelines on how cases will be assessed and statistics on how many cases have been approved are mostly non-existent.

Examining Chinese Investment in the Arctic

China's Natural Resource Strategy

Understanding the impact of Chinese FDI in the Arctic begins by understanding China's general strategy and approach to securing natural resources. Shiloh Rainwater, writing in the Naval War College Review, reports that China has aspirations to reorder the legal regime of the Arctic so that the resources in that region become part of the global commons, because these areas are the "common heritage of mankind" [150]. How exactly those policies would be implemented is unclear, since under UNCLOS the six littoral states in the Arctic control roughly 85 percent of the water space, which includes the resources in the water column and the seabed [151]. At the time of this writing (2017) the "Common Heritage" talk seems to have subsided; however, there is no guarantee, should world oil prices rise or mineral scarcities occur that this talk won't again resurface.

As both a supplier and a consumer of commodities, Chinese SOEs operate in a unique position as they hedge against low commodity prices on the supply side and against high commodity prices on the consumer side. The initial attitude of Chinese investors abroad has been to own assets, rather than lease them. This was

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especially apparent when panic buying of commodities by Chinese firms in the mid-2000s resulted in general anxieties over the quantity of resources being consolidated under Chinese ownership. However, when looking at the success of these investments through a variety of lenses, many seem to have done more harm to China than good.

For one, the Chinese companies that did not carefully vet their investments faced massive losses. For example, the Sino Iron project in Western Australia, which was developed by Citic Pacific and Metallurgical Corporation of China, ran \$6 billion over budget and four years behind schedule [152]. A failure on the part of the Chinese developers to assess the challenges of the project site and regulations in Australia meant that cost calculations were far from accurate.

Chinese companies also learned hard lessons abroad about environmental standards and labor practices. Poor behavior by Chinese companies has damaged China's reputation. Widely publicized instances of environmental damage, labor abuse, and violence in South America and Africa have made countries in North America and Europe wary of Chinese direct investment. Had Chinese companies been more attentive to good corporate behavior and had the Chinese government been more effective at managing the behavior of Chinese SOEs, then perhaps China might have a better reputation abroad.

Fortunately for future operations, China has demonstrated the ability to learn from these blunders abroad. China's financial institutions have become more critical of the projects they agree to supply funding to. The State-owned Assets Supervision and Administration Commission (SASAC) has taken on a greater oversight role, requiring SOEs to produce feasibility studies, due diligence reports, and third-party appraisals of new targets [152]. In addition to this, SASAC will hold SOEs and their managers accountable to major losses overseas.

China has gradually readjusted its strategy toward natural resources, as both political and business leaders have gained experience dealing with global commodity markets. Comparing individual transactions from the mid-2000s to the mid-2010s shows that over the course of seven to ten years, China has learned a lot about how to invest, where to invest, and when. Investments are made with much greater care now, with a focus on assets with proven profitability in regions with greater stability. In the minds of Chinese officials, security was much more important than profitability [152]. However, this strategy led to the bleeding of China's financial institutions, where massive cost overruns and project failures meant that capital rarely flowed in any direction other than out. Recognizing this position to be unsustainable, China has recalibrated to focus on diversity of supply but at a reasonable price. Chinese financial institutions are less willing to sink capital into projects that can't reasonably be expected to produce positive returns.

China has recalibrated to focus on diversity of supply but at a reasonable price

China's investments are also much more strategic and in regions that have proven resource potential. When Chinese companies began seriously investing in resources abroad, there were few options for desirable projects. As Fu Chengyu, the CEO of CNOOC lamented in 2004, "it's actually not easy for us to find projects. The world oil industry has a one-hundred-year history. The good projects are already taken" [153]. Since the 2008 financial crisis, this pattern has changed. China has found that it is able to acquire stakes in higher quality, more secure projects.

Examples of this abound: recently, CNOOC Iceland, a subsidiary of CNOOC became the lead operator on hydrocarbons in the Dreki area; Chinese firms are heavily invested in the Yamal Peninsula LNG project; and Chinese companies have formed partnerships with Norwegian firms on the construction of oil rigs and submersible drilling platforms. These examples demonstrate that Chinese firms are becoming more trustworthy to highly advanced operators. The number of investments going into North America and Europe has increased steadily since 2014, whereas investments in Africa and South America have leveled off or dropped in the same period.

Quantifying Chinese Direct Investment

To identify the scope and scale of influence that China is garnering through investment in the Arctic, this study examined the legal regulations (or absence thereof) and the size of Chinese investment in the Arctic. Our analysis relied on the best sources of data available at the time and represents a snapshot in time in regards to both legal frameworks and Chinese investment. During our analysis, we observed numerous changes to

size and scope of several transactions. This indicates that Chinese investment in the Arctic is highly dynamic, with new deals regularly being formed and old deals being cancelled or changed.

The transparency issues that were identified in the legal review of domestic investment laws in the various states were also encountered in our attempt to quantify these investments. There are very few sources that are tracking Chinese FDI, and most of the data is sourced from periodicals, not through reporting by governmental agencies.³⁹ Because of this, it is challenging to trace investment funds because investors will often use a maze of limited liability companies and subsidiaries to obfuscate the true corporate (or governmental) parent of a particular project or investment. When the values of investments are reported, it also merits some skepticism as to whether the values reported are accurate. Our analysis found that investments are often misreported or misrepresented for a myriad of reasons including competition and geopolitical maneuvering.

We assembled our data from existing databases⁴⁰ and from our own research. We found evidence that indicated that the scope of Chinese investment in the Arctic is both underreported and of concern. The lack of reporting on Chinese investment is likely because these transactions are predominantly legal, and therefore, not stringently tracked or reported on to avoid regulatory scrutiny. Alternatively, lack of reporting can be attributed to competitive reasons.

Occasionally, investments can raise alarms: the prospect of greater Chinese financial control of the U.S. movie industry recently, for example, spurred a sizable number of members of Congress to call for greater regulation of investments in U.S. film and broadcast companies [154]. New legislation was very recently introduced in November of 2017 in both the House and Senate by Cong. Pittenger (R-NC) and Senator John Cornyn (R-TX) to greatly expand the scope of CFIUS reviews because of a growing concern that “China is buying American Companies at a breathtaking pace” [155]. However, as a general rule, the level of attention Chinese FDI receives is spodic.

We believe that FDI should be tracked carefully, because the impact of large quantities of investment dollars flooding into some Arctic nations (Greenland) or tribally governed land can have an impact on political sovereignty. We believe this to be true, regardless of the nationality of the investor. An analyst of FDI in India, which is a modest site for FDI, summarized this overall problem as follows:

A major issue with the developing nations is not the financial backwardness they have, but their overdependence on the doles of the developed countries, which makes them vulnerable and always keeps at the receiving end... The façade of the development that the BJP government proposes can be compared to the growing urban India’s psyche — with a rabid fascination for gadgets and cars, either downplaying the plight of the poor or pity them [156].

This is an obvious overstatement of the problem since many of the Western democracies in the Arctic are not that easily influenced by outside money. But, if FDI is not closely monitored, even large Western democracies will think twice before taking an action that will upset their investor and bankers. And in the Arctic, there are investors that are already entering the fold.

39 A notable exception to this is Russia, Both the Central Bank of Russia (CBR) and Rosstat, the National Statistical Office, track inbound FDI, however their statistics are frequently at odds with each other.

40 Our analysis relied heavily on the China Investment Tracker from the American Enterprise Institute (AEI) and RWR Advisory Group’s IntelTrak. The authors would like to thank the experts at both AEI and RWR Advisory Group.

We estimate that, from 2005-2017, China has invested over \$1.4 trillion in the economies of the Arctic nations (including Finland and Sweden), \$89.2 billion of which was in infrastructure, assets, cooperative agreements, financing agreements, or other projects located within the 60 degrees north boundary drawn by this paper (See table 6 for a summary of Chinese investment in the littoral states.) While the annual Arctic economy is greater than \$450 billion, Chinese investment remains a significant portion of available investment capital [157]. These investments are primarily in the energy and minerals sectors. And while these transactions are all legal, the transparency of each transaction leaves much to be desired. During the investigation of many of these transactions, announcements of the expense, scope, and anticipated value of various investments were clearly distorted, particularly in Russian and Chinese media.

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During this study, we encountered many transactions that were initially reported to be significantly higher than in reality. We discovered instances of suspected distortions in the Chinese media which were accompanied by praises of the power of the Chinese economy and Chinese enterprise abroad. For example, in Greenland, the Isua Iron project, owned by General Nice, was reported by China Daily to be an estimated \$2 billion dollar investment (though the official value of the investment had not been announced) [158]. Reuters and the Financial Times, who also reported on the acquisition by General Nice, assert that the \$2 billion figure that was reported by China Daily is either the total value of the iron in the mine, or the cost of developing the mine [159-160]. In Russian media we noted instances of ‘creative accounting’ (inflating the value of deals) to attract much needed capital into Russian projects and the economy in general. Despite frequent announcements

Table 6. Chinese Investment in Arctic Littoral Nations, 2012-2017

	Population	GDP	GDP <i>per capita</i>	Number of Transactions	Average Transaction Size (Million USD)	Total Value (Billion USD)	% of GDP
Canada	35,362,905	\$1.53 trillion	\$46,400	107	\$442.1	\$47.3	2.4%
Greenland	57,728	\$1.06 billion	\$37,600	6	\$33.4	\$2.00	11.6%
Iceland	335,878	\$20.05 billion	\$49,200	5	\$30.8	\$1.2	5.7%
Norway	5,265,158	\$370.60 billion	\$69,400	17	\$147.9	\$2.5	0.9%
Russia	142,355,415	\$1.28 trillion	\$26,900	281	\$691.7	\$194.4	2.8%
USA	323,995,528	\$18.62 trillion	\$57,600	557	\$340.6	\$189.7	1.2%
Total	-	-	-	884	\$508.66	\$449.66	-

Sources: U.S. Central Intelligence Agency, United Nations, RWR Advisory Group, CNA

Figure 14. Chinese FDI as a Percentage of GDP, credit: CNA



about cooperative loan agreements and investment funds, some experts have privately cast serious doubt on if any money is changing hands. Whether due to translation errors or deliberately misleading statements, there is limited certainty in the veracity of stated investment values. This poses a major and persistent challenge to tracking the scale of investments made by non-Arctic states in the Arctic.

Greenland presents one of the more interesting cases in this study. Chinese FDI accounts for 11.6 percent of Greenland's GDP (see figure 14 for a global comparison of Chinese FDI as a percentage of GDP). This is notably higher than the other Arctic nations. Greenland's economy is a special case in the context of this study: it is the smallest nation in terms of population and the size of its economy. In comparison to the U.S., where there are dozens of active transactions between U.S. and Chinese industries that exceed \$1 billion in value, these large transactions generate minimal concern because, in the context of the greater U.S. economy, these transactions have a minimal impact. In Greenland, a \$1 billion investment would have an enormous impact on Greenland's population and economy. This impact would be significant enough to alter regulatory decisions.

Greenland's aggressive national development strategy provides space for such influence to grow. Greenland's Prime Minister Kim Kielsen said, "as yet we're not aware of the mineral potential, how extensive it is. We will not find this out until we have turned the last stone" [161]. The path to a prosperous future, leaders argue, lies with exploitation of Greenland's resources. This is a feat that cannot be undertaken without the assistance of outside capital. For Greenland's part, the source of that capital is of lesser importance, so long as the terms are favorable and the amount of capital is sufficient. Greenland's natural resource potential is large, but most resources require a significant initial investment to make extraction possible. An example of this is the Citronen Fjord zinc project, owned by Ironbark from Australia. Ironbark has held a series of non-binding agreements with China Nonferrous, which demonstrates an interest by China Nonferrous to fund and build the mine. However, the cost of zinc remains, at the time of this writing, too low to justify the high cost of developing the Citronen project. Should the cost of zinc rise to a price that would make the Citronen Fjord

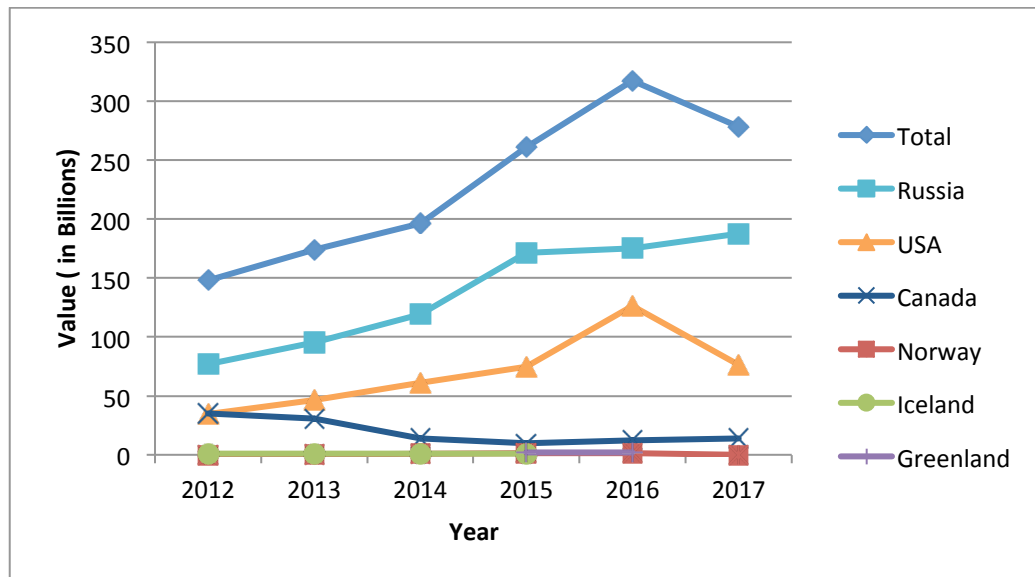
project profitable, it is likely that the initial development phases of the project would most likely be carried out by foreign workers [162].

The Government of Greenland's Oil and Mineral Strategy estimates that more than \$4.4 billion in tax revenue could be generated by the numerous proposed mining projects over the next 15 years [163]. It estimates that over this same 15-year period, overall tax revenues for the government of Greenland will be about \$24 billion, meaning that the revenue from a mining industry would constitute close to one-fifth of the Government of Greenland's total revenue [163-164].

Our data also indicates that Russia is extremely vulnerable to influence from China. This is compounded by sanctions against Russia by the United States and most OECD nations that drives the two countries together by economic necessity. Russia had over 281 inbound investment transactions with China from 2012 to 2017, worth on average, \$691.7 million each. This is equal to 2.8 percent of Russia's annual GDP. And while other nations may have greater saturation of Chinese investment dollars, this trend is expected to continue the longer sanctions remain enforced. Looking at table 6, it is clear that Russia receives the most FDI by dollar value out of the Arctic nations that we investigated. As Figure 15 illustrates, growth has been steady.

Canada is also an interesting case. While there are significantly fewer transactions in Canada than in the United States or Russia, Chinese FDI over the four-year period is larger relative to Canada's total economy, the equivalent of more than 3 percent of annual GDP. Individual transactions are also worth much more on average than they are in other nations. While this isn't cause for panic by any means, the United States should be attentive to the saturation of Chinese FDI in Canada's economy. If FDI is distributed in a relatively even fashion across regions and sectors, then it likely does not pose a major threat to the sovereignty of those regions or sectors.

Figure 15. Value of Chinese Investment in Arctic Countries 2005 - June 2017 (in Billions)



Sources: CNA, RWR Advisory Group

Overall, Chinese investment in Arctic nations is clearly on the rise. As seen in Figure 15, those investments are rapidly increasing. Most Chinese investments were made in the transportation, energy, construction/infrastructure, financial, and real estate sectors. Among Arctic-specific investments, almost all were made in the energy, mining, or infrastructure sectors. Given that the resources of the Arctic are becoming more available, we expect that this trend will continue.

China has also made significant investments in research in the Arctic states, particularly in Iceland. The University of Iceland hosts the Northern Light Confucius Institute, a research center that aims to elevate the understanding of Chinese language and culture in Iceland [165]. The Aurora Observatory near Kárhóll, Iceland, is another example of Sino-Icelandic research collaboration. The Aurora Observatory, which was financed with the proceeds from land leased to the Polar Research Institute of China, will be used to study the northern lights (Aurora Borealis) [166]. Iceland has historically been very wary of Chinese investment. In 2011, Chinese property tycoon Huang Nubo's bid to purchase land for an "eco golf course" was denied even though Icelandic law generally permits foreign ownership of land in connection with business enterprises [167].

Following the Money

This study is particularly interested in what sectors attracted the most investment. Increasingly, it seems that Chinese investment in the Arctic predominantly falls into the following three buckets: energy, infrastructure, and mining. This finding underscores the environmental concerns that unregulated development poses in the Arctic. As prospective mines and oil wells come online, the probability of environmental degradation is multiplied. Because of this, it was important for this study to examine each transaction, with particular attentiveness to natural resource investments.

Chinese investment in the Arctic predominantly falls into the following three buckets: energy, infrastructure, and mining

One area of investment that has been dismissed recently is oil and natural gas. At the time of this writing, oil prices have ranged from the low \$30s to high \$50s per barrel. At these prices, most analysts have labeled Arctic oil as unprofitable. This may be the case for most deposits, but according to recent analysis of Norwegian oil company Statoil's Arctic fields in the Barents Sea, prices above \$35 per barrel are sufficient for some fields to be profitable [168]. Specifically, the Johan Castberg field will be brought online as soon as 2022, making it the northernmost field in operation on the Norwegian Shelf [168]. The Castberg field will be developed by Statoil, with Aker Solutions AS, a Norwegian engineering firm, serving as a subcontractor on the project.

New oil discoveries hold similar promise of a surprisingly low bar to achieve profitability. Rosneft announced a major discovery in the Laptev Sea that could hold as much as 9.5 billion tons of oil equivalent [169]. With Russian experts predicting that by 2020 about 20 percent of Russian oil production could come from the Arctic, continued expansion of Arctic oil and gas activities is to be expected, despite the environmental risks associated with extraction and shipment from the Arctic region [169]. In June 2017, Nanhai VIII, a semi-submersible drilling rig, caused a stir when it stopped in Murmansk on its way to the Kara Sea [170]. The rig is owned by China Oilfield Services Limited and is ultimately bound for the Leningradskoye Field, where it will be operated by Gazprom Neft.

Another resource area in which we see investment potential is rare earth elements (REEs). REEs are used in much of today's technology. While most REEs are actually abundant in nature, they are hazardous to extract, because they are often collocated with radioactive elements. Potential and proven deposits of REEs are found in Greenland and in the western Arctic Ocean [171-173]. These resources are valuable, especially as the demand for technology such as laptops, cell phones, solar panels, and electric vehicles continues to rise.

Concerns over environmental damage due to mining waste and the unearthing of nuclear material will complicate the development of REE projects. In Greenland, authorities just completed an intense scrutiny of an agreement between Greenland Minerals and Energy (GME), an Australian owned company with rights to the Kvanefjeld/Kuannersuit uranium project, and Shenghe Resources, a Chinese company that is investing in GME. Greenland's Ministry of Mineral Resources established that Shenghe's investments do not grant a preferred option to acquire 60 percent of the Kuannersuit uranium project, despite Shenghe's claims that the agreement did entitle them to the takeover of a deciding majority [174]. Rather, officials found that the agreement gives Shenghe the right to acquire 12.5 percent of Greenland Minerals and Energy [174].

Looking forward, this analysis found evidence that China may be seeking to strategically place investments in resources and complementing infrastructure. Investment in the Yamal LNG port, as well as in oil and gas exploration in the Kara Sea demonstrate that China is interested in becoming a partner in resource activity from start to finish. With such a large foothold already established in Russian Arctic oil and gas, the security of China's access to these resources is more concrete.

Appendix A and Appendix B summarize the Arctic transactions of which we are aware of, and provide much of the underlying data in Table 6 and Figure 10. Transactions that exceed \$100 million are accompanied by short narrative. These lists are not meant to be exhaustive of all investments that occurred in any given year. The transactions that are listed had sufficient data to support their inclusion. This information was used in analyzing the amount of, and trends in Chinese FDI in the Arctic. It is provided to give interested parties a sense of the industries and types of transactions that are being carried out.

Why is FDI in the Arctic a Concern?

Our concern over Chinese FDI in the Arctic is that the historical impact of Chinese FDI abroad does not evoke much confidence in the practices and policies of Chinese investors. One doesn't have to look far to find multiple critical failures on the part of Chinese multinational corporations to abide by local environmental regulations, particularly in Africa. A spill in Chad during 2013 led government authorities to suspend the suspension of operations by China National Petroleum Corporation [175].

Nonetheless, Chinese enterprises have shown an ability and willingness to adjust business practices in response to negative attention. Corporate social responsibility, particularly as it relates to the environment, is becoming increasingly important to Chinese citizens. In China, frustration over corruption, safety violations, and environmental disasters is pushing both government regulation and a change in corporate culture. While this process has been slow, small changes indicate that Chinese companies will comply with labor, social, and environmental regulations, but only when these regulations are clearly promulgated and rigorously enforced.

While it goes without saying that the development of natural resources is a sovereign right, there are ways in which FDI can affect sovereignty. When foreign investments make up large percentages of GDP, political leaders may begin to feel beholden to the overseas investors fueling the domestic economy, rather than citizens. As will be generally discussed below, in the case of Chinese investments in Djibouti, there seems to be some small improvements in the utilization of local labor; however, much of that labor is at the low skill level and does not include those involved in the design, engineering, or financing of a project. If this persists, then the host community is intellectually disassociated with the project. It cannot effectively participate in the project's management, regulation, or its long-term sustainment.

Imported labor is a source of friction for many reasons and potentially a threat to political sovereignty. Professor Yoon Jung Park of Georgetown University conducts research on Chinese migration, specifically in Africa. She found that of the one million Chinese residing and working in Africa, one-third or more are temporary labor migrants with fixed-term contracts that last one to three years [176]. Park notes that this subset of Chinese migrants into Africa tend to be more skilled and occupy roles such as managers, supervisors, and translators; they seldom remain in their African host country at the end of their contract. The other two-thirds of labor migrants are not operating under a contract and tend to be unskilled [176]. These migrants tend to settle permanently. While not inherently negative or concerning in the context of Africa, where 1.1 billion people are spread across 52 nations, the context of the Arctic is different. Greenland has a population of a mere 56,000 and Iceland has about 330,000 citizens [177]. Greenland and Iceland are also both endowed with natural resources that the PRC has already demonstrated an interest in. While it might not rise to the level of an official strategy, it does not require much creativity to envision a situation where even a modest influx of migrants could alter the political landscape of an Arctic nation if imported workers become citizens.

In a small nation such as Greenland, it may only take a couple hundred new citizens to dramatically alter the political landscape. Greenland elects 31 members to its national legislature every four years using proportional

representation. In the 2014 election, the difference between the winning Siumut Party and the runner-up Inuit Ataqatigiit Party was 326 votes [178].

The recent passage of the 2012 Large-Scale Projects Act through the Inatsisartut, Greenland's National Legislature, gives foreign workers rights in Greenland. Once the bill is enacted, over 3,000 Chinese workers could potentially be making their way to Greenland to work on the Isua iron project. This would increase Greenland's population by 5 percent; assuming that the workers were able to remain in Greenland and sought political rights.

Additionally, the Arctic is a sparsely populated area. Unlike in other areas where FDI is common, the Arctic does not have enough population density to adequately monitor natural resource developments. In Africa and South America, when foreign companies behaved poorly, indigenous groups have been able to elevate the visibility of poor practices. This same mechanism can neither be relied upon to act as a deterrent to companies that would otherwise violate environmental standards, nor can it be counted on to expose violations if and when they do occur. In Russia, for example, Greenpeace and others documented that the Russian oil industry has spilled more than 30 million barrels of oil on land each year—much of that in the Komi Republic near the Arctic Circle [179-181]. Some of this is detected, yet suppressed, and some is undetected because of the vast regions involved [180]. Greenpeace also estimates that every 12 months, 2.6 million barrels make their way into the Arctic Ocean via the Pechora River [180].

The political implications of the Komi Republic oil pollution, which has been mostly underreported due to Russian censorship, is a window into what can happen if resource extraction projects are started without proper technology and oversight. As documented in the Greenpeace report, the spills have displaced many indigenous people who rely upon reindeer, groundwater, fish, and other resources that have been contaminated, destroyed, or driven from their ranges by oil pollution.

It also creates issues for the region when the oil reaches the pristine Arctic Ocean and harms fisheries, potentially generating political friction among the Arctic powers. As noted in multiple places in this report, there is limited cleanup capability in the Arctic; especially to remediate the effects of terrestrial seepage into a large river that empties into the ocean. Monitoring the extent of the problem is difficult, because the seepage is occurring within Russian territorial waters and Russia is unwilling to be transparent about the extent of the Komi oil disaster. It is for this reason that analysts argue that the Arctic Council needs to assume a more prominent role in promoting harmonized environmental standards and inspections, especially as regards the operation of oil rigs. Other standards that the Arctic Council could support include standards for FDI to ensure that projects are sufficiently well-capitalized to afford self-funded remediation should something go wrong [11].

Environmental degradation also has potential social and cultural impacts in the Arctic. Most of the high Arctic population is composed of tribal groups who rely heavily on the Arctic for important social, cultural, and economic traditions. The Arctic, which is already changing rapidly due to climate change, is becoming unreliable for these groups. Environmental degradation, on top of climate change impacts, could have significant ramifications for the health, economic security, and culture of Arctic peoples.

Finally, a pattern is emerging in how China uses the activities of its SOEs to advance military interests. China's Military Support Facility in Doraleh, Djibouti, is the most prominent example. China Railway Group and

China Civil Engineering Construction Company recently completed a rail line from Addis Ababa, Ethiopia to Djibouti [182]. The railway was constructed by the two Chinese companies, exclusively with Chinese manufactured equipment. This, along with the Doraleh Multipurpose Port, which was funded in partnership with China Merchants Holdings, could give the People's Liberation Army (PLA) the ability to move in and out of Ethiopia. This fits into a greater pattern of Chinese government strategy to control a project from design to operation. While much of the construction labor was sourced from local populations, the majority of the planning, design, and operations work was carried out by Chinese firms. Researchers at the Chinese Naval Research Institute, the main research center for Chinese military strategy, recommend the People's Liberation Army focus the construction of overseas military infrastructure in regions and locations where there is already an established presence by Chinese SOEs [183]. While it is unlikely that Chinese investment in port infrastructure in the Arctic could ever be used for military operations, ownership of Arctic infrastructure could give China more standing in its claim as an Arctic "stakeholder." Given that over 80% of the Yamal LNG export facility in Russia is financed by Chinese capital with conditions that Chinese firms dominate the construction and operation of the port, a Chinese Yamal Multipurpose Port where the PLA Navy could regularly berth is a future reality.

China's interest in the Arctic is clear: as one of the last remaining sources of unexploited resources, the Arctic is an attractive source of the raw materials that China needs to fuel its development. Beyond resources, the Arctic is the potential launching pad for Chinese SOEs seeking profit and market dominance. The Arctic is also a location where many Chinese laborers could find employment and possibly residence. For China, the Arctic is a vast landscape of opportunity.

For the Arctic littoral states, their Arctic resources are also deposits of opportunity for regional development and resource security. And the possibility of economic partnerships with Chinese companies is not inherently bad. However, China's history of environmental damage, labor abuse, and political hardball with developments in Africa and South America should be interpreted as historical caution to the Arctic nations. There is a way forward where the Arctic environment can be sufficiently protected while its resources are extracted, but taking that path will require cooperation and coordination between the Arctic nations in advance of resource development.

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Recommendations for the Arctic Regulatory Environment

The marine environment in the Arctic is especially vulnerable because there are both political and scientific unknowns of a major polluting accident occurring there. It also bears repeating that the Arctic is, for all intents and purposes, a nearly closed sea. An incident in one part of the Arctic is very likely to be felt in others, especially if pollution were to become trapped beneath the ice floes, beyond the reach of pollution remediation and recovery techniques. There is very little off-the-shelf technology to remediate an Arctic pollution incident, and not much of that technology and equipment is being stockpiled. All of this is exacerbated by enormous time and distance factors that would have to be overcome to mount a cleanup effort. These scientific and logistical limitations are magnified by a legal structure that is not supportive of the current pace of development and human activity, because liability issues related to ship operations are mostly relegated to the hoped-for good intentions of a variety of flag states and further hope that there will always be good weather and good charts. Last, but certainly not least, the current legal structure is too diverse to monitor and regulate inbound foreign investments both in specific companies and investments in large projects such as mines, and oil and gas facilities. To address these legal and regulatory gaps, we suggest three separate multilateral initiatives to establish a common framework for development, FDI, and the financing of Arctic development projects.

Environmental Development Standards and Project Transparency

Either as a stand-alone instrument or in connection with lending by the proposed Arctic Development Bank, described below, a common set of development standards should be adopted by the six Arctic states that have coastlines potentially affected by imprudent development. There is as yet no Arctic transnational organization like the EU to promulgate regulations and conduct enforcement actions, so the best approach would be for the six Arctic states to establish a multilateral agreement that is then incorporated into the domestic laws of each of the countries. To ensure that these standards are implemented in an effective manner, as opposed to being merely aspirational, each country's domestic laws would have to include harsh fines and possibly criminal punishment⁴¹ for those that undertake projects that violate core principles.

The purpose of the Arctic Development Code would be to ensure responsible development of the Arctic region. The following are the core principles that could be established in a notional Arctic Development Code (ADC):

⁴¹ There are various provisions in U.S. law, for example, as relates to unauthorized possession of chemicals that could be considered a chemical weapon (18 USC 229), possession of biological weapons and toxins (18 USC Sec. 175), and the theft of foreign museum pieces (18 USC 668) that can be mapped to obligations the U.S. assumed in an international agreement or treaty.

- A. Projects that could affect the Arctic marine environment will be subject to the ADC. In this context, even mining projects that are in the interior are within the scope of the ADC if destination shipping must be used to export the ores.
- B. All ADC-scope projects will be preceded by a written environmental impact assessment. The concept of advance planning is found in various international instruments including, for example, Article 14 of the 1992 Biodiversity Convention and Article 15 of its Cartagena Protocol, which require a scientifically sound and transparent assessment of risks associated with a particular project [184-185]. Since many of these projects will be constructed on the Arctic coastline and could impact the Arctic marine environment, the requirement to conduct sound planning can be inferred from Part XII of UNCLOS, which requires states to minimize impact(s) on the marine environment and “seek to harmonize” their practices with those of other states. The multilateral Arctic agreement would establish that each country reserves the sovereign right to decide whether to license a project involving its territory or resources, but it should include a mandatory requirement for a scientific study, publication of the results, and some method of eliciting comment from members of that country’s public as well as designated officials from the other six Arctic states.
- C. All projects that are assessed pursuant to the ADC will conclude with a formal Record of Decision (ROD) that is signed by a government official and incorporated by reference into a written license that each government issues. A copy of the signed RODs and licenses will be provided electronically to a public repository that is established pursuant to the multilateral agreement and open to public inspection. It will also be a criminal violation for a person or company to either commence work on or finance a project until a license is issued.
- D. The parties to the multilateral agreement agree to meet within a short, specified period (one to two years) to adopt recognized international standards for the operations of mines, oil rigs, and refineries to the extent that those standards have not already been adopted by the countries domestically.
- E. The parties to the multilateral agreement will establish a legally binding mechanism to receive and investigate complaints from another state party that certain projects are not conforming to recognized international standards.
- F. The parties to the multilateral agreement will establish a claims procedure wherein individuals or government organizations from one of the six countries can make claims for damage and cleanup costs associated with incident in any of the six countries that has a transboundary impact or any impact on the Arctic Ocean’s marine environment. The operators of all sites will agree, as a condition of licensing, that they will participate in this scheme and agree to reimburse claimants for reasonable costs incurred in cleanup or damages to livestock or fisheries. The scope of this claims process would have to be limited to ensure maximum participation and to prevent costly, frivolous claims from being filed against land owners or operators. This claims process will be expressly recognized as a precondition to any suits in the local courts where the site is located.
- G. The parties to the multilateral agreement will create a mechanism to deal with the costs of decommissioning and remediation of plants in those cases in which those costs were not irrevocably pledged when the project was licensed. This would involve a requirement that each project owner post a long-term bond or

purchase insurance to cover the risk of the enterprise's default. The failure of a project owner or operator to have such a bond or insurance policy to cover this default risk would result in criminal liability in all of the states that are party to the ADC. Posting a bond or insurance policy seems infinite less complex than establishing and funding multinational "superfund" to deal with these sorts of situations.

The negotiation of a multilateral agreement for offshore oil and gas operations (as advocated in Addressing the Gaps in Arctic Governance) and to implement an Arctic Development Code can and should be made a high priority because the Arctic is still comparatively pristine from a development and FDI perspective [11]. As a result, no single country would be especially disadvantaged if reciprocal standards were adopted in the very near future [11]. If this process were delayed, however, and a plethora of offshore oil and gas rigs, mining sites and/or refineries were to gain a foothold in the Arctic, it would become extremely difficult to negotiate an agreement that both "grandfathered" the existing users and also addressed new investors prospectively. So too, the decline in prices for oil, gas, and other commodities gives governments a little bit of breathing room to "cut a deal" and enact these regulations before the resource boom restarts. When prices rise, there will be much more pressure on certain states like Russia and Greenland to offer lower environmental and regulatory costs for competitive advantage vis-à-vis the other states. Taking lower regulatory costs off the table now is in everyone's interest.

Promulgating an Assessment Criteria for Arctic FDI

In addition to the ADC, we suggest that there should be the adoption of criteria that assess proposed transactions in which a foreign purchaser is seeking to purchase a controlling interest in an ongoing business or enterprise in the Arctic. There are a number of recurrent themes in UNCTAD and OECD policies could guide how the Arctic region and individual states could assess whether a proposed foreign investment is beneficial. These standards are collectively designed to prevent some of the adverse impacts experienced in Africa and Latin America, including environmental destruction, dilution of worker's rights, corruption, loss of sovereignty, and a lack of technology transfer. Since these standards are more or less universal, they could be tailored and made applicable to future FDI in Arctic companies or projects. The actual standards adopted would be incorporated into a multilateral instrument between the six Arctic states.

We do not think that regional norms governing Arctic FDI should in any way infringe upon the rights of individual nations to enforce their own national security controls⁴² or limits on investments in scarce national resources.⁴³ Those types of national security or critical resource controls on inbound FDI should be governed by bilateral free trade agreements. However, there is no reason that the Arctic states could not reach some sort of agreement to limit the acceptance of FDI within their borders that could have transboundary economic or political impacts or impact on the Arctic marine environment. The key proposition is that countries should be free to refuse any FDI inconsistent with their treaty obligations and national security concerns, but they also should not accept FDI that is harmful to the region.

⁴² This would include restrictions on the purchase of controlling interests defense and high-technologies, industries, critical infrastructure, nuclear power generation, broadcasting and telecommunications.

⁴³ This would include restrictions on foreign purchases of hydrocarbons, rare earth elements, or other minerals in short supply.

Determining the sort of FDI that is harmful and should be regulated is certain to be controversial, particularly since neither UNCTAD nor OECD have published a code on what is “good” vs. “bad” FDI. That should not prevent the issue from going forward for discussion given the many instances in which FDI has “gone bad” and the inherent vulnerabilities of the Arctic region, including small populations, low capacity to monitor and manage, and the willingness of some states to move forward with economic development projects irrespective of their transboundary impacts. Just as UNCLOS recognizes in Article 234 that the Arctic region may require special coastal shipping regulations by coastal states because of its unique environmental character, it is appropriate to draw upon some of the policy threads in the UNCTAD and OECD guidelines to establish a framework for assessing FDI. Obviously, that framework would need to be objective, reciprocal, and respectful of the inalienable right of the Arctic states to responsibly develop their resources.

An FDI Review Agreement

A common set of standards to assess inbound FDI that is adopted by the six Arctic states is the second major recommendation to equalize the disparities that exist in each state’s national laws and regulations. Because of the sensitivities associated with this overall endeavor, the scope of any agreement should be limited to the acquisition of a controlling interest in a business or enterprise that operates in or near the shoreline of the Arctic Ocean or within the region’s watershed where an accident could reasonably impact the Arctic Ocean. Similarly, inland projects that will require extensive access to the marine environment to export ores, timber, oil, or gas should also be subject to the FDI agreement. Finally, if the particular project would result in the importation of substantial number of foreign workers to live and work in the region, that should be a covered transaction.

Sovereign control over FDI has heretofore never been subject to the consent or direct regulation of outside states or entities. Even though the European Commission has enacted regulations to promote foreign direct investment and to provide protection for foreign investors, to the best of our knowledge, the EU has never inserted itself into the role of directly restricting certain types of FDI [186]. For this reason, an agreement in which one country is asked to “clear” an inbound FDI transaction in another country is almost certain to be objectionable to everyone, including the United States. But reciprocal adoption of general FDI principles and reciprocal reporting on transactions that are within the scope of the agreement is possible. Similarly, if there is a reported transaction that raises concerns with another state, any state should have the right to challenge a transaction of concern and request consultations with the state that authorized the FDI transaction, such consultations would occur on a bilateral or multilateral basis. At the end of the day, under multiple principles of international law, it remains the right of each country to control the disposition of resources under its legal and physical control. The design of an FDI agreement should keep that important principle in mind.

The general FDI principles within a multilateral FDI agreement should establish “review criteria” or “standards,” which, if followed, do not trigger any sort of basis to challenge country’s decision to authorize an FDI transaction. The following evaluative criteria/standards for acceptable FDI could be incorporated into a multilateral instrument:

- The FDI is properly sequenced. The host nation has the systems and regulatory mechanisms in place to monitor the resulting FDI enterprise and, if appropriate, regulate it.
- The FDI will generate local employment. That local employment should involve transfer of technology and knowledge.

- The acquiring entity will mostly rely on local labor. Imported labor shall not exceed a modest percent for ongoing operations, ideally mapped to the percentage⁴⁴ used in local law for defining a controlling transaction.
- The FDI promotes overall development of the host country. The FDI will not crowd-out indigenous enterprises or result in adverse labor or social impacts.
- The FDI will not have permanent adverse environmental risks or impacts. Conversely, if there are potential risks, the proposing entity has a plan to mitigate the risks associated with operation.
- The acquiring entity is sufficiently well capitalized to pay the costs if there is an adverse environmental event.
- There is adequate infrastructure to support the FDI enterprise. If not, the acquiring entity will provide funding for necessary infrastructure.
- The proposed FDI is known to the local population. There is a public office that administers the inbound FDI and permits local citizens, either directly or through their representatives, the right to comment on FDI petitions.
- Public access to information concerning proposed transactions should not require the disclosure of the business-sensitive or proprietary information of those parties involved in the proposed transaction.
- There are both publicly available and published standards for the government to apply in deciding whether an FDI project should be permitted.

An Arctic Development Bank

The whole discussion of Chinese FDI is predicated on the fact that several Arctic countries are anxious to attract foreign capital in order to develop their infrastructure and natural resource potential. China's foreign investment has "grown nearly tenfold from 2005 to 2013 helping it win new allies, increase trade, and secure oil and other natural resources"[187]. China has become a "go to" source for investment capital and know-how—especially in developing countries—and institutions like the World Bank are becoming increasingly irrelevant. This cannot be ignored since the strings associated with World Bank lending have been helpful in the past in curbing graft, corruption, poor environmental practices, and other elements of poor governance.

China is within its legal rights to make these investments and to use these "soft power" investments to secure access to raw materials and real estate. With some exceptions, Chinese businesses that are involved in FDI have to rely on capital from either China's EximBank (C-EXIM), China's Development Bank (CDB), Sinosure (a rough equivalent to the U.S. OPIC) or the newly formed, Beijing-based Asian Infrastructure Investment Bank (AIIB) which is technically a multilateral bank composed of 48 members [188].

China's EximBank has a substantial loan portfolio and can provide concessional loans to stimulate Chinese exports or to make overseas investments in the energy, mining, and industrial sectors. China has been very successful in capturing international development projects because it is able to use a blend of concessional

⁴⁴ Absent existing standards, 20 percent seems reasonable to the authors.

loans, foreign aid, direct investment and service contracts and other instruments to maximize Chinese participation in international projects [189]. Because China is not a member of the OECD, it does not follow the OECD definition or practices of development aid. Chinese development banks can also lend wherever and whenever it advances Chinese strategic commercial interests as opposed to prioritizing shareholder interests [190]. Moreover, since much of Chinese lending is ultimately financed by the state, commercial firms can be emboldened to make riskier plays or offer better terms than their Western counterparts. In general, Chinese lending facilities have these characteristics:

- Greater liquidity than Western banks, since the source of funds (CDB and C-EXIM) is the state rather than capital markets
- Default risk that is usually assumed (practically speaking) by China EximBank versus the Chinese commercial borrower [191]
- The ability to be more strategic in the lending outlook since Chinese banks can operate on behalf of state interests
- Lower costs of capital because there are no reserve requirements or costly regulatory oversight
- Fewer lending compliance and transparency terms
- Lower interest rates [190]

To be fair, this type of lending can have a place in some countries with low credit ratings that cannot get international project finance from the World Bank or regional development banks. But in a context like the Arctic, cheap and plentiful money can be a problem because it “chases out” responsible investment capital. In this context, responsible investment capital is that in which there are conditions that the recipient of the loan(s) will: comply with labor and environmental standards; comply with international lending forms and standards; or face legal and financial consequences if repayment is not made.

Since commercial lenders or Western export credit agencies like the Export-Import Bank of the United States have difficulty competing on a head-to-head basis with their Chinese counterparts, it is too much to expect that the United States and the export credit agencies of the other Arctic states can reform their processes to be competitive with China’s. Nor is it reasonable or legal for only one country’s export credit bank to assume all of the default risk. However, establishment of an Arctic Development Bank that is funded and administered, principally or totally, by the six countries to finance projects in the region seems to be the most expeditious short-term solution to the capital access issue. One country could serve as the host nation for the agreement and provide the administrative support for the lending facility.

There are many examples of development banks, but, an organization similar to what China orchestrated in the establishment of the AIIB makes sense since the AIIB is also a multilateral financial institution dedicated to the financing of growth or infrastructure in a particular region [192]. China led the formation of the AIIB to compensate for its lack of control in the World Bank and the Asian Development Bank. It decided to form another development bank as an alternative source of capital for Asian countries to be able to finance large infrastructure and economic development projects (mostly Chinese). To refute criticism that the AIIB is a “tool of Beijing” the AIIB was established via a multilateral international agreement that allowed for financial participation of states outside of Asia in the various infrastructure projects, including the United States. As noted, the AIIB was established via a multilateral international agreement that creates a structure similar to

that of a corporation. There are articles of incorporation, bylaws, and the creation of a voting mechanism that is equated with stock ownership. The formula for those voting rights is not completely transparent. But day-to-day control of the bank is, as with modern corporations, vested in the 12 member board of directors—with multinational members. The Bank's management team consists of a president, general counsel, and five vice presidents [193].

The exact mechanics of establishing such an institution are beyond the scope of this study. The framework of the AIIB could be used as a primary analytical point of departure, but there are some hard questions that the six states would have to decide before moving forward. We present these, followed by an outline of the general path forward.

Issue 1: Should membership in the bank be limited to the Six Arctic littoral states?

As noted, the AIIB is a multinational bank in which there are regional members and non-regional members, and day-to-day activities are determined by the bank's multinational management team and board of directors, in which China has only one vote [194]. For very major issues, China has over one-third of the votes based on shares of stock that they hold in the bank's capital structure,⁴⁵ and this could force a systemic change in the bank's lending practices or operations. Given that China has this sort of power, its creation of a more multinational operation works in China's favor since it spreads the default risk to other states and creates the political appearance that it is inviting other countries and their businesses to participate in Asian infrastructure projects.

Membership of the ADB is a tricky question. Limiting membership to only the six littoral states does help ensure that states with a commonality of outlook with respect to Arctic infrastructure and project finance hold the levers on investments decisions. That model would not be unprecedented: the European Investment Bank (EIB) is closely aligned with the EU and membership is limited to the 28 member states of the EU [195]. The downside of this approach is that it would create the appearance that the Arctic states were acting in a unilateral fashion even though they had already agreed to multilateralism vis-à-vis the Arctic Council when it expanded the full and observer membership of the Arctic Council to states that did not have a coastline on the Arctic Ocean. Also, to the extent that participating membership were expanded, it would soften the default risk of the other participants.

Issue 2: Should the bank only be chartered to provide capital for public infrastructure or should it also be able to provide capital to private-sector investors to invest in commercial projects?

Most regional banks do not have charters that limit their lending to only state borrowers for infrastructure projects. The AIIB provides a wide variety of financial products including political risk insurance—similar to the U.S. OPIC—and can provide loans to governmental entities as well as to private enterprises that contribute

⁴⁵ The articles of incorporation specify how many shares each country can purchase. Interestingly, there are 1,000,000 shares authorized in the articles of incorporation. China is eligible (and has) purchased nearly 298,000 shares which represents 33.5 percent of the total voting stock. India is the next largest eligible purchaser: 11.9 percent. The President of the AIIB is Chinese and China also has a seat on the 12 member Board of Directors.

to the “economic development of the Asia region” [196]. It also can provide loan guarantees and underwrite the issuance of securities, like a U.S. investment bank; or like the U.S. Small Business Investment Corporation program, it can take an equity stake in projects. The Inter-American Development Bank (IADB), which focuses on financing to Latin America and the Caribbean, offers a less robust menu of financial products to public and private-sector clients, but it can provide concessional loans and grants to lower-income private sector borrowers. In contrast to the AIIB, the board of the IADB exercises considerable day to day oversight over management [197].⁴⁶ Finally, European Investment Bank (EIB) offers a variety of lending products to public and private borrowers including microfinance, funding for venture capital funds, project loans, intermediate loans to EU banks, and equity investments in infrastructure and energy projects.

There are widely varying estimates of how much investment in Arctic infrastructure is required for the region to effectively engage in tourism or extractive activities. But even the low estimates call for many billions of dollars, and this certainly suggests that an Arctic Development Bank should be able to offer the widest possible menu of products and be able to provide capital to private owners/operators of infrastructure products, tribal, and government entities. Similarly, because the point of creating an Arctic Development Bank is to help ensure that projects are developed in socially and financially responsible manner, direct lending to private entities that are seeking to commercially develop mines, oil and gas facilities, and other natural resource activities should be permitted.

Issue 3: Should the Arctic Development Bank (ADB) impose environmental and development conditions upon borrowers?

The AIIB makes the bold statement on its website that it does not involve itself in the domestic affairs of borrower countries. The Bank’s Policy on Prohibited Practices makes no mention of sustainable development policies in its blackletter rules on prohibited practices. The Bank’s Operational Policy on Financing states that projects will be assessed for “environmental and social due diligence” pursuant to the AIIB’s February 2016 Environment and Social Framework [198-199]. That particular policy promotes the use of incentives to support good environmental and social performance, as opposed to creating preconditions to lending.

Instead of requiring all projects to meet standards, the bank emphasizes its support for a selection of sustainable development projects. The AIIB does have various policy memoranda stating that bank operations will support sustainable development. The bank’s board of governors note that they have promoted sustainable development goals in some of the lending projects (e.g., Nepal), and the AIIB recently concluded an agreement with the Manila-based Asian Development Bank to cooperate on sustainable development goals and compliance with the Paris Climate Agreement [200].

The European Investment Bank (EIB), by contrast, is more prescriptive. The EIB states that lending must meet sound lending practices and must be environmentally sound and include public participation in projects with environmental consequences (Standard 21). In addition EIB lending policies address lending to combat

⁴⁶ The IADB has 48 member countries (and 26 eligible borrowing countries) with power vested in the Board of Governors whose voting power is proportional to their country’s capital in the Bank (similar to the IIB). The 14-member Board of Executive Directors exercises most of the powers of directors of a for-profit corporation, although their oversight appears to be more robust, since they meet once a week and exercise responsibility for approval of loan and guarantee proposals, setting interest rates, approving country strategies, and approving the bank’s budget.

bribery, fraud, poverty reduction, the rule of law, human rights, health, education, and technology and knowledge transfer.

Unless multilateral instruments are created that establish reciprocal rules and development that countries will enforce vis-vis individuals, the use of lending conditions to reinforce standards is an excellent approach and an excellent hedge if development codes do not come online soon. Obviously, there are fundamental differences in the legal systems of the Arctic countries and so care must be taken to not erect standards that are impossible for smaller countries to enforce.

Suggested Design of an Arctic Development Bank (ADB)

If one were to imagine the six Arctic nations occupying a similar position of influence to that of China in the AIIB, there is a great deal to admire in the design of that bank. China reserved a majority voting stock among the member nations, a permanent seat on the board of directors, and appointment of the bank's presidency. This ensures that the Chinese Government is able to establish the appearance of a transparent corporate structure with the reality that important levers of power are mostly controlled by the Chinese Government. All the better, from China's perspective, is that the participation of other countries enables the bank to spread the default risk and have many additional sources of revenue for new lending.

It is important that the six main Arctic states maintain some of the same levers of power as China has retained with the ADB to ensure that overall development standards are maintained. More transparency and sharing of power is acceptable because the ADB faces less default risk than other development banks. Five of the six countries are OECD members and are among the top tier of countries in GDP per capita: Canada, Iceland, Denmark, United States, and Norway. Also, allowing other countries to be passive investors in the ADB makes a tremendous amount of sense, since the six charter members, especially the United States, would likely face political headwinds in getting the appropriations to finance the ADB's operation and lending. Based on the aforementioned, we recommend the following attributes of the ADB, drawing on the characteristics of other development banks:

The ADB would be organized via a multilateral agreement. It would have a policy link to the Arctic Council, and its regional development goals, but it would not be linked in a legal sense to either the Arctic Council or the EU.

The ADB's multilateral agreement would establish a capital structure similar to the AIIB in which the six founding members would control 90 percent of the voting stock. Each country would be eligible to purchase 15 percent, and the remaining 10 percent would be offered via an IPO or auction to any members of the Arctic Council. These shareholders would adopt the bylaws of the ADB and general lending policies, and would vote on dissolution or issuance of additional stock for the admission of new members.

Day-to-day corporate responsibility, including review and approval of deals above a certain size and adoption of specific sustainable development policies and financial policies,⁴⁷ would be vested in an 14-member board

⁴⁷ Financial policies include bank capital reserve requirements, lending policies (collateralization), environmental and social impact assessments and the associated obligations of borrowers.

of directors that would consist of two members from each member county⁴⁸ and two at-large representatives who would come from other development banks (to ensure that the bank is employing best practices). Like the EDB Board, the ADB Board would meet either weekly or fortnightly.

Corporate officers would be selected on a competitive basis. Officers would implement the decisions and policies of the board but have authority to authorize projects below a certain level.

Borrowers would be required to obtain financing to cover the risks associated with project default and the reasonable cost of claims associated with an oil-and-gas or mining pollution incident

The ADB would act as the trustee for any default or pollution damage payments. As trustee, it would administer an administrative claims process to facilitate payment for remediation or cleanup costs. This would eliminate the need to use local courts.

Recommendations to U.S. Leadership

This study raises a plethora of issues and suggested approaches to mitigate the risks associated with uncontrolled development of the Arctic. We make three different and concordant recommendations to address the issues associated with Arctic development. First, we recommend that the United States lead negotiations of a multilateral agreement among the six Arctic littoral states that would have an Arctic Development Code (ADC) as its centerpiece. Second, we recommend that the United States seek to negotiate a multilateral agreement among the six Arctic littoral states to establish regional standards for “acceptable” FDI and the associated reporting of FDI transactions in areas that can affect the Arctic marine environment, including watershed areas. Third, we urge careful consideration be given to the formation of an Arctic Development Bank (ADB) that is patterned upon the recently formed Asian Infrastructure Investment Bank. The point of the ADB would be to provide “local” capital for Arctic economic development and would contain reasonable riders that would ensure that projects are sufficiently well-funded to assure their long-term operation and the expenses of wind-down.

Timing is an issue. The Arctic is rarely mentioned in the headlines, and it is almost certainly not something that the U.S. President or Secretary of State has paid much attention to since taking office in January of 2017. Most commentators have opined that the Arctic has been an area in which there has traditionally been a great deal of cooperation, if for no other reason, because the climatic conditions are so bad that everyone’s physical survival depends upon it. This cooperation mostly continues to this day and could, if properly managed, also be the foundation for a cooperative relationship between the United States and Russia, since our interests in the Arctic are parallel [196]. Russia is just as wary as the United States of the continued FDI efforts of China in their Arctic backyard.

The issues raised in this study do not have to be tackled at this very moment, but it must be addressed in the next few years. Delays do entail costs. The challenges associated with Arctic development are complex and, for the most part, beyond the control of the United States. Accomplishing what is proposed in this paper will

⁴⁸ While the selection of qualified representatives is entirely up to the discretion of each country, the authors strongly urge that each Arctic nation select members who represent the interests of the Arctic’s tribal communities.

take a great deal of effort and money. The timetable for action will likely be driven by changes in worldwide commodity prices and the discoveries of new mineral or hydrocarbon deposits. Yet when that moment arrives, and the United States finally decides that it needs to implement a multilateral policy to shape Arctic development, it is quite likely that policies or investments will already have been made by other countries that will be impossible to unwind. Worse yet, the lack of action could be perceived by unscrupulous investors as a regulatory vacuum, setting the stage for a major industrial

The lack of action could be perceived by unscrupulous investors as a regulatory vacuum, setting the stage for a major industrial accident in which the Arctic littoral countries are forced to confront an environmental catastrophe of the highest order

accident in which the Arctic littoral countries are forced to confront an environmental catastrophe of the highest order. Depending on the severity of the incident, political pressures might then put future development of the Arctic resources at risk for the foreseeable future.

It is also important that the United States demonstrate a strong commitment to the Arctic because of the importance of this region to the United States' economic well-being. President Trump has made development of U.S. infrastructure a priority, and the U.S. Arctic should be no exception [197]. The Arctic is important to the United States on many different levels, and yet the U.S. government recently put planning for its single Arctic infrastructure project—the construction of a deep water port—on hold [198]. For military, disaster-response, and community support, there are a lot of good reasons why the United States needs to increase its Arctic infrastructure. On another level, it is important that U.S. businesses be in the vanguard of designing and constructing Arctic infrastructure for both public and private purposes. Incentivizing this sort of U.S. expeditionary business investment in the United States and in other Arctic countries is one of the best ways that the United States and other Arctic littoral countries can and should collaborate on a business-to-business level.

The challenges of developing sound Arctic policies are daunting but cannot be ignored. The Arctic represents one of the few remaining final frontiers, and the United States would do well to recognize that fact and start making investments now.

Appendix A: Chinese Arctic Investments over \$1 Billion

Country	Value (Bn USD)	Event Type	Sector	Chinese Entity	Narrative
Russia	16.5	Belkomur Railroad Project	Infrastructure, Transportation	CCECC	In November 2012, China Civil Engineering Construction Company (CCECC) committed to the Belkomur Railroad project, which will connect the Russian cities of Perm and Arhangelsk. When completed, the railway will cut time and distance for travel between the Barents Sea and the Ural region. Over 80% of the \$20.6 billion project is anticipated to be funded from private sources.
Canada	15.10	Acquisition	Energy	CNOOC	In February 2013, China National Offshore Oil Company (CNOOC) finalized a \$15.1 billion acquisition of the Canadian oil and gas company Nexen. The Nexen acquisition will give CNOOC access to production in the North Sea, Middle East, the Gulf of Mexico, West Africa, and Canada.
Russia	10.6	Yamal LNG Finance	Energy	Export-Import Bank of China	In April 2016, Yamal LNG signed a 15-year loan agreement worth 10.6 billion. Other investment partners in the Yamal LNG project include the China Development Bank. Of note, French energy company, Total, announced in 2015 that it was looking to secure \$15 billion for its share of the Yamal project, likely from Chinese investors. The project will cost \$27 billion in total.
Russia	5.0	Coal Exploration and Development Agreement	Energy, Minerals, Infrastructure	Shenhua Group	In September 2014, Rostec and Shenhua Group Corporation Limited signed an MoU to explore the Gerbikan-Ogodzhin coal deposit. This project includes the construction of a coal export terminal in Primorsky Krai. The partnership is a 50/50 agreement. Exports are anticipated to land in China.
Russia	5.0	Investment Agreement	Financial, Infrastructure	China Development Bank (CDB)	In August 2013, the CDB signed an agreement with the Russian government in an effort to attract funds for major infrastructure projects in Siberia. Russian officials claim that over \$100 billion in investment is needed in the area. No firm financial commitment was announced but officials claim that the agreement includes at least \$5 billion in Chinese investment.
Russia	4.0	Share of Yamal LNG Project	Energy, Shipping	CNPC	In September 2013, China National Petroleum Company (CNPC) took over 20% of Novatek's share of the Yamal LNG project.
Russia	2.1	Joint Venture	Shipping	Teekay LNG, China LNG Shipping	In July 2014, Teekay LNG and China LNG entered into a joint venture to build six Arctic-class LNG tankers for the Yamal LNG project. The LNG carriers will be the first ice-breaking, polar class LNG carriers to be built. Each vessel is valued at about \$316 million.

Country	Value (Bn USD)	Event Type	Sector	Chinese Entity	Narrative
Norway	2.0	Company Acquisition	Manufacturing, Petrochemical	China National Bluestar	In January 2011, China National Bluestar and Blackstone LP agreed to purchase Elkem and Orkla (silicon producers).
Russia	2.0	Potential Minority Share Acquisition	Mining	Fosun International	In November 2016, Fosun International and Polyus began negotiations for a 20-25 percent acquisition in the Russian gold company. The size of the acquisition is still being negotiated and may include more partners than Fosun International.
Russia	2.0	Share Acquisition	Energy	Chengdong Investment Corporation	In September 2013, Chengdong Investment Corporation paid \$2 billion in convertible bonds for a 12.5% stake in Urakali, which may be returned in a buyback program.
Russia	2.0	Development Loan for Coal Exploration	Energy, Mining	China Development Bank	In March of 2013, CDB and Shenhua Group agreed to a \$2 billion joint development deal for coal resources owned by En+ Group in Eastern Siberia.
Russia	2.0	Oil Supply Agreement	Energy, Financial	China Development Bank	In March 2013, Rosneft agreed to conditions for prepaid oil supplies to China as well as for cooperation on geological exploration, production, and sale. The deal is in exchange for a \$2 billion, 25-year loan financed by CDB.
Russia	1.6	Core Module Production for LNG Plant	Energy	CNOOC	In July 2015, CNOOC signed a \$1.6 billion deal to build equipment for the Yamal LNG project.
Russia	1.59	Arctic LNG Carriers	Energy, Shipping	China Merchants Energy Shipping, Sinotrans, CLNG	In September 2015, China Merchants Energy Shipping, Sinotrans, and China LNG Shipping, along with Dynagas (Greece) agreed to construct five polar class LNG carriers for the Yamal LNG project.
Canada	1.50	Alternative Asset Investment	Mining	China Investment Corporation	In July 2009, China Investment Corporation (CIC) acquired a 17.1% stake in Teck Resources Limited, the operator of Red Dog Mine in Alaska.
Russia	1.5	Yamal LNG Finance	Energy	China Development Bank	China's involvement in the Yamal LNG project began when China Development Bank (CDB) agreed to provide and undisclosed amount of financing to Novatek. More clarity was brought when it was announced that CDB would provide \$1.5 billion to the project. The EximBank of China is also a major investor. Of note, French energy company, Total, announced in 2015 that it was looking to secure \$15 billion for its share of the Yamal project, likely from Chinese investors. The project will cost \$27 billion in total.
Russia	1.4	Oil Field Stake Acquisition	Energy	CNPC	In November 2014, CNPC agreed to purchase 10% of Vankorneft.
Canada	1.0	Loan Agreement	Energy, Financial	Export-Import Bank of China	In October 2015, Teekay Corporation signed a cooperation agreement with the EximBank of China for loan facilities.

Country	Value (Bn USD)	Event Type	Sector	Chinese Entity	Narrative
Russia	1.0	Investment Funds	Construction, Infrastructure	CSCEC	On March 2017, The Russia Far East Development Fund and the Baikal Regional Development fund indicated intent to establish two development funds with Asian investors, the value of which is expected to amount to \$1 billion each for infrastructure, construction, and gold development. Announced investors include China State Construction Engineering Corporation, Metropoly, and China National Gold Group.
Russia	1.0	Investment Funds	Construction, Infrastructure	China National Gold Group	On March 2017, The Russia Far East Development Fund and the Baikal Regional Development fund indicated intent to establish two development funds with Asian investors, the value of which is expected to amount to \$1 billion each for infrastructure, construction, and gold development. Announced investors include China State Construction Engineering Corporation, Metropoly, and China National Gold Group.

Source: Available from authors upon request.

Appendix B: Chinese Investments less than \$1 Billion

Country	Value (M USD)	Event Type	Sector	Chinese Entity
Russia	654	Equity Acquisition in Polyus Gold	Mining	Chengdong Investment Corporation
Norway	640	Solar Power Company Acquisition	Energy	China National Bluestar
Norway	473	Oil Rig Construction	Energy	COSCO
Norway	450	Semisubmersible Drilling Platforms	Energy	COSCO Shipyards Co.
Russia	280	Potash Export Contract	Agriculture	Sinochem
Canada	150	Controlling Share Acquisition	Energy, Minerals	CNOOC
Canada	117	Majority Share Acquisition	Mining	China CAMC Engineering
Russia	100	Minority Share Acquisition	Mining	China Highland
Russia	100	Project Share Acquisition	Mining	Unknown
Canada	73.1	Share Acquisition	Mining	China Minmetal and Wuhan Iron and Steel (Group) Corporation (WISCO)
Canada	70.4	Joint Venture	mining	WISCO International Resources Development
Canada	40	Mining Investment	Mining	WISCO
Canada	36.4	Joint Venture	Mining	WISCO
Russia	28	Trade Loan	Financial	Export-Import Bank of China
Greenland		Mining Memorandum	Mining	China Non-Ferrous Metal Industry Foreign Engineering and Construction Co. Ltd.
Canada		Strategic Cooperation Agreement	Infrastructure, Transportation	China Railway Rolling Stock Corporation
Canada		Potential Minority Stake Purchase	Energy, Petrochemicals	Sinopec
Canada		Technology Development Agreement	Aerospace, defense, technology	Chendu Space Technology Company
Iceland		Offshore Oil Exploration License	Energy	CNOOC
Russia		Pending Share Acquisition	Energy	Silk Road Fund
Russia		Energy Cooperation Memorandum	Energy	CNPC
Russia		Energy Cooperation Memorandum	Energy	CNOOC
Russia		Gold Exploration Agreement	Mining	China National Gold

Country	Value (M USD)	Event Type	Sector	Chinese Entity
Russia		Financial Memorandum	Financial, Minerals, Mining	Export-Import Bank of China
Russia		Oil Field Joint Development/Share	Energy	Sinopec
Russia		Potential Minority Stake Acquisition	Energy	Russia-China Investment Fund
Russia		Potential Offshore Oil Exploration	Energy	CNOOC
Russia		Potential Rare Earth Mine	Mining	Unknown
Russia		Possible Arctic Oil Cooperation	Energy	CNOOC
Russia		Interest in Energy Project	Energy	CNPC
Russia		Potential Share Acquisition	Metals	Baosteel
Russia		Pending Mine Development	Mining	China Nonferrous Metal Industry, COVEC
Russia		Joint Oilfield Development	Energy	China CEFC Energy Company
Russia		Eastern Siberian Joint Venture	Energy	CNPC
Russia		Arctic Drilling Cooperation	Energy	CNPCs
Russia		Possible Minority Share Acquisition	Energy	CNPC

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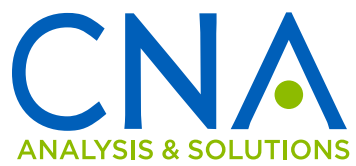
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