JOINT STEWARDSHIP OF THE BARENTS SEA: RUSSIAN AND NORWEGIAN POLICY EXPECTATIONS FOR PREVENTING OFFSHORE OIL SPILLS

By

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Abstract

As Arctic environmental conditions fluctuate, ongoing economic-related agreements established for the Barents Region continue to support and attract Norwegian and Russian oil-producing expeditions within the shared maritime zone. Increased industrial activity throughout the Circumpolar North heightens the need to understand the factors that influence policies responsible for protecting the environment – in particular, preventive measures. Agency theory provides the framework for an analysis of various dynamics that influence the Norwegian and Russian governments (principals) as they develop and enforce rules that regulate petroleum industries (agents). The research question asks about differences between the prevention policies of the two nations even though both acknowledge a very similar need to protect the Barents. Since the regulatory and governance structures cannot fully explain the differences between the two countries' prevention policies, the hypothesis presents an argument that the strategic goals of Norway and Russia in the global political economy provide sufficient conditions for policy divergence. This research presents case studies of economic and environmental factors that influence how Russia and Norway develop energy-related prevention policies in the Barents Sea. The findings suggest that differing strategic goals between the two countries influence their oil spill prevention policies. Russia's oil spill prevention policy enables it to maintain high production levels that it can leverage to further its geopolitical aims. Norway's more cautious prevention policies promote domestic economic stability. In a progressively interdependent world, this study contributes insight into contemporary international relations regarding aspects of partnerships, energy economics, and geostrategic policy.

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Chapter 1: Introduction

Offshore petroleum activities create concern about oil pollution of the marine environment. In the Arctic, oil operations raise special concerns because of the potential effects to marine flora and fauna as well as humans in this particularly vulnerable ecosystem. Oil exploration and extraction activities in the Barents Sea (Figure 1.1) at locations within each nation's maritime boundaries have been managed by both Russia and Norway. According to the most recent information regarding world rankings, Russia owns the third spot for total oil production[1] and second for exports[2] while Norway clinched fifteenth in production and fourteenth in exports. Continuing these commercial activities remains a national priority for Moscow and Oslo alike. Nonetheless, potential oil spills represent the largest threat to the Barents Sea for humans and the environment.[3] Environmental degradation remains a top concern for the Barents Sea Region.[4]

Relations between Russia and Norway in the North in managing oil activities in the Barents Sea are respectful, *Ceteris paribus*. However, Russian and Norwegian oil-pollution prevention efforts to protect the Barents environment differ markedly. Norway relies greatly on performance and risk management (discussed in chapter 2.3), whereas Russia utilizes stricter, prescribed regulations. Both approaches can theoretically achieve the same goals, but the former holds producers more strictly accountable for accidents, whereas the latter stresses following rules, which may or may not be well enforced. This difference in spill prevention approaches, as

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[1] James Henderson and Julia Loe, "The Prospects and Challenges for Arctic Oil Development" (Oxford, England: The Oxford Institute for Energy Studies, 2014).
[2] "The World Factbook," Central Intelligence Agency. https://www.cia.gov/library/publications/the-world-factbook/rankorder/2242rank.html (accessed 4 July, 2016).
[3] Anatoli Bourmistrov et al., *International Arctic Petroleum Cooperation: Barents Sea Scenarios* (Routledge, 2015), 243.
[4] G. Matishov et al., "Barents Sea" in *Global International Waters Assessment*, ed. Ulla Li Zweifel (Kalmar Sweden: United Nations Environment Programme, 2004), 77.

well as other strategic and domestic economic influences explain how and why goals and objectives diverge, resulting in different prevention effectiveness.

Figure 1.1 – The Barents Sea

The Barents Sea defined by the International Hydrographic Organization.
Sources: Boundary information provided by Marineregions.org. Map adapted from CIA World Factbook Regional Maps https://www.cia.gov/library/publications/the-world-factbook//graphics/ref_maps/political/jpg/arctic_region.jpg

Discourse analysis of over fifteen years of Norwegian public debate indicates that a strong bilateral partnership between Norway and Russia is essential for protecting the Barents Sea environment from oil pollution.[5] While some evidence indicates Russian interest in safeguarding the Barents, Norway's superior environmental protection record goes unchallenged. Russia

[5] Leif Christian Jensen, *International Relations in the Arctic: Norway and the Struggle for Power in the New North* (London and New York: I. B. Tauris & Co. Ltd., 2016).

acknowledges the striking disparity in "ecological problems" between the two countries and a need to "come closer to European standards."[6]

The Barents Sea is ecologically representative of the entire Arctic Ocean, much as Jane Lubchenco notes that "[t]he Arctic Ocean is, in fact, a microcosm[7] of all ocean ecosystems: rich in its beauty, bounty, and history but fragile in its susceptibility to unsustainable practices on land and in the oceans."[8]

Governments have an obligation to act on behalf of societies in protecting the environment, but they must balance environmental responsibility with socio-economic and fiscal obligations. Using the Arctic Circle as a geographic reference point, the number of people in the European Arctic of Russia and Norway accounts for over 55 percent of the total circumpolar population (Figure 1.2).[9] The potential impacts of a major oil spill on such concentrations of people could be staggering, and could spread far beyond a country's economic zones. Yet powerful economic actors constantly pressure public sectors to promote their interests, which often conflict with sensible policies to protect the environment. Such conflict points to gaps and opportunity to study differences in oil-spill prevention policies based on intent as well as implementation – a process featuring the vital governmental function of oversight.

An oil spill in the Barents Sea has yet to occur. Thus scientists can only speculate about potential effects. Existing data cannot determine the level of sensitivity of Arctic species

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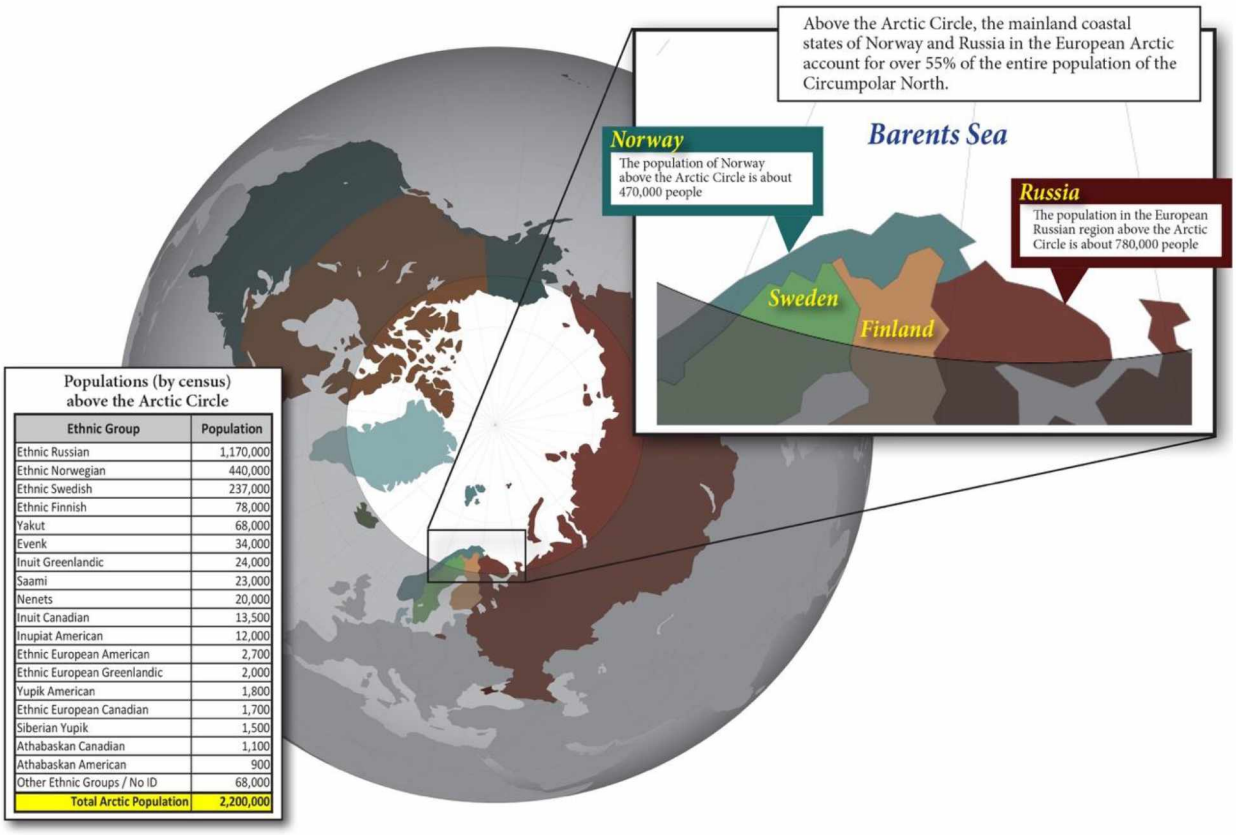
[6] Ibid., 98.
[7] A microcosm is a community, place, or situation regarded as encapsulating in miniature the characteristic qualities or features of something much larger: Angus Stevenson and Christine A. Lindberg, *New Oxford American Dictionary*, Third ed. (Oxford, New York: Oxford University Press, 2010).
[8] Jane Lubchenco, *Forward: Lessons from the Ice Bear*, ed. Karen L. McLeod and Heather M. Leslie, Ecosystem-Based Management of the Oceans (Washington, DC: Island Press, 2009).
[9] Harry Bader, Cameron Carlson, and Troy Bouffard, "Tale of Two Arctics: Impact of Geography Affecting Security and Disaster Response Capabilities between North America and Europe," *Homeland Security Review* 8, no. 2 (2014).

compared to temperate ones.[10] Aside from risks to biota, indirect effects of a major oil spill on humans raise concerns. Large fish stocks are harvested in the Barents Sea, meaning environmental protection and food safety are closely linked. Oil spills could also negatively affect sea-ice margins as well as parts of the shores along the Kola Peninsula that are highly productive marine zones.



Populations (by census) above the Arctic Circle

Ethnic Group	Population
Ethnic Russian	1,170,000
Ethnic Norwegian	440,000
Ethnic Swedish	237,000
Ethnic Finnish	78,000
Yakut	68,000
Evenk	34,000
Inuit Greenlandic	24,000
Saami	23,000
Nenets	20,000
Inuit Canadian	13,500
Inupiat American	12,000
Ethnic European American	2,700
Ethnic European Greenlandic	2,000
Yupik American	1,800
Ethnic European Canadian	1,700
Siberian Yupik	1,500
Athabaskan Canadian	1,100
Athabaskan American	900
Other Ethnic Groups / No ID	68,000
Total Arctic Population	2,200,000

Figure 1.2 – Arctic Population of European Norway and Russia

Russia and Norway maintain a highly effective and responsive partnership with regard to establishing expectations and managing activities in the Barents Sea, including oil production.

[10] Roald Kommedal, Andrea Bagi, and Tor Hemmingsen, "Environmental Effects of Oil and Gas Exploration and Production in the Barents Sea," in *International Arctic Petroleum Cooperation: Barents Sea Scenarios*, ed. Anatoli Bourmistrov, et al. (New York, NY: Routledge, 2015), 243-44.

Each belongs, separately and together, to several high-level organizations that retain the Barents as part of their portfolios. Cooperation and interdependence between the two provide convincing evidence of official intent and sincerity in protecting this common environment.

However, the two countries diverge significantly in terms of actual oil-spill prevention measures. Administratively, as well as operationally, Russia and Norway maintain different regulatory approaches. Both could work equally well in theory, and official documents suggest similar intent to manage the Barents region responsibly. But Norway has a better developed oil-spill prevention policy than Russia.

My research question is: What explains the difference in Norwegian and Russian offshore oil-spill prevention policies in the Barents Sea?

I argue that global forces shape governmental willingness to accept risky practices from oil companies. Russia needs to maintain its status as one of the top oil producers in the world for political as well as economic reasons. It therefore applies less restrictive policies on oil producing operations. Norway maintains a profitable oil production industry and relationship with clients and the international community enabling emphasis on safer practices. The differences in regulatory behavior depart from written policy and occur owing in part to two related factors: 1) historical development of principal-agent relationships that shape the operational culture, and 2) global objectives that drive the need and use of oil-production revenues. This argument does not deny the relevance of multiple historical and current domestic socio-cultural and political forces that shape oil spill prevention policies in Russia and Norway, including authoritarianism versus democracy, secrecy and corruption in governance versus transparency in governance, the lack of a history of rule of law versus a strong history of rule of law, and no history of prioritizing environmental protection versus environmental leadership. I

argue, however, that principal-agent theory and the differing strategic aims of the two countries have explanatory power in considering the differences between these two countries' oil spill prevention policies.

The type of regulatory regimes (performance versus prescriptive) and government (liberal-democratic versus authoritarian) alone cannot explain why there are differences in policy. Agency theory and case study methodology suggest that written policy addressing pollution prevention has limited chance for success on its own. Operational behaviors ultimately decide how intent is achieved.

A case study of Russia reveals that Russia's status as a global oil producer provides opportunity and motivation for its oil companies to be more aggressive toward oil production and assume more risk in the Barents Sea. Although Russia has robust strategies, policies, and regulations concerning environmental protection, its behaviors do not always align with the conventional thinking of protecting the environment for the environment's sake. The primary Arctic Russian strategies indicate that interest in the environment focuses on fulfilling sovereignty objectives. The term "Russian Federation Jurisdiction" looms among those pages associated with environmental content. When the track record of terrestrial oil pollution is coupled with the pressure to maintain oil supplies in the market for strategic leverage, Russia's demonstrated concern for offshore oil-spill prevention does not instill much confidence in others.

In contrast, a case study of Norway reveals that its status as a petro nation does not drive it to permit unnecessary risk and damage in the Barents Sea. Unlike Russia, Norway had a fairly stable and growing economy when it first found oil and pursued production. Furthermore, the state diligently avoided 'Resource Curse' and/or 'Dutch Disease' issues. A strong democracy, separation of associated oil-production authorities, and effective oversight established a

protection system meant to meet just that intent – preserve the environment for the environment's sake. Additionally, Norway subscribed and committed to integrating its petroleum industry value into global economic systems by way of fiscal and monetary means. Chapter 2 of this project will provide the context for understanding the economic and ecological importance of Barents Sea and Arctic offshore oil pollution regulation, Russia's and Norway's prevention-related policies, fundamentals involved with regulatory regimes, and the major historical influences on the current offshore oil production policies of Russia and Norway. Chapter 3 provides a review of the related literature. Chapter 4 outlines the theoretical framework and hypothesis for this study. Chapter 5 explains the research design, including the case study methodology, case selection criteria, cases and findings. Chapter 6 concludes this study with implications for future research and policy.

Chapter 2: Background on Oil-Spill Risk and Management in the Barents Sea

Mark Cohen loosely defines oil-spill prevention as a general responsibility of government to monitor and enforce adopted policies while dealing with imperfect information about the level of pollution or source and incorporating deterrence as a social cost.[1] Government, being unable to directly monitor all oil producing activities, must create incentives for oil companies to internalize prevention measures, and thus reduce risks. Further definition provided by the Sydnes' explains that oil-spill response, or OSR, is any action taken to prevent, reduce, monitor, or combat oil pollution.[2] Of note, prevention and response are often mistakenly used interchangeably when addressing oil spill policy. This research specifically emphasizes aspects of prevention as opposed to response, mitigation, recovery and other phases of an oil-spill incident. The project focuses on prevention not only to narrow the study, but because the policies, actors, authorities, and frameworks for oil-spill response, mitigation, recovery and other phases differ vastly from those focused on prevention. Prevention policies involve distinct philosophies and principles in support of development and implementation. Moreover, public-sector relationships change after an oil spill, which, if incorporated into this study, would likely cause spurious results since the project's framework involves application of a theory designed specifically to explain relationship dynamics involving the dominant actors. These roles of the

[1] Mark A. Cohen, "The Costs and Benefits of Oil Spill Prevention and Enforcement," *Journal of Environmental Economics and Management (originally published in a dissertation at Carnegie-Mellon University)* 13, no. 2 (1986): 167.
[2] Are K. Sydnes and Maria Sydnes, "Norwegian–Russian Cooperation on Oil-Spill Response in the Barents Sea," *Marine Policy* 39 (2013).

actors involved with prevention policy change for other policies, and mixing these conditions would likely cause inconsistencies in the findings.

2.1 Oil Development in the Barents Sea

On September 15, 2010, in the presence of the Russian President and Norwegian Prime Minister, the respective Foreign Ministers signed[3] the Barents Delimitation Agreement.[4] By July 7th of the next year, the national legislatures voted the treaty into force (Figure 2.1) and Norway gained an additional 34,000 square miles of continental shelf in the Barents Sea, allowed by provisions in the United Nations Law of the Sea Convention (UNCLOS). In addition, the agreement required joint Russia-Norway development of any deposits that cross boundaries.[5] Within hours of ratification, Norway launched several scientific vessels into previously disputed maritime territory to conduct geological surveys in support of petroleum exploration. Five weeks later, Prime Minister Medvedev published the *General Outline of the Development of the Oil Sector of the Russian Federation until 2020*.[6] The national strategy indicated that legacy terrestrial fields were nearing the later phases of depletion. The report highlighted offshore Arctic reserves in the Northwest as an important province for replacement reserves.

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[3] The Mission of Norway to the European Union, "Treaty on Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean," news release, 15 September, 2010, http://www.eu-norway.org/news1/Treaty-on-maritime-delimitation-and-cooperation-in-the-Barents-Sea-and-the-Arctic-Ocean-signed-today/ (accessed 2 April 2014, 2010).

[4] "*Treaty between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*," ed. (Murmansk, Russia 2010).

[5] Energy Information Administration, "Norway" in *International Energy Data and Analysis* (Washington, D.C.: U.S. Department of Energy, 2015).

[6] Heather Conley and Caroline Rohloff, "The New Ice Curtain: Russia's Strategic Reach into the Arctic" (Washington, DC: Center for Strategic and International Studies (CSIS), 2015), 26.

Although statements of intent for delimitation had been made several months prior to the signing of the Barents Delimitation Agreement, the move came as a surprise to many Norwegian allies.[7] This watershed moment of diplomacy signaled clear intent of Norway's strategic interests amidst complicated circumstances: concordant access to natural resources in the Barents, especially offshore oil, had offset geopolitical differences between Norway and Russia.

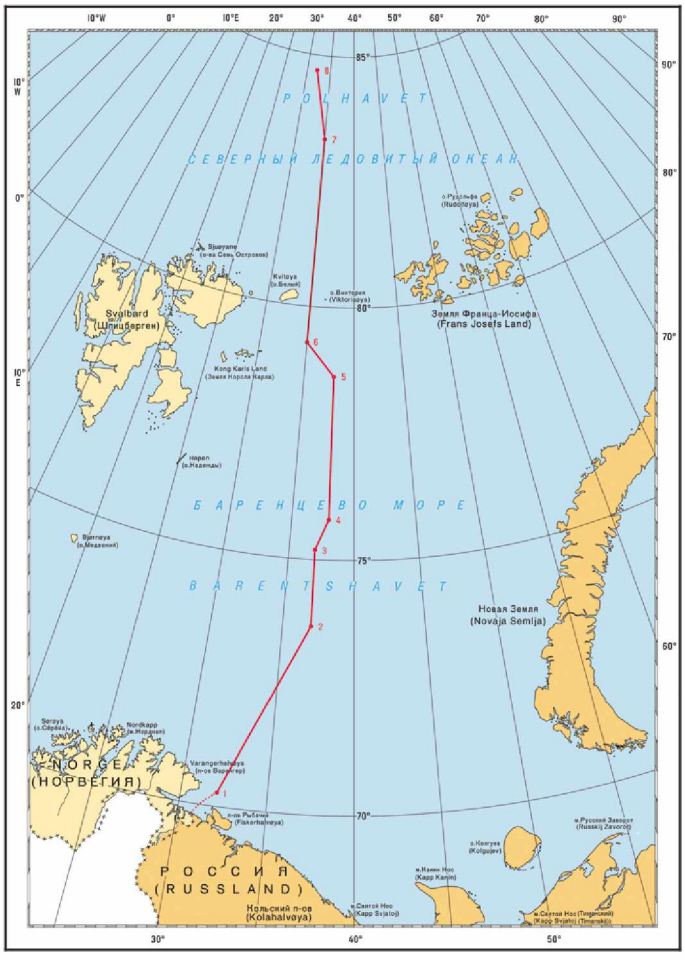

Figure 2.1 – Barents Delimitation Boundary

Source: The Norwegian Ministry of Foreign Affairs
https://www.regjeringen.no/en/topics/foreign-affairs/international-law/innsikt_delelinje/chart/id614287/

[7] Tore Henriksen and Geir Ulfstein, "Maritime Delimitation in the Arctic: The Barents Sea Treaty," *Ocean Development & International Law* 42, no. 1-2 (2011).

In 2008, the U.S. Geological Survey published an updated report concerning the Circum-Arctic Resource Appraisal of undiscovered, technically recoverable oil and gas. At a time when scientists were reporting dramatic declines in sea ice thickness, age and extent, the report stirred up unprecedented movement and interest toward energy-related activities in the Arctic. According to the report, the surveyed petroleum provinces in the Barents region, including the sub-provinces (assessment units or AUs), have potentially billions of barrels of oil in unproven reserves. Russia's East Barents Basins 1 and 2 (EBB 1 and EBB 2) as well as the Norwegian Barents Platform (BP) 1 and 2 have deposits totaling nearly ten billion barrels of oil.[8] EBB 1 and BP 1 receive a probability rating of 100 percent (likeliness that the estimates are accurate) and EBB 2 (area between Franz Joseph Islands and northern Novaya Zemlya) and BP 2 list at 51-100 percent.[9] According to Russia's own estimates, 90 percent of the hydrocarbon deposits are located in the Russian continental shelf – 66.5 percent of which are in the Barents and adjoining Kara Seas.[10] Along those same lines, Norway's oil industry has good reason to expand interest and operations as analysis indicates that 30 percent of the undiscovered Norwegian petroleum resources are in the Barents Sea.[11]

Industrial efforts to exploit oil account for much of the maritime enterprise subsidized by Russia and Norway. Moreover, forecasts indicate increased activity in the Barents as global demand for energy is increasing.[12] But petroleum operations and/or accidents could pollute the

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[8] Kenneth J. Bird et al., *Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle* (U.S. Department of the Interior, U.S. Geological Survey, 2008).
[9] Donald L. Gautier et al., "Assessment of Undiscovered Oil and Gas in the Arctic," *Science* 324, no. 5931 (2009).
[10] Russian Federation, "*Energy Strategy of Russia for the Period up to 2030*," ed. Ministry of Energy of the Russian Federation, (Moscow: Government of the Russian Federation, 2010).
[11] Jon Rytter Hasle, Urban Kjellén, and Ole Haugerud, "Decision on Oil and Gas Exploration in an Arctic Area: Case Study from the Norwegian Barents Sea," *Safety Science* 47, no. 6 (2009).
[12] Alexei Bambulyak and Bjørn Frantzen, "Oil Transport from the Russian Part of the Barents Region. Status Per January 2009" (Norway: The Norwegian Barents Secretariate and Akvaplan-niva, 2009), 7.

environment. The Barents Sea is one of the most productive in the world, and in an Arctic environment like the Barents, low temperatures could slow down photo-oxidation (evaporation); bacteriological breakdown of petroleum pollutants also takes place more slowly than in more temperate regions.[13] Marine ecosystems in the Barents are generally simple; therefore a disruption of one link in the food chain can severely affect the rest of the system.[14] In a worst case scenario, disruption to key species (e.g. zooplankton, which requires algae) could collapse the ecosystem, since energy would not transfer further up from the primary producers level.[15] Ecological effects of oil production include changes to the topography of the sea floor, destruction of marine life and its habitat, and damages to the equilibrium of the ecosystem.[16] An oil spill can also disrupt gestation and development of new fish, harm and kill marine life, and jeopardize the habitat of fish stock.[17] Other ancillary sources of pollution in the Arctic include nuclear waste from Russia (e.g. nuclear sites on the Kola Peninsula and testing on Novaya Zemlya). However, oil spills represent the greatest anticipated risk to the marine ecosystem of the regions and the greatest new response expense.[18]

Various stakeholders within the eight Arctic nations have expressed anxiety about the dangers of oil pollution in northern waters.[19] Such worries reflect the growing scientific and

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[13] Olav Schram Stokke, "Sub-Regional Cooperation and Protection of the Arctic Marine Environment: The Barents Sea," in *Protecting the Polar Marine Environment: Law and Policy for Pollution Prevention*, ed. Davor Vidas (Cambridge, United Kingdom: Cambridge University Press, 2000), 130.
[14] Ibid.
[15] Roald Kommedal, Andrea Bagi, and Tor Hemmingsen, "Environmental Effects of Oil and Gas Exploration and Production in the Barents Sea," in International Arctic Petroleum Cooperation: Barents Sea Scenarios, ed. Anatoli Bourmistrov, et al. (New York, NY: Routledge, 2015), 234-35.
[16] Myron H Nordquist, John Norton Moore, and Alexander S Skaridov, *International Energy Policy, the Arctic, and the Law of the Sea*, Center for Oceans Law and Policy (Leiden, Boston: Martinus Nijhoff, 2005), 220.
[17] Ibid., 221.
[18] Charles Emmerson and Glada Lahn, "Arctic Opening: Opportunity and Risk in the High North" (London, Great Britain: Lloyd's, 2012).
[19] The eight Arctic nations are Canada, Denmark (via administration of Greenland), Finland, Iceland, Norway, Sweden, Russia, and the United States.

cultural awareness of the sensitivity and interconnectedness of the ecosystem as a whole.[20] Russia and Norway, in their roles as individual administrators as well as united stewards of the Barents Region, not only recognize the richness and complexities of the Arctic, but in many ways offer contributions that serve as examples of responsibly high standards. However, Russia's *actions* suggest that this acknowledgement may be superficial and self-serving. Whereas Norway's oil activities demonstrate a true appreciation for the ecosystem, Russia's actions represent reckless behavior that pose a high risk to the environment.

2.2 Understanding Oil and Offshore Concerns in the Arctic

Crude oils and refined petroleum products[21] can vary greatly in physical and chemical properties associated with toxicity and biological effects.[22] When oil spills into open waters, it undergoes chemical changes through various weathering processes. The two primary concerns for weathering in more temperate regions[23] that determine the consequences of any offshore oil spill[24] are evaporation (surface oil photo-chemically oxidizing into the atmosphere), and solubility in water. Within the Arctic, two additional weathering complications are dramatically elevated: stranding and trapping.[25] Once an oil spill is deposited onto shores, it is considered stranded. Normally, high-energy wave action along a shore helps to continue the dissipation

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[20] Scott Nicholas Romaniuk, *Global Arctic: Sovereignty and the Future of the North*, 1st ed. (Highclere, Berkshire: Berkshire Academic Press, 2013), 88.
[21] The Norwegian Marine Pollution Research and Monitoring Programme (FOH) defines oil as a naturally occurring, complex mixture of organic components, resulting from the transformation of plant and animal remains under special geological conditions, e.g. high temperature and pressure.
[22] S. F. Moore and R. L. Dwyer, "Effects of Oil on Marine Organisms: A Critical Assessment of Published Data," *Water Research* 8, no. 10 (1974): 820.
[23] Ibid.
[24] "Synthesis of Effects of Oil on Marine Mammals", ed. Joseph R. Geraci and David John St. Aubin (Canada: University of Guelph, 1988).
[25] R. Douglas Brubaker, *Marine Pollution and International Law: Principles and Practice* (London, U.K.: Belhaven Press, 1993), 14.

process. However, in a low-energy Arctic shoreline, that process is significantly diminished. Trapping occurs when an oil spill enters into coves or other similar maritime features. Again, lack of high (or any) wave energy, as well as colder temperatures, significantly diminishes the dissipation process compared to more temperate areas. Active cleanup in situations within the Arctic involving stranding or trapping would likely require increased human or technological efforts, both considerably impacted by the difficulties of working in such an environment.

Offshore oil spills in the Arctic generally arise in three potential scenarios: 1) oil spill in open water with sea ice, 2) oil spill in open water without sea ice, and 3) oil spill that reaches a coastline. Two factors determine the extent of an offshore oil spill: the amount of oil as well as hydro-meteorological conditions (strength and direction of wind, currents, wave height, ice conditions).[26] In the Barents, currents consist of three main water masses (Figure 2.2): the Atlantic and Norwegian Coastal waters (moving Northeast and East through the Barents Sea), and the Arctic waters (moving South and Southwest through the Barents Sea).[27]

[26] "Modeling Oil Spills in the Beaufort, Bering and Barents Sea", in *Fact Sheet* (World Wildlife Fund, 2014).
[27] Harald Loeng, "Features of the Physical Oceanographic Conditions of the Barents Sea," *Polar Research* 10, no. 1 (1991): 6-7.

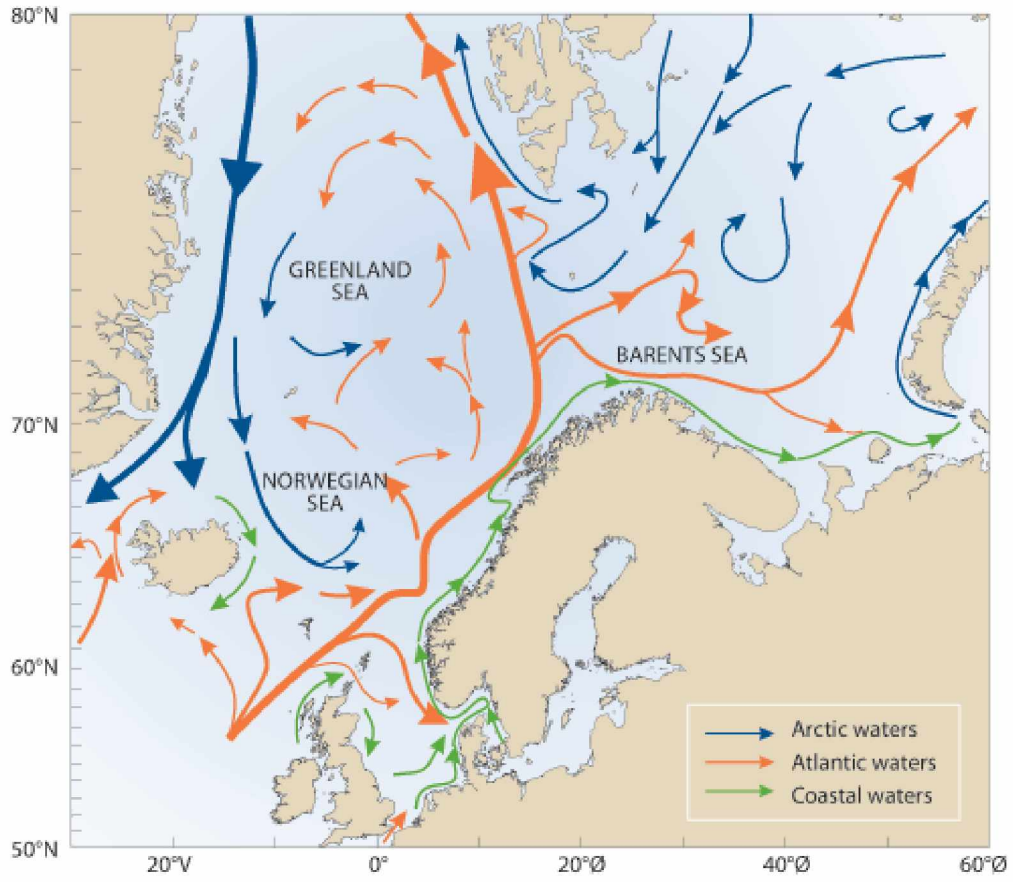

Figure 2.2 - Main currents and water mass of the Barents Sea

Source: Havsforskningsinstituttet (Institute of Marine Research, Norway)

In the open waters of the Barents Sea without sea ice, it is theoretically possible to contain an oil spill using conventional response technologies and processes such as mechanical containment and recovery, chemical dispersants, and *in situ* burning.[28] When an oil spill occurs in waters with sea ice, response becomes much more difficult with no known way to prevent accumulation in sea ice. Arctic conditions pose additional environmental and logistical challenges and may reduce the efficiency of conventional oil-spill response (OSR) techniques

[28] "Modeling of Potential Oil Spill Behavior When Operating Prirazlomnaya OIFP (Offshore Ice-Resistant Fixed Platform). Assessment of Possible Oil-Spill Emergency Response ", ed. V. I. Zhuravel, et al. (Moscow, Russia: RGC Risk Informatics Research Center, 2012), 81.

considerably.[29] Traditional response options face limitations in Arctic conditions while current oil-spill response OSR plans involving sea ice remain unverified beyond small-scale controlled testing.[30] Finally, oil pollution in a polar marine environment increases as a threat when it becomes stranded on sloping, low-energy beaches.[31] Low-energy in this context refers to areas with sea ice that experience little wave activity, leaving the oil undisturbed in the ice. In contrast, wave energy, the crashing and grinding of ice by ocean currents, dissipates oil much more rapidly. Certain low-energy Arctic shorelines can remain polluted from one year to several decades, whereas stranded oil pollution on non-Arctic, high-energy coasts usually only remains up to a year.[32] Some of the low-energy coastal features include lagoons and other areas that can act as oil traps. Aside from these elevated risk conditions, there are three types of coasts in the European and Asian Arctic associated with permafrost: 1) tundra cliffs, 2) peat shorelines, and 3) inundated low-lying tundra.[33] The combination of the latter two, which typically lack barriers (eroded cliffs, etc.), and the presence of energy-dissipating sea-ice (and oil itself) also meet the characteristics of low-energy beaches.

Contrary to popular belief, sea ice is constantly moving if it is not locked to a coast (land-fast) or seabed (bottom-fast), meaning oil can be transported for great distances and released into other ecosystems. As oil spreads from a spill, drift ice (found throughout the northern Barents) can trap oil in numerous ways. Oil can saturate ice leads, coat the undersurface of ice and

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[29] Alexei Bambulyak, Are Kristoffer Sydnes, and Maria Sydnes, "Oil-Spill Response in the Russian Arctic," in *Handbook of the Politics of the Arctic*, ed. Christian Leif Jensen and Geir Honneland (Northampton, Massachusetts: Edward Elger Publishing Limited, 2015), 80.
[30] Ibid.
[31] D. J. Griffiths, Nils Are Øritsland, and Torger Øritsland, "Marine Mammals and Petroleum Activities in Norwegian Waters," *Fisk og Havet* Serie B, no. 1 (1987): 68.
[32] Brubaker, *Marine Pollution and International Law: Principles and Practice*, 14.
[33] Edward H. Owens and Jacqueline Michel, "Planning for Shoreline Response to Spills in Arctic Environments" (paper presented at the International Oil Spill Conference, 2003), 1-3.

accumulate against ice edges.[34] Ice edges (zones), where many species look to find breathing holes (which can fill with oil), represent highly productive areas within polar ecosystems. Edges and leads also support migration, habitat, and subnivian processes.[35] In fact, nowhere is primary biological production as concentrated in time and space as it is in the Sea-Ice Marginal Zone.[36] Additionally, the coastal zone of the Kola Peninsula (the Barents, Pechora and White Seas) is notable for high levels of biodiversity, including rare and specially protected birds and mammals.[37] Aside from fish, impacts to wildlife vary greatly depending on the levels of toxicity of the pollution. However, pollutants present some degree of adverse sub-lethal effects at a minimum. Much has yet to be learned about the range of consequences of oil pollution to Arctic mammals, marine birds, marine bacteria, phytoplankton, and invertebrates.[38] As a microcosm, representative of the entire Arctic, the Barents is vulnerable to all of these threats.

Oil production involves four main phases: exploration, well development, production, and decommissioning (site abatement). During exploration, seismic surveys are conducted along with exploratory drilling. Both of these activities have been undertaken extensively throughout the Barents (Figure 2.3). Currently, the two fields in production in the Norwegian part of the Barents are Goliat and Johan Castberg which have a combined (deposit) estimate of 674 million barrels of oil.[39] In the Russian sector, the Prirazlomnoye field is currently the only active site, having established operations in December 2013, filling its first tanker the following April, and

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[34] Kjell Isaksen, Vidar Bakken, and Øystein Wiig, *Potential Effects on Seabirds and Marine Mammals of Petroleum Activity in the Northern Barents Sea* (Oslo, Norway: Norsk Polarinstitutt, 1998), 14.
[35] F. Rainer Engelhardt, "Petroleum Effects on Marine Mammals," *Aquatic Toxicology* 4, no. 3 (1983): 200.
[36] Jan-Gunnar Winther and Dag Vongraven, "Where the Ocean Blooms," *World Wildlife Fund (WWF)*, 11 November 2014.
[37] G. Matishov et al., "Barents Sea," in *Global International Waters Assessment*, ed. Ulla Li Zweifel (Sweden: United Nations Environment Programme, 2004), 62.
[38] Brubaker, *Marine Pollution and International Law: Principles and Practice*, 21-30.
[39] Energy Information Administration, "Norway."

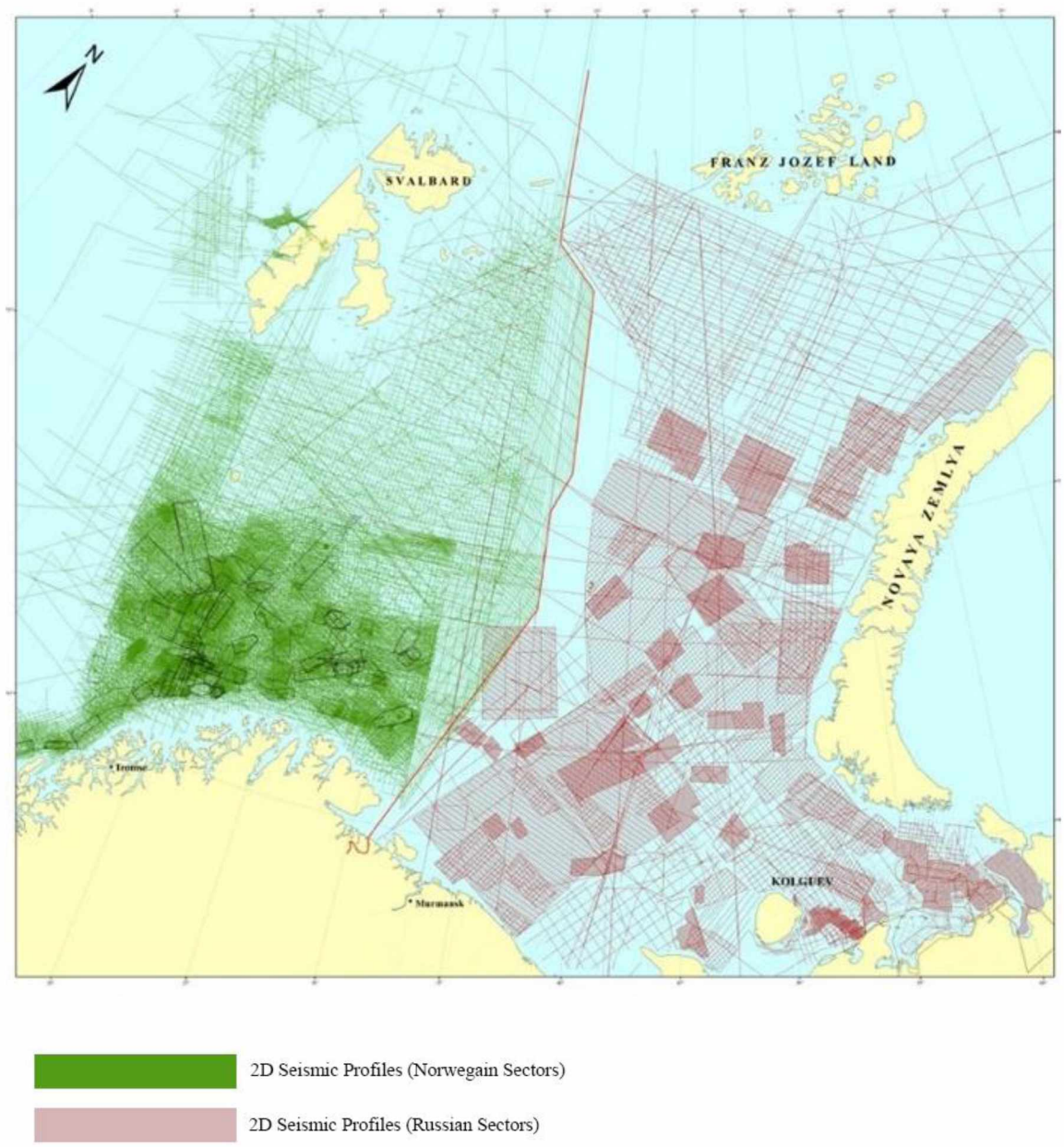

Figure 2.3 - Map reflecting production survey activity in the Barents Sea before 2014

Source: BarentsPortal http://www.barentsportal.com/barentsportal/index.php/en/more/art/90-human-activities/151-oil-and-gas-activities

reaching a milestone in September of that same year with one million barrels drawn from below the seabed.[40] Sanctions related to the Ukraine crisis effectively blocked development of any additional offshore Arctic fields for Russia. To offset restrictions on new production, the single operating *Prirazlomnaya* platform doubled output in 2015 with plans to increase output fivefold within a few years.[41]

2.3 Prevention Policy

Preventing oil spills requires governmental mandates and industrial compliance. Policy is not just the written word or implemented documents; it is also the speech and conduct of the public-sector elites. Translating intent adds to the challenge. At the top of policy-making hierarchies, crafting regulations often involves architectural frameworks that are "necessarily vague." Deliberate ambiguity allows subordinate agencies to adapt regulation to meet intent through discretionary application. Such latitude allows flexibility to circumvent unexpected predicaments and respond to specific challenges, but it also invites abuse. Profit-maximizing firms tend to disregard the full economic and social costs of their activities, such as increased risk of accident from petroleum extraction, on other stakeholders involved and on the ecosystem in general.[42] Such externalities, or unintended consequences of economic enterprise, generally require governmental regulation to mitigate harms to society and the environment.

A vexing complication of pollution prevention policy arises in its publication. Unlike pollution *response* policy, which is normally presented in clear terms as a 'policy,' pollution

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[40] O. Korneev et al., "Oil and Gas Activities" in *Human Activities* (BarentsPortal, 2014).
[41] "Modernization of Prirazlomnaya Will Fivefold Oil Production," Norwegian Barents Secretariat. http://barentsobserver.com/en/energy/2015/10/modernization-prirazlomnaya-will-fivefold-oil-production-12-10 (accessed 12 October, 2015).
[42] Scott Cole, Sergei Izmalkov, and Eric Sjöberg, "Games in the Arctic: Applying Game Theory Insights to Arctic Challenges," *Polar Research* 33 (2014): 10.

prevention policy is rarely as explicit. Instead, prevention-related policies normally take form through regulations, embedded throughout various mandates and requirements where preventive intent can be little more than implied directives. For example, the U.S. Clean Water Act of 1977 (and subsequent amendments) specifies no pollution prevention measures, but implies an expectation of the development of regulations.[43]

Cooperation in oil-spill prevention has been a continuing partnership between Russia and Norway for nearly twenty years. However, Norway is considered to be the driving force in this cooperation given the differences noted between the two nations and their approaches toward oil pollution protection.[44]

Motivation to enter the Barents for oil production is not just based on anticipated natural resource development and production revenues. Some analysts contend that Norway has a vested interest in entering the Barents Sea and conducting oil operations to protect the environment. The rationale is based on the domestic perception that the Norwegian petroleum industry has more expertise and experience in environmentally friendly drilling than their Russian counterparts.[45] Russia has recognized this imbalance in drilling technology. Its national energy strategy acknowledges domestic ecological problems and a need to approach European ecological standards.[46] Thus, both countries implicitly, if not explicitly, acknowledge the mutual advantages in Norway's leading joint oil exploration and production activities in the Barents Sea. The next

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[43] Office of Pollution Prevention and Toxics, "Evaluation of EPA Efforts to Integrate Pollution Prevention Policy Throughout EPA and at Other Federal Agencies" (Washington, D.C.: Environmental Protection Agency, 2008), 104.
[44] Bambulyak and Frantzen, "Oil Transport from the Russian Part of the Barents Region. Status Per January 2009," 80.
[45] Leif Christian Jensen, "Petroleum Discourse in the European Arctic: The Norwegian Case," *Polar Record* 43, no. 3 (2007): 249.
[46] Jensen, *International Relations in the Arctic: Norway and the Struggle for Power in the New North* (London and New York: I. B. Tauris & Co. Ltd., 2016), 98.

two sections provide the basis of this perception by describing the historical context of each nation's regulatory regime. They also demonstrate variation in prevention emphasis.

2.4 Historical Context of Norwegian Offshore Oil-Spill Prevention and Regulation

Norway developed its principles and values concerning oil policies in three distinct phases: 1) the transition from foreign to domestic petroleum systems when oil companies dominated regulation in the early 1970s, 2) the establishment of Norway's oil industry when public administration controlled regulation in the late 1970s, and 3) the abandonment of prescribed regulation in favor of a performance-based regulatory regime in 1980 following Norway's two oil industry disasters.

During the first phase, Norway went through a transition period in the sixties and early seventies when foreign investment provided much of the capacity to pursue projects on Norway's continental shelf. Norway discovered oil in the North Sea Ekofisk field in 1969. However, only exploration, and no production took place during the first couple years. Prior to discovery though, political and operational conditions shaped the first phase.

At that time, the dominating international oil companies (the "Majors") were struggling to keep up with national demand around the world and independent oil companies found increasing project access. Worrisome political conditions, such as disputed boundary lines, in other parts of the world also made the emerging Northern European market more appealing. Norway claimed sovereignty over its shelf on May 31st, 1963 and found itself the benefactor of

economic "push" and "pull" factors that garnered interest from oil companies.[47] The Phillips Group (including Phillips Petroleum [operational lead], Petrofina, and Agip) gained the first licensing concession to explore and provided the technical operating capacity in Norway's North Sea fields.[48] As political, technological, and operational issues advanced throughout the 1960s, Phillips continued to prepare for offshore production. Political decisions included establishment of a new oil base for the project. Phillips relocated from Oslo to a location closer to the oil field in the North Sea for practical reasons. Ed Crump, the project supervisor, eventually chose Dusavic in Stavanger, Norway (the state's primary petroleum headquarters now) because of location mostly, and some lobbying pressure from the local mayor.[49] Throughout the years until actual discovery, the government and various stakeholders often leaned forward and excitedly reported the imminent discovery of oil, which played as big news in Norwegian society. It is unclear whether such reports represented over eagerness or efforts to retain fading interest in the project, or both. On the technical side, the composition of oil and gas concentrations and pressures, as well as geological materials, all exceeded the firms' expectations in the Ekofisk field.[50] Operationally, as progress toward discovery increased during 1969, exploration was slow and more difficult than originally thought. The reality of working in the Subarctic maritime environment became apparent in November of that year. The oil platform *Ocean Viking* lost its anchoring during a fall storm in the North Sea and required over a week to reposition once crews returned to the rig after evacuation.[51] Fortunes shifted, however, and within a few weeks, the

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[47] "Norway's Petroleum History," Norwegian Oil and Gas Association. https://www.norskoljeoggass.no/en/Facts/Petroleum-history/ (accessed 25 June, 2016).
[48] "Facts 2014 - the Norwegian Petroleum Sector", (Oslo, Norway: Norwegian Government, 2014), 10.
[49] Stig S. Kvendseth, "Giant Discovery: A History of Ekofisk through the First 20 Years" (Phillips Norway Group, 1988), 17.
[50] Ibid., 24-25.
[51] Ibid., 29.

firm announced the official Ekofisk discovery on Christmas Eve 1969, marking the moment that Norway became a petro nation.

Production began, but the Norwegian petroleum industry at the time remained largely foreign owned. Recognizing the extraordinary wealth that lay in these offshore deposits, the Norwegian government developed a plan named the Norwegian Petroleum Innovation System (NPIS) for domestic oil enterprises to acquire ownership responsibly and capably. The transition to NPIS occurred when Norwegian officials adapted electrical industry transition strategies from fifty years prior to help transfer oil operations, as well as research and development, to domestic ownership and established public institutions to oversee the industry. The government designed the transition largely through incentives that promoted "absorptive capacity" within domestic enterprises and national institutions.[52] At this point Norwegian internal regulatory regimes for offshore oil production began. In this early stage, negotiated stipulations during transfers established the only form of industry regulation. Not surprisingly, this worked in favor of the oil companies. The Norwegian government depended heavily on the Norwegian oil companies to facilitate the transition, which gave oil companies an influential advantage over the pace, proposing systems of licenses or concessions, and ultimately the regulatory outcomes. Representatives of the Norwegian administration did not independently make demands; regulations were formulated according to the desires of the oil companies.[53] The Norwegian government prioritized the transition to domestic industrial control and thus resisted unilaterally imposing regulations over oil companies. Decisions about which regulations to establish required

[52] Ole Andreas Engen, "The Development of the Norwegian Petroleum Innovation System: A Historical Overview," *Oxford Handbook of Innovation* (2009): 2.
[53] Ibid., 4.

industry consensus. In 1971, the first oil production site went into operation, largely a result of foreign capital. Within months, the foreign-dominated arrangements began to change.

In the second phase, during the early seventies, the economic and political foundations of Norway's oil industry were created with the establishment of the Norwegian Petroleum Directorate, Ministry of Oil and Energy, and a state-owned oil company, Statoil.[54] Prior events had set the conditions for this phase. Throughout the century, Norsk Hydro had built up a considerable industrial complex and was expected to play a central role in creating an independent oil capacity for Norway.[55] However, many of Hydro's initiatives met resistance with the Norwegian authorities. Hydro never attained a central role and as a result, Statoil was established and overtook Hydro to become the dominant petroleum actor for Norway. From its establishment, Statoil was the primary mechanism for Norway to achieve the desired national petroleum competence. Knowing that, the firm steered technical and organizational state objectives while relying on the concession system to strengthen its advantage. The concession system consists of laws that created the mechanisms controlled by the state to determine which companies were awarded rights to produce oil. The concession laws clarified the relationship between the government and the petroleum industry while at the same time guaranteeing the rights of firms and reinforcing state sovereignty over the Norwegian continental shelf. In 1973, the Norwegian Petroleum Directorate (NPD) was established, although it engaged staff and personnel with little petroleum experience. Rigid regulations became the choice to offset the Directorate's weaknesses. Within a few years, the Norwegian public administration grew enough

[54] Ibid., 10.
[55] Olav Wicken, "The Layers of National Innovation Systems: The Historical Evolution of a National Innovation System in Norway," in *Innovation, Path Dependency, and Policy: The Norwegian Case*, ed. Jan Fagerberg, David C. Mowery, and Bart Verspagen (New York, NY: Oxford University Press, Inc, 2009), 33-60.

institutional competence within the petroleum industry and increased control over the regulatory regime. During this time, the Norwegian Labour Party retained majority power in the parliament with its leader, Trygve Bratelli, as Prime Minister. With the Prime Minister as head of government and ultimately responsible to the Storting, the future potential for the petroleum economy and regulatory regime largely began with leadership provided from the Bratelli administration. The government kept close tabs on developing estimates for both oil and gas. They also established an Ekofisk commission to handle the difficult issue of how to deliver the petroleum to shore.[56]

The third phase started after Norway experienced devastating offshore accidents in 1977 and 1980. The first disaster happened on April 22nd, 1977. Known as the 'Bravo Blowout,' oil well B-17 under Phillip's *Bravo* rig experienced an oil and gas pressure incident as a result of an improperly placed upside-down blowout preventer.[57] The human error resulted in over two-hundred thousand barrels of oil spilling into the North Sea until the well was capped by U.S. technicians on April 30th. Fortunately, no one was injured, and the oil and gas never ignited. Moreover, warmer temperatures and smaller droplets that formed, as a result of shooting out from an open pipe twenty meters above the surface, allowed the oil to evaporate quicker than normal, and the oil spill never reached a shoreline. The second disaster, known by the platform *Alexander L. Keilland*, occurred on March 27th, 1980 in the Ekofisk area.[58] One of the five support columns broke off and the rig collapsed. After intense search and rescue efforts, only eighty-nine of two hundred and twelve individuals working on the platform were saved.

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[56] "Norway's Petroleum History."
[57] "Ekofisk Bravo Oil Field," National Oceanic and Atmospheric Administration. https://incidentnews.noaa.gov/incident/6237/506648 (accessed 25 June, 2016).
[58] "Norway's Petroleum History."

Following *Keilland*, public outrage over the one hundred and twenty-three deaths prompted the Norwegian energy ministry and NPD to begin significant policy reforms.[59]

The Norwegian government funded a research program named "Safety at the Shelf" (1978-1981) focused on preparing new principles led by the NPD, industry, and research institutions.[60] As a result, this phase is identified with the implementation of a new safety regime from 1980-1990 with the NPD developing what is still known as the "internal control" safety system.[61] The policy agenda changed to include a major regulatory paradigm shift from an old reactive regime based on prescriptive and technical requirements toward a risk-based, proactive regime with working legal requirements.[62] The new approach allowed for consideration of meaningful partnerships between public regulators and industry, supervising and fostering self-regulation by industry, the involvement of labor force and other stakeholders, and the building of mutual trust among parties.[63]

Norway's policy reform process resulted in a system based on egalitarian principles involving a tripartite arrangement between the government, employers, and employees with an emphasis on risk reduction and safety though performance. As a form of institutionalized cooperation among economic actors, the tripartite performs 'conservative' functions, protecting and upgrading established investments.[64] The classic Nordic *corporatism* approach compliments

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[59] Preben H. Lindoe, Michael Baram, and John Paterson, "Robust Offshore Risk Regulation: An Assessment of US, UK and Norwegian Approaches," in *PSAM 11 & ESREL 2010* (Helsinki, Finland 2012), 5.
[60] Geir Sverre Braut and Preben Lindøe, "Risk Regulation in the North Sea: A Common Law Perspective on Norwegian Legislation," *Safety Science Monitor* 14, no. 1 (2010): 2.
[61] Helge Ryggvik, "Offshore Safety Regulations in Norway: From Model to Systems in Erosion," *New Solutions: A Journal of Environmental and Occupational Health Policy* 10, no. 1-2 (2000): 84.
[62] Ole Andreas Engen and Preben H. Lindøe, "The Nordic Model Revisited: Focusing Events and Regulator as Proactive Agent in the Norwegian Petroleum Industry" (Durham, NC: Kenan Institute for Ethics, 2014), 1.
[63] Ibid.
[64] Darius Ornston, "Creative Corporatism: The Politics of High-Technology Competition in Nordic Europe," *Comparative Political Studies* 46, no. 6 (2012): 3.

proportional representation principles and governance that rely on a consensus building arrangement often less partisan in nature compared to other nations, such as the United States.

Along with corporatism, Norway has had a distinct fiscal advantage in being able to explore policy options. By December 2015, Norway's petroleum-based sovereign wealth,[65] totaled over $870 billion – the largest of its kind in the world.[66] In times of good financial situations, innovations and safety improvements are easier to foster and promote within the companies and by regulators than in times of scarce resources.[67]

One of Norway's defining steps in pollution prevention and in balancing environmental protection with the need to produce natural resources has been designating special areas where oil production is not allowed.[68] Norway does this in two ways: 1) considering restrictions for production near or in the sea ice zone,[69] and 2) following protocols established by the United Nations Convention on Biodiversity (CBD).[70]

Sea ice zones are areas of high biological production and particularly vulnerable to human impact. They are more ecologically susceptible than other parts of the ocean. The Norwegian

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[65] Government Pension Plan Global, one of two parts that manages an investment plan derived from Norwegian oil revenue.
"The Government Pension Fund," Norwegian Ministry of Finance. https://www.regjeringen.no/en/topics/the-economy/the-government-pension-fund/id1441/# (accessed 4 March, 2015).
[66] Kjetil M. Hovland, "Norway Considers Investing Oil Fund in Infrastructure," *Wall Street Journal*, 2 December 2015. http://www.wsj.com/articles/norway-considers-investing-oil-fund-in-infrastructure-1417512518
See here too: http://www.cnbc.com/2015/10/28/norways-giant-oil-fund-sees-biggest-loss-in-4-years.html (accessed 03 December 2015).
[67] I. B. Dahle et al., "Major Accidents and Their Consequences for Risk Regulation," in *Advances in Safety, Reliability and Risk Management* (Taylor and Francis London, 2012), 39.
[68] Hasle, Kjellén, and Haugerud, "Decision on Oil and Gas Exploration in an Arctic Area: Case Study from the Norwegian Barents Sea."
[69] Winther and Vongraven, "Where the Ocean Blooms." A sea ice zone is the entire dynamic area between open waters and 100% sea ice while the marginal ice zone is the outer edge of the sea ice zone.
[70] Peter Johan Schei and R. Douglas Brubaker, "Developments in Environmental Protection-the Barents Sea and European Union Waters," *New Era in Far East Russia & Asia. Tokyo, Ocean Policy Research Foundation* (2006): 4.

Polar Institute has conducted satellite sea ice monitoring for over thirty years and provides monthly maximum and minimum sea ice extent to the government, which uses that information to guide which licensing blocks to propose and offer for petroleum production. Diminishing sea ice continuously makes this more challenging. In 2014, Norway presented the proposed licensing blocks in the Barents Sea. The process marked the first time Norway ventured into open waters with sea ice for consideration of oil production. The World Wildlife Fund met the proposal with strong opposition supported by other organizations and demanded that forty-eight of the fifty-four blocks remain closed to oil activity.[71] Many blocks are within the potential marginal and/or sea ice zone. In May 2016, Norway awarded nearly all the offered blocks.[72] Such a generous level of awarding may be the result of confidence in the regulatory regime as well as the ample opportunities to review potential impacts during subsequent phases of oil production.

The second approach followed by Norway relies on one of the more significant global treaties, the UN Convention on Biodiversity (CBD), which became effective in December 1993 and applies to the Arctic environment. The treaty has three main goals:[73] 1) conservation of biodiversity, 2) sustainable use of biodiversity, and 3) the fair and equitable sharing of the benefits arising from the use of genetic resources. The overall objective is to encourage actions that lead to a sustainable future. Additionally, the Secretariate of the CBD and the Arctic

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[71] "We Know Where to Draw the Line for Oil in Norway," *World Wildlife Fund*, 4 April 2014. http://wwf.panda.org/wwf_news/?220254/We-know-where-to-draw-the-line-for-oil-in-Norway (accessed 24 June 2016). Refer to map in Winther and Vongraven, "Where the Ocean Blooms."

[72] "Announcement 23rd Licensing Round Awards," news release, 18 May, 2016, https://www.regjeringen.no/no/aktuelt/announcement-23rd-licensing-round-awards/id2500936/ (accessed 25 June, 2016). Refer also to "Map of Awarded Licenses."

[73] "Convention on Biological Diversity", in *Factsheet* (United Nations Environment Programme, 2010).

Council's Conservation of Arctic Flora and Fauna (CAFF) working group signed a resolution bringing special attention to the importance of biodiversity throughout the Circumpolar North.[74]

In 1988, 'Norwegianization' of the state's petroleum industry was complete. In keeping with constitutional rights and responsibilities, Norwegian state authorities issue specific provisions that implement the principles for protecting the environment. Two primary pieces of Norwegian legislation meet this obligation, including: 1) the Pollution Control Act of 1981,[75] and 2) the Petroleum [Activities] Act of 1996.[76] Furthermore, offshore oil-spill prevention measures are captured in five framework regulations issued by the Petroleum Safety Authority for Health, Safety and the Environment.[77]

To summarize, the previous background offered as context for Norway's petroleum industry and practices can be presented as two factors: 1) the discovery of oil and how Norway transitioned from foreign to state production capacity while at the same time establishing its petro-economy, and 2) how Norway reformed its regulatory regime following the two offshore oil disasters.

Norway had little choice but to endure foreign dominance and participation over its new hydrocarbon offshore industry initially. However, Norwegian society immediately set out to develop independent production capacity, though it proceeded cautiously. Previous experience

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[74] Arctic Council, "Resolution of Cooperation between CAFF and the UN Convention of Biological Diversity," (Iceland: Conservation of Flora and Fauna (CAFF) Working Group, 2010).
[75] "Pollution Control Act - Concerning Protection against Pollution and Concerning Waste", ed. Government of Norway (Oslo, Norway: Ministry of Climate and Environment, 1981).
[76] "Petroleum Activities Act," ed. Government of Norway (Stavanger, Norway: Norwegian Petroleum Directorate, 1996).
[77] "Regulations Relating to Health, Safety and the Environment (HSE) in the Petroleum Activities and at Certain Onshore Facilities (the Framework Regulations)", ed. Petroleum Safety Authority of Norway (Stavanger, Norway 2013).

with establishing major infrastructure involving foreign participation and transition provided the framework and confidence to do so. Norway was determined to control its petroleum sector, but not willing to rush the process. Moreover, the slow timeline for achieving capacity and production seemed to work fortuitously with developing a new sector of the economy.

While offshore oil exploration progressed and management skills developed, there was time for Norway to determine how to integrate petro profits into its national budget. From the start, Norway demonstrated awareness of the dangers of excessive domination by the oil and gas economy. The 'Dutch Disease' was well known to the northern nation and Norwegians had a real appreciation for the difficulties Denmark endured in the 1960s as a result of natural resources (gas) located in a maritime environment they share: the North Sea. Norway proceeded cautiously to avoid the disruption of existing industries and the stability of its currency by offshore energy. The political leadership leaned forward in ensuring that oil and gas profits integrated into the macro-economy with reliability and a positive effect, collecting much of the massive revenue in a savings program. Much of the public disagreed with the approach at first, but eventually appreciated the will and determination of its elected leadership. Public officials are now often credited for maintaining inclusive social participation as well as having the wisdom to steer toward a better outcome through a more difficult pathway.

As cautious as Norway was, problems still occurred. The two major disasters, 'Bravo Blowout' and '*Alexander L. Keilland*' serve as reminders of what can happen despite concentrated efforts to establish safer oil practices. While the *Bravo* incident of 1977 caused concern, Norway did not react decidedly until people died as a result of the *Keilland* tragedy of 1980. Evolution in national labor laws allowed for inclusion of oil industry employees and

created a more homogenous national workforce. As such, the oil industry and government committed to a new approach to address the increased risks for that particular industry. The result was adoption of performance-based regulations whereby the government exchanged the mandated rules system for a more results-oriented system and made industry a true partner in determining how best to produce oil for profit while minimizing risk.

The short history of Norway's journey to becoming an oil country sets an example of how a nation pursued exciting, but dangerous, opportunity with great awareness and prudence. Prior to developing an energy partnership with Russia, Norway strove to learn how to manage external pressures that influenced internal systems. The few decades represent a model cautionary tale of balancing natural resource development and wealth against the myriad effects to other contributing or impacted sectors of the economy, society, and the environment. The Norwegian government met with some opposition to its prudent policies, but remained determined to ensure that petroleum strengthened the nation overall and for the long term, as indicated by the establishment of a sovereign wealth fund partly dedicated to the benefit of future generations. Adhering to such values reveals a determination to promote and subscribe only those processes which meet intended priorities.

2.5 Origins of Russian Offshore Environmental Protection Policies and Regulations

Before Norway became a petro-state, Russia was known globally as a significant producer since the early 1900s. Although foreign investment dropped off during the 1917

revolution, oil fields in European Russia came online throughout the 1930s and 1940s followed by the major discovery of the Western Siberian reserves in the 1960s.[78]

Russia's first significant offshore journey began in the Far East in the Sakhalin Gulf in the mid-1970s. Japan and the USSR developed a collaborative relationship toward the project in 1965 after expanding trade relations in the previous years. By the 1970s continental shelf production began to take priority and the USSR sought foreign assistance. For years, the Soviet Union negotiated with Japan, through the 1973 OPEC oil crisis and up to the invasion of Afghanistan, which dampened the Sakhalin development as a result of sanctions as well as plummeting oil prices shortly thereafter. By 1975 agreements were in place and exploration began with first production occurring by 1980.[79] However, the project was far from stable. As a result of changing investments, technical difficulties and the fall of the Soviet Union, it would take over two decades for the Sakhalin offshore projects (I and II) to became reliably operational.[80]

Russia's Arctic oil focus in the Barents region (on- and offshore) is first associated with the previously mentioned Western Siberian terrestrial reserves. Although minor hydrocarbon production occurred in 1953, exponential growth began in 1965.[81] Offshore, systematic studies in the Barents began in the 1960s and increased in the 1970s. Although exploratory drilling

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[78] James Henderson and Alastair Ferguson, "The Turbulent History of Foreign Involvement in the Russian Oil and Gas Industry," in *International Partnership in Russia* (Palgrave Macmillan, 2014).
[79] Tadashi Sugimoto, "The Foundation of Japan–Russia Energy Cooperation: The History of the Ups and Downs of the Sakhalin Project," *The Northeast Asian Economic Review* 1, no. 2 (2013): 28-31.
[80] Michael Bradshaw, "A New Energy Age in Pacific Russia: Lessons from the Sakhalin Oil and Gas Projects," *Eurasian Geography and Economics* 51, no. 3 (2010): 341-42.
[81] Annika E. Nilsson and Nadezhda Filimonova, "Russian Interests in Oil and Gas Resources in the Barents Sea" (Stockholm, Sweden: Stockholm Environment Institute, 2013), 11.

began in 1981 with gas discovered in the Shtokman field by 1988, the first oil discovery was a year later in the Prirazlomnoye field.[82]

Throughout this time of nearly seventy years, the government of the Soviet Union acted in all authoritative capacities over the oil industry - as legislator, enforcer, and adjudicator. Extensive environmental degradation occurred in the context of oil and gas production, despite protective provisions. The USSR had one of the most advanced regulatory regimes in the world at the time,[83] but larger economic and military enterprises remained generally exempt. Near the end of the Soviet era, much political and economic effort focused on matching Western capability and spending. In order to maintain a perceived and/or actual threat to counter the West, the Soviet military had to be prioritized with resource and political support. The economic sectors that could best help achieve this strength could support those that could not contribute as much to industries involved with national priorities. Such primacies offer a sample link between foreign influence enabling domestic outcomes, for example. The energy sector met priority requirements, leading to lax conditions for industry operation. Not only did the oil industry go largely unregulated, but taxes were applied at the "tap" rather than at the well head, so there was virtually no incentive for oil companies to avoid spills or leakage in the pipelines. A prime example of such disregard is an oil spill that occurred just outside of Usinsk, Russia. A pipeline just south of the Arctic Circle had been leaking since February 1994, but contained in a dike constructed for that purpose. However, cold temperatures and snow caused the dike to collapse in October of that year and millions of gallons of oil flowed into the Siberian tundra. Just how

[82] Ibid.
[83] Deborah K. Espinosa, "Environmental Regulation of Russia's Offshore Oil & (and) Gas Industry and Its Implications for the International Petroleum Market," *Pacific Rim Law & Policy Association* 6 (1997): 656.

much is unknown, but expert estimates put the amount between eighteen and ninety million gallons (the *Exxon Valdez* oil spill was eleven million gallons by comparison).[84] With frozen conditions, the pollution did not soak into the ground and reached the Pechora River, eventually dumping into the Barents Sea (Figure 2.4).[85] The incident is considered among the top five worst oil spill incidents in history. The Russian company *Komineft* was responsible for this and several other incidents in the Komi region.

Figure 2.4 – Russian Pipeline Oil Spill near Usinsk

Source: Map adapted from CIA World Factbook Regional Maps https://www.cia.gov/library/publications/the-world-factbook//graphics/ref_maps/political/jpg/arctic_region.jpg

[84] Carey Goldberg, "Leak in Siberian Oil Field Turns into Massive Spill," *Los Angeles Times*, 26 October 1994. http://articles.latimes.com/1994-10-26/news/mn-54912_1_oil-spill (accessed 25 June 2016).
[85] "The Russian Arctic Oil Spill," American University. http://www1.american.edu/ted/komi.htm (accessed 25 June, 2016).

Efforts by President Gorbachev to reform associated systems through *Perestroika* and *Glasnost* in the late 1980s failed as a result of overwhelming structural gaps, such as ministerial and judicial officials with toothless authority, a lack of separation of powers and independent regulatory agencies, and a weak court structure that was unable to convict violators or influence policy.[86] The absence of a traditional independent judiciary and rule of law exacerbated the situation affecting all levels of government. The Russian constitutional law system generally does not allow for interpretation of statutory intent. Statutory line items guide legal rulings. A lack of literal detail bestows legal authorities with little recourse for due consideration, unlike common law systems with stronger rule-of-law foundation principles. This leaves the Russian legal system and regulations without precedents for developing laws rationally with mechanisms for systematic application. Although the main argument in this project is foreign focused, it is useful to informally consider the effects that impacted related legacy systems. The Cold War alliances offer a different perspective in consideration of how external factors can steer domestic politics. By the mid-1980s, major weaknesses and gaps in the USSR's legal regime had come to light, causing grave doubts from the West about the Soviet's capacity to effectively implement its offshore petroleum legislation.[87] The USSR's lack of participation in the 1974 Paris Convention for the Prevention of Marine Pollution from Land-Based Sources fueled that sentiment. In addition, Russia has been invited repeatedly to join the OSPAR Convention ('Oslo' - 'Paris') with no signs of doing so.[88] OSPAR's goal is to facilitate cooperation to protect the

[86] Espinosa, "Environmental Regulation of Russia's Offshore Oil & (and) Gas Industry and Its Implications for the International Petroleum Market," 657.
[87] Robin Churchill and Geir Ulfstein, *Marine Management in Disputed Areas: The Case of the Barents Sea*, vol. 10 (London, U.K.: Routledge, 1992), 148.
[88] Lilly Weidemann, "Possible Ways for Enhancement," in *International Governance of the Arctic Marine Environment*, ed. Jurgen Basedow, et al. (Switzerland: Springer International Publishing, 2014), 214.

marine environment of the Northeast Atlantic. 40 percent of the OSPAR coverage is located in Region I – Arctic Waters.[89]

In the 1990s, after the fall of the Soviet Union, substantial diversification and privatization in the oil companies took place. Gorbachev had recently opened property to private ownership and various members of the public and private elites bought significant portions of valuable property, assets and economic influence. Russian constitutional law could not prevent the process and the dysfunctional government simply could not hastily develop the statutory instruments needed to stop the runaway disaster. Key sectors throughout the reforming Russian economy quickly fell into the hands of a few powerful people, now known as the oligarchs.

Beginning at the turn of the twenty-first century, Putin's authoritarian regime worked to centralize oil-production assets into state-controlled companies, (i.e. Rosneft, Gazprom, and Gazprom Neft).[90] Recentralization coincided advantageously with an energy boom for Russia. In 2003, petroleum revenues contributed about 15 percent of the national budget.[91] A decade later, the total value of export revenue from crude oil, petroleum products, and natural gas provided for nearly 50 percent of the total national budget. Putin ensured he received the most credit for leading Russia's energy success. Retaining control and positioning the larger oil and gas corporations for the most important projects became the standard operating procedure. Figures vary for the increase in state ownership of oil companies. One source put estimates of state

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[89] "Region I: Arctic Waters," OSPAR Commission. http://www.ospar.org/convention/the-north-east-atlantic/i (accessed 05 May, 2016).
[90] Jennifer Josefson, Alexandra Rotar, and Brandon Rice, "Overview: Russia Oil and Gas Sector Regulatory Regime" (King and Spalding International Law Firm, 2014).
[91] Meghan L. O'Sullivan, "The Unconventional Energy Boom: Bad Timing for Revanchist Russia," in *The Crisis with Russia*, ed. Nicholas Burns and Jonathon Price (One Dupont Circle, N.W. Washington, D.C.: The Aspen Institute, 2014), 86.

control from 13-40 percent between 2004-2011 while another indicates 15-37 percent between 2004-2007 with a forecast of 55 percent by 2013.[92] As of June 2016, 69.50 percent of Rosneft is owned by OJSC Rosneftegaz, a company that is 100 percent owned by the Russian Federation government.[93] Russia owns over 50 percent of Gazprom, a public joint stock company which owns over 96 percent of Gazprom Neft.[94] Rosneft is the largest oil producer in Russia, accounting for over 40 percent of production.[95] Gazprom (via Gazprom Neft) is the fourth largest oil company in Russia in terms of production.[96] Together, Rosneft and Gazprom Neft represented about 48 percent of total oil production for Russia in 2015.[97] Although Lukoil is Russia's second largest oil company (privately owned), Rosneft and Gazprom remain the only firms with access to the offshore fields in the north, partially as a result of the strategic natural resources importance of the region.

State ownership came at a challenge. Early in his tenure, Putin confronted the oligarchs as the various elites wrestled for power. The president effectively silenced the voice of several business influences when he took control of several TV stations they relied on for outreach. Without television access, key vocal opposition forces to Putin diminished significantly. Putin also had the backing of the state party *United Russia.*[98]

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[92] David Lane, "Divisions within the Russian Political Elites," *Russian Analytical Digest* 124 (2014): 3.
[93] "Rosneft Shareholder Structure," https://www.rosneft.com/Investors/Equity/Shareholder_structure/ (accessed 26 June, 2016).
[94] "Shares," Gazprom. http://www.gazprom.com/investors/stock/ (accessed 8 July, 2016).
[95] Rosneft, "Rosneft at a Glance," https://www.rosneft.com/about/Rosneft_today/ (accessed 26 June, 2016).
[96] Gazprom, "Gazprom Neft at a Glance," Gazprom Neft PJSC. http://www.gazprom-neft.com/company/at-a-glance/ (accessed 02 July, 2016).
[97] "Russian Oil Production by Company," TopForeignStocks.com. http://topforeignstocks.com/2015/06/01/russian-oil-production-by-company/ (accessed 8 July, 2016).
[98] Ora John Reuter and Thomas F. Remington, "Dominant Party Regimes and the Commitment Problem the Case of United Russia," *Comparative Political Studies* 42, no. 4 (2009): 518.

Following the immediate post-Soviet era, Russian oil companies found many faults with the regulatory regime, including three fundamental problems: 1) the unplanned and cumbersome way the system originated and evolved, 2) the side effects of recentralization of power, and 3) confusion and conflict over goals.[99] The primary agencies involved with oil regulation (the Ministries of Natural Resources, Economic Development, and Energy) maintain a complex regime structure. The regulatory architecture developed over decades without a plan during Soviet times, followed by Yeltsin's tenure and into the Putin era. Each period added a new set of agencies and missions without removing the previous ones. As a result of post-Soviet reforms involving privatization, new fields of activity that did not exist before required some form of state regulation and oversight. New systems were hastily added alongside old ones. In the energy sector particularly, two new regulatory functions were established: licensing and anti-trust processes. However, creating new agencies on paper was much different than conducting regulatory responsibilities in reality. Here again, it is possible to examine various reasons for aligning domestic issues in order to achieve global outcomes. Throughout the 1990s and well into the new century, new regulatory bodies remained largely weak and ineffective.[100] Licensing pressures help explain part of the problem; the government focused on assigning resources to oil companies as quickly as possible, giving little attention to regulatory enforcement. The outcome was no real regulatory control over oil production activities through the middle of the first decade of the new century. Licenses were written so poorly that the courts could not address legal quandaries. During this period not a single license was revoked or suspended pending

[99] Gustafsen Thane, *Wheel of Fortune: The Battle for Oil and Power in Russia* (Cambridge, Massachusetts and London, England: Harvard University Press, 2012), 384.
[100] Ibid., 387.

investigation and/or for noncompliance.[101] Although the oil companies did not defy the government openly, they did not take authorities seriously. Oil companies continued to take advantage of the regulatory limbo until the Putin regime took control. During his first two terms, Putin markedly increased the employment and size of the federal bureaucracy. Having political support within *United Russia*, the leading political party within Russia, he also addressed loyalty issues by establishing the FSB, the successor institution of the KGB. With reform of such magnitude and consequence, Putin secured a means of imposing governmental oversight on energy actors. However, under Putin's efforts to restore strong central powers, the regulatory system became unpredictable, arbitrary, and ultimately ineffective. The system works best when it has specific political objectives. Given the bloated and ineffective bureaucracies involved, the oil companies could hardly be blamed for gauging the costs of overly burdensome regulations against the likelihood of prosecution. The regulatory regime's main overall mission is to protect state interests. However, defining interests and how to defend them remains an exercise in uncertainty, largely a result of tremendous state change over the last three decades.

Since the fall of the Soviet Union, Russia has struggled to develop a market-oriented economy. Russia's enormous oil and gas reserves make it a major player in the global market and all the more necessary to modernize and improve its regulatory regime in order to attract critical foreign investment while increasing its capacity to protect the environment in accordance with standards maintained by key partners such as Norway. Currently, activities related to offshore oil-spill prevention are generally guided by a national regulatory framework including

[101] Ibid., 388.

eight federal laws and six major regulations as well as several associated international agreements.[102] However, as noted, implementation is haphazard, unenergetic, and ineffective.

In summary of Russia's history of oil production and regulation, the important context for comparative purposes can be understood from two post-Soviet, millennium transition factors driven noticeably by foreign interests: 1) the establishment of national oil companies, and 2) bureaucratic inability or unwillingness to develop meaningful and effective oversight of the oil companies.

During post-Soviet state reform, Russia experienced various domestic challenges often affecting the whole nation. After suffering the loss of a considerable amount of territory and severely weakened military, post-Soviet Russia experienced something of an identity crisis having been a global superpower. After the turn of the century, Russia pursued a path toward reestablishing itself as a formidable power: oil production. With oil prices on the rise and huge reserves to exploit, Russia had a means of recovering from a crippling recession as well as exerting influence internationally. Natural resource energy production and exports provided the supply, and growing energy thirst around the world created the demand. With Putin in power as the new petroleum phase began, energy strategies could be harnessed for national purposes under the right conditions. Putin aggressively, and successfully, challenged the most powerful political opposition and competition. While striking an acceptable balance with the politically entrenched oligarchy, Putin also strengthened federal influence over the oil (and gas) industry by recentralizing corporate interests and increasing government ownership of the critical companies.

[102] G20 Global Marine Environmental Protection (GMEP) Initiative, "Information on the Russian Federation's Regulatory and Administrative Framework and Experience Related to Accident Prevention, Response and Mitigation During Oil and Gas Offshore Exploration, Production and Marine Transportation" (G20, 2013), 12-15.

Oil projects and revenues could then be forcefully aligned with national interests and goals. As majority shareholder, Russia was positioned for total dominance over all aspects of its state energy strategy.

Bureaucratically, the transition period to post-Soviet Russia could have been an opportunity for a new approach to oversight. Instead, the unwieldy and ineffective government made matters worse. The complex Soviet bureaucracy endured into the new era with new systems added alongside. During the transition period, the pressure to produce oil eclipsed interest in regulating the industry. The laws and regulations in place remained meaningless, owing to lack of enforcement and opposing priorities. Putin's forceful restructuring of agency oversight and control succeeded eventually with party backing and strategic integration of a new federal security authority (FSB) based on the legacy KGB organization. The federal approach to bureaucratic governance over the oil industry continues to rely on dictating requirements through prescriptive-based regulation.

The development of the energy sectors for Norway and Russia, as well as their regulatory approaches, provide the context needed to analyze activity in the Barents Sea. Norway prefers to work with the major stakeholders to ensure safe oil production operations, despite the potential greater financial costs of this approach. Russia prefers to mandate the rules of how oil companies operate. This prescribed method can allow for more efficient regulation, but in Russia's case, it fails to do so. Although the regulatory approach is an important factor in oil spill prevention, enforcement determines the effectiveness of the regulatory regime. Norway instills a sense of ownership in the process by allowing companies to manage enforcement mechanisms in response to violations. The Norwegian government achieves competence and reliability in oil

companies to meet regulatory intent of protecting the environment and preventing pollution without having to expend funds to increase observation of behavior. The Norwegian system can be described as a form of self-regulation for all intents and purposes, because it effectively holds the oil producers responsible not simply for following regulations, but for outcomes. In contrast, the Russian government promotes a system where it has to gather the necessary information for regulatory oversight because there is often little-to-no reason for oil companies to freely share such data. At the same time, Russian bureaucracy can choose when to ignore safety issues. Norway imparts robust incentives to share safety concerns and violations. In contrast, the Russian system encourages industry to consider options (cost-benefit analysis of profits vs. fines) of hiding safety concerns and violations within oil-production activities. The history of both nations in this regard reveals important industry and environmental perspectives about each state now and for the future. Even more interesting is the opportunity to combine them in a deliberate study of how they will work together in protecting the Barents Sea. How each state pursues individual interests, compromises with the other, and employs different bureaucratic systems in a shared maritime region will provide indications of the potential for other collaborative industrial enterprises and regulatory regimes. This is not the first study regarding such an arrangement. The literature review below will present research and publications on prevention policies, regulatory regimes, and other related aspects of avoiding disaster in the Barents Sea as well as oil-spill prevention in general.

Chapter 3: A Review of the Literature

While studies of oil-spill response seem plentiful, research on oil-spill prevention in the Arctic is sparse. Investigation of oil-spill prevention policy for the Arctic is rare, and even rarer concerning the northern coastal neighbors of Norway and Russia. This can be largely explained by the lack of an incident, to date, within the jurisdiction of these nations (or others) in offshore areas above the Arctic Circle. However, there are important considerations that shed light on past and current efforts regarding oil-spill response and prevention policy, several which involve concomitant instruments facilitating deterrence of unspecified risks.

3.1 Studies of Current Oil-Spill Prevention Policy for the Barents Sea

Recent studies of the relationship between Norway and Russia regarding any aspect of oil production often focus on the Barents Region. Certain key institutional mechanisms provide incentives for cooperation. Canadian scholar Michael Byers analyzes contemporary efforts involving prevention through application of ecosystem-based management theory. This approach applies to the Barents Region and explains the adoption of the Declaration on Cooperation in the Barents Euro-Arctic Region (the Kirkenes Declaration) and establishment of the Barents Euro-Arctic Council (BEAC),[1] with active participation from both Norway and Russia as founding members. Byers describes attempts to expand related principles to the Arctic Ocean as a whole that failed to meet legal or geographic justification. That being said, the author's argument of this expansion stated that it is clearly desirable that the Arctic Ocean coastal states increase their efforts to protect the environment of the central Arctic Ocean in a holistic manner, including but

[1] Michael Byers, *International Law and the Arctic*, vol. 103 (New York: Cambridge University Press, 2013).

not limited to oil spill prevention.[2] Byers concluded his assessment of existing environmental agreements and efforts by stating emphatically that "more cooperation is needed, and quickly, on regional standards for oil spill prevention."[3]

This thesis examines the differences in prevention policy between the two countries in the Barents Sea. Russia and Norway belong to various conventions, agreements and organizations with cohesive goals often concerning protection of the Barents environment. Yet, the two states differ in their oil-prevention measures, as illustrated by divergence from the explicit and implicit intents of these agreements and organizations. Understanding attitudes and objectives concerning membership in international associations sheds light on the reasons behind policy differences.

From a public administration perspective, Maria Ivanova analyzes the roles of primary actors connected to oil spill response (OSER) systems using the two dimensions of vertical and horizontal relationships.[4] The horizontal relationships focus on those actors within the same industrial/institutional segment while vertical relationships refer to those actors associated with sequential activities of a particular chain of responsibility. After conducting semi-structured interviews with thirteen informants (and using the few public documents on the subject), she concluded that the OSER system in the Murmansk region is not fully developed owing to the absence of organizational statutes and unified state policy.[5] Of note, Ivanova predicts progressive development in such a system, likely driven by a major incident,[6] that results in significant

[2] Ibid., 215.
[3] Ibid.
[4] Maria Ivanova, "Oil Spill Emergency Preparedness in the Russian Arctic: A Study of the Murmansk Region," *Polar Research (Norwegian Polar Institute)* 30, no. 1 (2011).
[5] Ibid., 10.
[6] Ibid.

policy reform. The prospect of such punctuated equilibrium theory[7] driving prevention policies poses great concern throughout the Circumpolar North, since the theory's framework established a conditional process for ways to harness political will and commitment for the purposes of significant policy reform following a major incident. For the Arctic, there is strong adversity against waiting for a disaster to apply hindsight after the damage is done. In Russia's case, the lack of prevention measures does not stem from unawareness of risks. It appears to be a function of government and industry calculating the likelihood of an accident and determining to accelerate the production schedule to meet political and economic objectives. If and when a crisis occurs, officials can take advantage of disasters, making political gains through heroic response measures. Ivanova's study reveals a further gap in the research. Elucidating Russia's seeming lack of political will and commitment to prevention could help explain the differences in policy development, implementation and enforcement between itself and Norway.

To examine the lack of major accidents in the Murmansk (Barents Region) area,[8] the Sydnes' focus on comprehending the influences of institutionalism, specifically the Barents Sea operational cooperation. To evaluate the potential efficacy of current policy, the Sydnes' use qualitative data from training exercise reports as well as interview data.[9] Without considering the role of political elites in shaping these policies, they conclude that the effectiveness of the OSR regime can be explained by the cooperative, interest-based influences of technological professionals.[10] The study suggests a gap in the literature on how executive public- and private-

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[7] George J. Busenberg, *Oil and Wilderness in Alaska: Natural Resources, Environmental Protection, and National Policy Dynamics* (Georgetown University Press, 2013).
[8] Ivanova, "Oil Spill Emergency Preparedness in the Russian Arctic: A Study of the Murmansk Region."
[9] Are Kristoffer Sydnes and Maria Sydnes, "Norwegian–Russian Cooperation on Oil-Spill Response in the Barents Sea," *Marine Policy (Department of Engineering Science and Safety, Faculty of Science and Technology, University of Tromsø,)* 39 (2013): 258.
[10] Ibid., 263.

sector decision makers might affect the OSR effectiveness in the Barents. The Sydnes' research nevertheless contributes to understanding the differences in oil-spill prevention policy by revealing some of the known dynamics in the Russian decision-making process involving government and oil companies. In particular, the study identifies uncertainties that firms face and how they address them, and reveals the lack of a framework or guidelines for operational reference, a troubling lapse.

3.2 Perspectives Involving Firms and Opportunity Costs

The majority of related published research regarding oil spill prevention in the Arctic and elsewhere focuses on economic analysis and modeling. Mark Cohen emphasizes the need for policy makers to consider the cost of enforcement in deciding what level of compliance to expect from industry.[11] He clarifies that "the effectiveness of any regulation depends on the level of compliance by those firms being regulated" combined with "the effectiveness of the regulatory authority in enforcing its standards."[12] He implies that oil-production companies prefer to independently measure and weigh risk analysis against associated regulations when determining what resources and time to allocate to compliance. Cohen notes as recently as 1986, there was almost no published data on firms' expenditures to prevent oil spills, and that oil companies are generally unwilling to share any proprietary information.[13] Cohen developed a cost-benefit analysis based on the following components: (1) baseline estimates of oil spills, (2) cost of oil

[11] Mark A. Cohen, "The Costs and Benefits of Oil Spill Prevention and Enforcement," Journal of Environmental Economics and Management (originally published in a dissertation at Carnegie-Mellon University) 13, no. 2 (1986): 168.
[12] M. Cohen, "Optimal Enforcement Strategy to Prevent Oil Spills: An Application of a Principal-Agent Model with Moral Hazard," *Journal of Law & Economics* 30 (1987).
[13] M. Cohen, "The Costs and Benefits of Oil Spill Prevention and Enforcement."

spill cleanup, (3) cost of environmental damage, and (4) cost of preventing oil spills. Acknowledging the uncertainties associated with industry-produced data and using publically accessible data on enforcement, he concluded that marginal benefits outweighed the marginal costs of prevention regulation.[14] Cohen's research suggests that further study could help account for variables influencing prevention expenditures outside those generated by the oil companies themselves in Norway (Statoil) and Russia (Rosneft and Gazprom) that is, government investment in oil spill prevention. Cohen's research offers valuable insight into industry perspectives concerning integration of prevention requirements into operations. The author provides a strong framework for analyzing key actors' levels of commitment toward policy intent. This foundational step is essential in finding empirical evidence to explain what accounts for differences in oil-spill prevention policy.

Policy is never developed in a vacuum. It is often informed and influenced by a combination of social context and economic imperatives. In development of their socioeconomic perspective on oil spill prevention dynamics, Carson et al. define oil spill prevention as a non-marketed good.[15] They analyze the responses of a select demographic to determine society's understanding of a proposed government program for oil spill prevention and its willingness to support it primarily through voting and taxation.[16] Carson et al. relied on the contingent valuation (CV) method, a survey-based economic methodology for valuing non-marketed goods, the only economic model capable of including passive use values in assessments.[17] Among other benefits, the CV methodology provided the opportunity to assess the full economic scope of an incident.

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[14] Ibid., 186.
[15] Richard T. Carson et al., *Valuing Oil Spill Prevention: A Case Study of California's Central Coast*, vol. 5 (Springer Science & Business Media (originally Kluwer Academic Publishers), 2004).
[16] Ibid., 6.
[17] Ibid., 2-3.

Other methodologies use post-incident calculations that likely would not reflect and account for the values of pre-incident conditions. Furthermore, using any other valuation methods would lack explanatory effectiveness for the Arctic, given the lack of major incidents to date, because the other methods "typically rely on recorded past choices based on knowledge and assumptions prior to incidents that are outside control of the researchers."[18] Until the value of various elements of the Arctic (such as coastlines, ecosystems, etc.) are assessed *after* an incident, other valuation methods cannot effectively determine and utilize accurate values. Carson et al.'s study confirmed the reliability and validity of the valuation results and found that survey participants had a meaningful understanding of the program.[19]

The CV approach is therefore helpful in assessing the value of oil spill prevention in Norwegian-Russian areas of the Arctic. Carson et al.'s findings shed light on how firms make decisions about complying with prevention requirements. Considering the social influences as understood by the oil companies provides an additional perspective on how differences can occur in prevention policy, in this case how societal preferences and expectations can influence prevention policies and practices.

To summarize, very little literature has been published on prevention policies and practices related to oil production, especially in the Arctic Ocean and Barents Sea. Nevertheless, a small number of studies offer insight into the influences on the shaping of public policy and on the practices of oil companies. Much of the literature that does exist focuses on ways in which to understand and measure risks associated with oil production. Informing policy and regulation is difficult to accomplish with speculative information. Even with strong supporting evidence,

[18] Ibid., 3.
[19] Ibid., 7.

suggestions toward development of oversight mechanisms normally has to survive a political process. A growing awareness of the multiplicity of potential impacts adds to the complexity. Nations are being informed through research and data that a disaster that occurs in one area of the Arctic is unlikely to remain isolated to that location. Scientific models show that oil spills in the Arctic could affect other areas and the ecosystem as a whole. The literature evaluated for this project often identifies a need to increase awareness and endeavors to enhance prevention efforts - whether through policy, behaviors or otherwise. No one questions the dangers of an oil spill. There is more than enough data to demonstrate potential catastrophic harms from a major oil spill. Pressuring officials to establish and implement protective policies endures as a constant battle. Developing and implementing protective policies remains challenging. Yet the literature illustrates that in the absence of an incident and hindsight, there is value in providing evidence-based perspectives concerning plausible situations, as in the Barents Sea for Norway and Russia separately as well as together. Each state individually must determine effective prevention policies to meet national objectives. At the same time, both nations must consider how to meet international norms and expectations for oil spill prevention. The gap in the literature on comparative analysis of Norway's and Russia's oil spill prevention policies forms the basis for this thesis.

Chapter 4: Theory and Hypothesis

This project relies on agency theory, also known as principal-agent theory, which uses the metaphor of a contract in which one party (the principal) delegates work to another (the agent) to analyze the dynamics between the two.[1] In this research project the 'principal' is represented by the respective governmental actors (Norway and Russia) and the 'agent' is represented by the individual oil companies.

Petersen presents the following five basic central elements of the principal-agent setting:[2] 1) *the agent's capacity to perform the task contracted by the principal*; this can involve determining the agent's trustworthiness, reliability, and level of ability for example - attributes often established through solicited recommendations, 2) *the agent's actions that influence the desired outcome of the relationship*; such actions might be the work performed by employees which comes at a cost to the agent, perhaps by physical and mental exertion, 3) *the random factors that can affect the outcome beyond the agent's actions*; these other factors might be weather and market conditions for example, 4) *the outcome itself*, the outcome is usually observable by both the principal and agent and often involves the quantity and quality of several relevant factors; and 5) *the concept of asymmetrical information*; while the outcome is observable, the agent usually has the advantage of seeing more of the process contributing to the outcome than does the principal. The principal can increase observation, but normally at a cost.

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[1] Kathleen M. Eisenhardt, "Agency Theory: An Assessment and Review," *Academy of Management Review* 14, no. 1 (1989).
[2] Trond Petersen, "The Economics of Organization: The Principal-Agent Relationship," *Acta Sociologica* 36, no. 3 (1993): 278-79.

Agency theory can explain how and why the principal and agent pursue different actions.[3] Differences arise, for example, when a principal (on behalf of society and the public interest) pursues actions that prioritize the intrinsic value of the environment, while the agent pursues actions that emphasize the exploitable value of the environment. Principal-agent theory is applicable to this project because in the case of Russia: 1) the Russian government (principal) is the dominant actor, especially as the regulator, controlling over 65 percent of the petroleum sector, and 2) all significant offshore licenses are split between the two state-owned companies (agents).[4] In the case of Norway: 1) the Norwegian government owns just over half the shareholder interest of its dominant oil company, and 2) the license awarding process for the agent is an endowment power specifically balanced between separate executive authorities. This project assumes that the principal has overall responsibility toward the environment, while the agent is only liable when specified contractually. Moreover, the agent retains *moral hazard* with regard to offshore oil-spill pollution, because the principal cannot generally observe the actions taken by an agent and is significantly limited in verifying such actions.[5] That is, the agent may engage in inappropriately risky behavior because the costs of that behavior will accrue disproportionately to another, in this case, the general public. Thus, it is incumbent upon the principal to sufficiently incentivize the agent contractually in order to achieve the desired outcomes. Agency theory helps to identify the most efficient contract governing the principal-agent relationship, specifically a behavior-oriented or outcome-oriented contract.[6] In addition,

[3] Eisenhardt, "Agency Theory: An Assessment and Review."
[4] Bengt L. Hansen, "Arctic Oil and Gas: Challenges and Opportunity," (Longyearbyen, Svalberg: University Center in Svalberg (UNIS), 2016), 12.
[5] Mark A. Cohen, "Optimal Enforcement Strategy to Prevent Oil Spills: An Application of a Principal-Agent Model with Moral Hazard," *Journal of Law & Economics* 30 (1987): 25.
[6] Eisenhardt, "Agency Theory: An Assessment and Review."

agency theory provides a unique realistic, and empirically testable perspective on problems of cooperative effort.[7]

This thesis explores how and why both Russia and Norway - as principals - have the similar goal of protecting their shared Barents maritime environment from oil pollution, but they diverge significantly in how their regulatory regimes incentivize the oil-producing agents. Agency theory helps reveal the disparities in the underlying intents of the principals when governments (through a regulatory body) are found to regulate the agents inconsistently in furtherance of the public interest. In addition, agency theory maintains the two following sets of assumptions that can be recognized when examining how incentive systems influence agency relationships: 1) human assumptions (self-interest, bounded rationality,[8] and risk aversion), and 2) information assumptions (information as a purchasable commodity). Such behavior can be understood when examining how incentive systems influence agency relationships.[9] As mentioned previously, government behavior is a form of policy. A high-ranking agent's actions can be seen as the interpreted version of a policy. Just like customary law, if a practice continues long enough and is not challenged, it can gain legal protection.

When considering key relationships regarding optimal enforcement of oil-spill policy, government (public-sector) and industry (private-sector) represent the dominant actors. As

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[7] Ekaterina Demakova and Jakub M. Godzimirski, "Russian External Energy Strategy: Opportunities and Constraints," in *Dynamics of Energy Governance in Europe and Russia*, ed. Caroline Kuzemko, et al., *International Political Economy* (New York, NY: Palgrave McMillan, 2012), 150.

[8] Bounded rationality is described by the theory's inventor (Herbert A. Simon – a Nobel Prize laureate) as a situation where individuals do not seek to maximize their benefit from a particular course of action, especially when it is not possible to obtain all required information, and even if it were possible, people could not process it all because our minds are 'bounded' by cognitive limits.
Herbert A. Simon, "Rational Decision Making in Business Organizations," *The American Economic Review* 69, no. 4 (1979).

[9] Barry M. Mitnick, "The Theory of Agency," *Public Choice* 24, no. 1 (1975): 146.

Cohen explains in his previously referenced cost-benefit research, oil spill pollution should be controlled so as to equate marginal costs with marginal benefits.[10] The principal-agent model is commonly used to explain economic relationships, but, as noted above, when a principal cannot observe an agent, the problem of moral hazard arises.[11] The model allows normative analysis to guide assessment of the development of contracts, and in turn helps guide retrospective analysis of such contractual agreements.[12] Cohen calculated the cost of risk neutrality and optimal penalties, just as firms weigh the costs of meeting policy intent through expenditures to comply with explicit regulatory requirements or avoiding compliance and chancing detection. Firms may calculate the cost of deliberately taking risks and being detected versus the benefits of higher profits without considering the negative consequences to society. Cohen applied his theoretical framework, which included expanded aspects of the previously mentioned assumptions such as risk aversion,[13] limited liability,[14] and risk-taking agents,[15] to a case study involving the U.S. Coast Guard's oil spill prevention program. [16] Cohen applied principal-agent theory to the Coast Guard's oil spill prevention program and found that government enforcement agencies' goals may diverge significantly from social welfare benefits.[17] The principal-agent model applies well to Arctic oil production issues. Cohen's research emphasized the agent's motivations and

[10] Mark A. Cohen, "Optimal Enforcement Strategy to Prevent Oil Spills: An Application of a Principal-Agent Model with Moral Hazard," *Journal of Law & Economics (University of Chicago)* 30 (1987): 23.
[11] Ibid., 25.
[12] Ibid., 26.
[13] Risk aversion involves human behavior in reaction to uncertainty and proceeding efforts to reduce that uncertainty.
[14] Limited liability describes an entity's financial liability as being limited to a fixed amount, normally tied to and restricted to the value of investment in a company or project and not personal wealth.
[15] Risk-taking agents refers to those entities that participate in a decision-making process that concerns operational behaviors involving risks.
[16] M. Cohen "Optimal Enforcement Strategy to Prevent Oil Spills: An Application of a Principal-Agent Model with Moral Hazard," *Journal of Law & Economics* 30 (1987): 27-36.
[17] Ibid., 49-50.

behaviors, which opens an opportunity to study the principal factor in public-sector political dynamics that influence the implementation of prevention policies.

Until the mid-1970s, the original scope of agency theory tended to be applied to analysis of regulation alone. Mitnick then not only expanded the theory of agency to include a wide class of social relationships, but he also distinguished between two broad classes of agency relationships based on formal roles, including 1) formal occupational agency (normally guided by specific ethics), and 2) consistent structural agency.[18] The relationship between a government (principal) and oil company (agent) falls under the definition of consistent structural agency because "the agent's social role does not formally involve agency," and for analytical purposes, the agent consistently acts as agent for a [principal].[19] As such, incentives become the primary means to induce compliance in furtherance of the principal's intent. These conditions barely begin to describe the complex arrangement between a regulator (principal) and firm (agent) which often involves degrees of consent and discretionary authority. The myriad characteristics involved in a relationship between national authorities (principals) and actors controlling production (agents) of the world's most valued commodity is well beyond the scope of this project. What is pertinent to this study are the conditions that help explain the influences on the amount of operational risk that the agents (oil companies) manage in accordance with the objectives of the principals.

Developing and maintaining a regulatory regime (prevention policy) is rarely a unilateral exercise. Numerous stakeholders collaborate to reach satisfactory and durable solutions. To

[18] Mitnick, *The Political Economy of Regulation: Creating, Designing, and Removing Regulatory Forms* (New York: Columbia University Press, 1980), 145.
[19] Ibid.

achieve government objectives, regulators typically utilize policy enforcement methods and monitoring strategies to encourage compliance. Industry generally incurs the cost of new regulations, and operationalizing rules often brings about genuine conflicts. For instance, petroleum companies are normally responsible for implementing risk reduction, but regulators face limitations in being able to observe the processes sufficiently to ensure compliance. This creates bureaucratic tension and typically, behaviors must be incentivized to achieve intent. Cohen's application of principal-agent theory generated several strategic insights into the design of effective oil-spill prevention regulation, including: 1) fines should not be set so high as to deter production (100 percent avoidance of accidents is not feasible), 2) strict liability standards (as opposed to negligence standards) incentivize increased investment in safety, 3) negligence standards are more costly for the principal (regulator) as a result of increased monitoring required to determine compliance, 4) fines should increase with environmental damages and cleanup costs, and 5) fines should distinguish significantly between self-reported accidents and discovered accidents.[20] Information is essential to developing effective offshore oil production policy, and firms frequently leverage and/or withhold proprietary data (also known as information asymmetry) to avoid costly regulatory efforts. Hults emphasizes the problem of differing or asymmetric preferences between government and firms which are common in all sectors, but particularly salient in the offshore oil industry.[21] Laffont suggests that stringent

[20] M. Cohen, "Optimal Enforcement Strategy to Prevent Oil Spills: An Application of a Principal-Agent Model with Moral Hazard."
[21] David Hults, "Environmental Regulation at the Frontier: Government Oversight of Offshore Oil Drilling North of Alaska," *Environmental Law Review* 44 (2014).

regulatory (principal) efforts or sheer competition that forces cost minimization may tilt the oil company's (agent) trade-off toward taking excessive risk.[22]

This thesis will explore the political interests dimension of oil prevention policy. Norway and Russia want revenues from oil production for fundamentally different reasons. Russian interests include asserting and maintaining global economic power, in particular through the energy sector. Russia has undergone a post-Soviet shift from using the military to project global power to leveraging energy as a geopolitical weapon. Its revenue goals emphasize leveraging influence abroad. Its energy and political sectors are linked.[23] Norway on the other hand pursues oil revenues to maintain a high quality of life for its citizens. Thus my hypothesis is:

> ***H:*** The difference in the strength of oil spill prevention policies between Russia and Norway in the Barents Sea can be explained in part by their diverging strategic goals in the global political economy.

This hypothesis rests on the assumptions that a state's (principal's) strategic priorities affect its expectations of the oil companies (agents). Agency theory will help explain, regardless of the overall stated (explicit) intent, that principals can achieve differing outcomes through policies that enable agents to support the unstated (implicit) goals of the principal. Under these conditions, we should expect Russia (principal) to accept increased risk from oil companies (agents) in order to ensure higher levels of oil production. Higher levels of production could be achieved by agents ignoring regulations and/or the principal not enforcing the rules. Such

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[22] Jean-Jacques Laffont, "Regulation, Moral Hazard and Insurance of Environmental Risks," *Journal of Public Economics* 58, no. 3 (1995).
[23] Kari Roberts, "Why Russia Will Play by the Rules in the Arctic," *Canadian Foreign Policy Journal* 21, no. 2 (2014).

behavior would increase assurance of a robust oil supply that the principal can use to its advantage in the face of global energy demands. Conversely, we should expect Norway (principal) to accept a decreased level of risk from oil companies (agents) as a result of decreased geo-economic pressures to produce oil. Lower oil production could result from increased observations that Norway could invest in as well as increased incentives for agent compliance with regulations, as indicated by Petersen's principal-agent element involving information asymmetry.

If the contextual circumstances outlined above accurately represent the underlying motivations of Russia and Norway in their oil production policies, then the following sub-hypotheses can be used to answer the hypothesis:

> ***H_A:*** Russia's oil spill prevention policies in the Barents Sea should be weaker, because energy is a key governmental priority for leveraging international political power.

> ***H_B:*** Norway's oil spill prevention policies in the Barents Sea should be stronger, because energy is not a key governmental priority for leveraging international political power.

Chapter 5: Research Design

This study uses comparative case study methodology to explain the differences in Norway's and Russia's oil-spill prevention policies.

5.1 The Case Study Approach

Case study is a form of qualitative research that can advise evidence-informed decision making in the policy realm. Case study is the detailed examination of an aspect of a historical episode to develop or test explanations that may be generalized to other events.[1] It is important to note that the emphasis is on the well-defined aspect of the incident, event or crisis, rather than the historical event itself. This means that case studies avoid analysis of an entire event, to focus on a single factor of that event to help explain phenomena. Case study is an empirical inquiry that focuses on contemporary phenomena within a real-life context in which the boundaries between the phenomena and the context are not evident.[2] Whereas other research methodologies often use strategies meant to reduce data for empirical clarity, case studies can focus on one case while accounting for context encompassing many variables.[3]

The cases in this study are Russia's and Norway's oil production and spill prevention systems. Each case represents a relationship between a national government and oil industry concerning oil-spill prevention in the Barents Sea. The historical episode for this case study is

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[1] Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in the Social Sciences* (MIT Press, 2005), 5.
[2] Robert K. Yin, *Case Study Research: Design and Methods* (Sage publications, 2013).
[3] Rolf Johansson, "Case Study Methodology" (paper presented at the International Conference on Methodologies in Housing Research, Stockholm, 2003), 4-5.

the new era of offshore oil production in the Barents Sea. Russia's production began with their first platform, *Prirazlomnaya,* at the end of 2013 (Figure 5.1). Norway's first production began in the Goliat Field in early 2016. Prior to these relatively recent endeavors, decades of exploration and preparation starting in the 1960s[4] contributed to the realization of these projects, much of which provides the timeline of data for this case study. Since operations began, concern for oil pollution has increased which lends opportunity to examine differences in regulatory intent versus implementation and, what is perhaps more important - a good relationship or good policy versus a weaker one. Examining the relationship between government and oil producers may contribute to understanding whether the state and the industry have a warm relationship (that results in less than optimal prevention policies) or a more guarded relationship owing to closer oversight (that results in stronger policy). Thus the study focuses on the various dynamics that contribute to the different influences on approaches to offshore oil-spill prevention in Norway and Russia.

Figure 5.1 – The *Prirazlomnaya* Platform

The *Prirazlomnaya* is an Arctic-class, ice-resistant oil platform in the Barents Sea
Source: OffshoreEnergyToday.com

[4] Ole Andreas Engen and Preben H. Lindøe, "The Nordic Model Revisited: Focusing Events and Regulator as Proactive Agent in the Norwegian Petroleum Industry" (Durham, NC: Kenan Institute for Ethics, 2014).

5.2 The Cases of Russia and Norway

5.2.1 Case Selection Criteria

As a method, case study requires selecting objectives involving relatively simple theoretical connections, rich analysis and managing the number of cases to be studied.[5] This means that it is sometimes necessary to choose between a very broad or narrow theme. For this case study, a multiplicity of variables was preferred over parsimony given the significance of the actors and commodity involved when nuanced, inside information provides more insight than outside conjecture. This approach seems optimal since Norway and Russia represent the state sovereignties that are the legal and *de facto* stewards of the Barents Sea. Furthermore, the Russian and Norwegian energy sectors are dominated by their state-owned petroleum companies. For this purpose, Russia and Norway are not only the principals as states, but also as the corporate owners of the lead agents.

5.2.2 The Russian Federation: Global Political Economy and Oil Production

Some of the publications cited below emphasize global political economic influence while others emphasize safety and environmental aspects of resources management. In each case, however, researchers consistently acknowledge Russia's desire or need to access offshore oil and gas reserves, invariably for geopolitical purposes, in order to offset upcoming terrestrial losses in production at the time.

[5] George and Bennett, *Case Studies and Theory Development in the Social Sciences*, 31.

Andreyava and Kryukov provide insight on the energy sector's significance to Russia and the global market when describing what they term the "Russian Model," based on principals involved with offshore oil and gas development strategies that they find distinguish Russia from other oil producers. They preface their analysis of the Russian oil supply's international impact by noting that the shelf in Russia's northern waters, including the Barents, is located far from ongoing or potential conflict. As a result, the Russian Arctic has a geopolitical advantage of being able to provide reliable deliveries of uninterrupted supplies of oil and gas to the leading markets of energy consumers.[6] Moreover, Russian authorities regard the oil and gas sector as the basis of the Russian state's power within the world economy.[7] The most important decisions about hydrocarbon development are made at the federal level. The corporate and government/bureaucratic role in prescribing requirements are enhanced because of a weak juridical system.[8]

A 2011 *New York Times* article provides context to decisions made for Arctic offshore exploration. In 2008, the Russian parliament easily passed amendments to subsoil legislation that allowed the Ministry of Natural Resources to transfer offshore blocks to state-owned companies. The move anticipated and supported Russia's maintaining its status as one of the world's top oil producers and a significant factor in the global energy balance.[9] At that time, Russian leadership already considered the Russian Arctic a key exploitable asset.

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[6] Elena N. Andreyeva and Valery A. Kryukov, "The Russian Model: Merging Profit and Sustainability," in *Arctic Oil and Gas. Sustainability at Risk*, ed. Aslaug Mikkelsen and Oluf Langhelle (New York, NY: Routledge, 2008), 245.
[7] Ibid., 247.
[8] Ibid., 246.
[9] Andrew E. Kramer and Clifford Krauss, "Russia Embraces Offshore Arctic Drilling," *New York Times*, 15 February 2011. http://www.nytimes.com/2011/02/16/business/global/16arctic.html (accessed 4 November 2015).

In a paper analyzing the scope and limits of Russia's capacity to use oil and gas as strategic resources to revive Russia's fortunes as a credible global power, Hashim explains that the relative weakness of Russia's economy and military compared to the Atlantic Alliance has forced current leadership to focus on leveraging energy as a weapon.[10] EU members' heavy dependence on Russian energy supplies has created awkwardness between the EU and Russia. Their desire for Russian gas and oil forces the EU to acquiesce in Russian foreign policies that they find highly objectionable. The issue is exacerbated when considering that the EU, heavily dependent on Russian energy supplies, continues to struggle to find a balance between EU policy that is market based and Russia's energy policy, which is geopolitically focused. Russia has a tendency to use the energy sector as "commanding heights" or "national champions" to leverage Russia's geopolitical stature and has become an impediment to relations with [the EU] part of the West.[11]

Orttung and Overland express similar observations in an article that argues that Russian leadership has pursued a rational set of political economic goals in its foreign energy policy. Their basic premise is that Russia's political leaders use energy to pursue advantages in expanding Russia's influence abroad.[12] Newnham,[13] Rutland,[14] Smith,[15] Stegen,[16] and Woehrel

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[10] S Mohsin Hashim, "Power-Loss or Power-Transition? Assessing the Limits of Using the Energy Sector in Reviving Russia's Geopolitical Stature," *Communist and Post-Communist Studies* 43, no. 3 (2010): 265.
[11] Ibid., 272.
[12] Robert W. Orttung and Indra Overland, "A Limited Toolbox: Explaining the Constraints on Russia's Foreign Energy Policy," *Journal of Eurasian Studies* 2, no. 1 (2011): 75.
[13] Randall Newnham, "Oil, Carrots, and Sticks: Russia's Energy Resources as a Foreign Policy Tool," ibid., no. 2 (2011).
[14] Peter Rutland, "Petronation? Oil, Gas, and National Identity in Russia," *Post-Soviet Affairs* 31, no. 1 (2015).
[15] Keith C. Smith, "Russian Energy Policy and Its Challenge to Western Policy Makers" in *CSIS Commentary* (Washington, D.C.: Center for Strategic and International Studies (CSIS), 2008).
[16] Karen Smith Stegen, "Deconstructing the "Energy Weapon": Russia's Threat to Europe as Case Study," *Energy Policy* 39, no. 10 (2011).

draw similar conclusions.[17] Newnham explains that a key component of Russian power revolves around its ability to use oil and gas as foreign policy tools. Russia has exerted pressure on states such as Georgia, Ukraine and the Baltics for their ties to the West, compared to those loyal to the Kremlin. Punishments can range from interrupted supplies to reduced monetary subsidies. Rutland argues similarly that Russia's ability to project power abroad relies on energy. Keith Smith adds data concerning Russian power projection against Lithuania. In an attempt to stop a sale to a Western company, Russia turned off the flow of oil through a monopoly pipeline (Transneft) nine times between 1998 and 2000.[18] Stegen analyzes whether Russia succeeded in leveraging energy to extract political concessions. Her several examples include the blocked oil supplies to Lithuania mentioned above, and she finds that, more times than not, Russia failed to achieve its goals in this regard.[19] She notes that the Lithuania incident represents a situation where Russia's behavior was punitive rather than preemptive like most other cases. Woehrel's report to the U.S. Congress is inconclusive on whether the behavior of Russian oil firms can be clearly tied to foreign policy objectives, although he notes in several cases where energy infrastructure was sold to non-Russian firms, Russia cut off energy supplies to the facilities.[20] His analysis provides further insight to the Baltic states' relationships with Russia. About 90 percent of the oil consumed by Estonia, Latvia and Lithuania comes from Russia. He concludes that the Mazeikiai oil complex in Lithuania contributes about 10 percent to the nation's GDP and when it failed to adhere to Russian demands to deny a sale to the West, as mentioned above, the Russian oil firm *Lukoil* shut down supplies until the complex was unprofitable and then it moved

[17] Steven Woehrel, "Russian Energy Policy toward Neighboring Countries", ed. Congressional Research Service (Washington, D.C.: U.S Congress, 2010).
[18] Smith, "Russian Energy Policy and Its Challenge to Western Policy Makers," 4.
[19] Stegen, "Deconstructing the "Energy Weapon": Russia's Threat to Europe as Case Study," 6509-10.
[20] Woehrel, "Russian Energy Policy toward Neighboring Countries," 4.

in to take over ownership. Yet Woehrel could not definitively link these actions by the oil firms to the Russian government.

Feklyunina, too, interprets Russia's energy policies (Energy Strategy of 2003) in terms of their capacity to further its strategic interests while pointing out that Russian elites are very sensitive to perspectives on the image of its state-owned companies.[21] Russia's move to shut the natural gas pipe to Ukraine in 2006 and the ensuing crisis illustrated well the Federation's willingness to use its energy resources as a political weapon. Feklyunina's article outlines the various Western (not altogether aligned) and other competing interpretations of this event. Some perspectives place more blame on rampant corruption in Kiev, especially as perceived by the Federation, as justification for Russia's action. Although few deny Ukraine's contributions to the turmoil and crisis, Feklyunina emphasizes Russia's rapid and almost violent response to the situation and is emphasized as indicative of its traditional method of handling such issues.

In an article in which Harsem et al. analyze factors influencing future oil prospects in the Arctic, the authors express certainty of Russia's need to tap into natural resources in the northern offshore. With Arctic hydrocarbons defined as a strategic natural resource asset, they conclude that the Russian government would not likely put constraining measures on the petroleum industry.[22] Similarly, Ariel Cohen argues that Russia hopes to influence geopolitical conditions, such as NATO expansion, by using energy as leverage while it seeks recognition of its predominant role in former Soviet space.[23]

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[21] Valentina Feklyunina, "Russia's International Images and Its Energy Policy. An Unreliable Supplier?," *Europe-Asia Studies* 64, no. 3 (2012): 453.
[22] Øistein Harsem, Arne Eide, and Knut Heen, "Factors Influencing Future Oil and Gas Prospects in the Arctic," *Energy policy* 39, no. 12 (2011): 8042.
[23] Ariel Cohen, "Europe's Strategic Dependence on Russian Energy," *Backgrounder* 2083, no. 5 (2007): 12.

Russian academics have also weighed in on Russia's Arctic offshore production operations. Pavlenko et al. provide significant detail about the increased risks involved with Arctic petroleum activities and admit that Russian technology and industrial culture cannot readily prioritize ecological safety.[24] They conclude that more effort should go into prevention mechanisms.

Moe and Rowe analyze the geopolitical significance of Russia's offshore strategies in the North, tackling questions regarding the troubled evolution of Russian federal policies and the extent to which the strategic importance assigned to offshore petroleum reserves translates into long-term policy goals.[25] Among other policies, they consider a 2003 Ministry of Natural Resources strategy concerning the continental shelf. Given that Russia's continental shelf in the Arctic accounts for 30 percent of the world's total, it is no surprise that an entire national strategy was developed for it. Moe and Rowe note several obstacles to Russia's efforts to meet its oil production goals, including the following two that speak to risk: 1) a poorly developed infrastructure supporting production, and 2) an insufficiently developed legal framework that is not adapted to offshore strategy.[26] Although the Strategy notes these issues broadly, it fails to identify any corrective measures. Regardless of how aspects of the Strategy may be interpreted, foreign policy objectives factor largely in the official thinking about offshore activity.[27] The Strategy also provides a series of enhancements to support offshore operations. As a result, the two largest state-owned companies, Rosneft and Gazprom, have had to enter into formal

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[24] V. I. Pavlenko, S. Yu Kutsenko, and E. K. Glukhareva, "The Role of Oil and Gas Companies in Ensuring the Ecological Safety of the Arctic" (paper presented at the The Twenty-fourth International Ocean and Polar Engineering Conference, 2014), 661.
[25] Arild Moe and Elana W. Rowe, "Northern Offshore Oil and Gas Resources: Policy Challenges and Approaches," in *Russia and the North*, ed. Elana W. Rowe (Ottawa, Ontario: University of Ottawa Press, 2008), 108.
[26] Ibid., 112-13.
[27] Ibid., 113.

agreements in order to manage tensions generated by the Strategy. Whether deliberately or not, the Strategy put these two majors into a position of increased competition. For example, not only do the companies have to demonstrate the usual operational capacities to manage production projects, they also have to engage in political processes in order to gain potential advantages toward securing licensing. There is no indication that these tensions could not be overcome or separated from national interests.

Keil provides an in-depth study of offshore Arctic oil production and the institutions regulating such activities. She relies on recent scientific modeling that shows how an oil spill will spread in open waters and addresses the insufficient regulations to prevent or respond to such an incident. Among other conditions in the Arctic that exacerbate the risks associated with oil spills is a lack of protected areas as well as ineffective liability caps that protect companies. Although Russia often supports unlimited liability, companies can exploit gaps by claiming unforeseen or unstoppable circumstances (*force majeure*).[28] Russia also has a pattern of politicizing liability enforcement and environmental regulations. Of note, the emerging understanding of transboundary effects of oil spills underscores the need for regulating Arctic offshore activities.[29] Keil also notes that resource-endowed, but dependent, countries like Russia often favor less strict environmental regulation in order to facilitate cost-effective access and production.

Wilson analyzes the relationship between industry representatives and local peoples at Sakhalin 2, a major offshore project at the turn of the twenty-first century. Sakhalin 2 involved

[28] Kathrin Keil, "Spreading Oil, Spreading Conflict? Institutions Regulating Arctic Oil and Gas Activities," *The International Spectator* 50, no. 1 (2015): 90.
[29] Ibid., 91.

multinational corporations and 'frontier' circumstances that allowed the author to examine the implementation of Russian federal legislation concerning safety and the environment among other things. Wilson finds enforcement leaves much to be desired. Requirements on foreign investors to conduct impact assessments might have bridged gaps in legal obligations of domestic firms, but here again, Wilson found compliance to be inadequate. For example, public input hearings would be scheduled at unsuitable times at inconvenient locations.[30] Furthermore, company representatives resisted dialogue based on lack of ethnological expertise claiming the lack of a legal framework to do so.[31] They determined that domestic laws and compensation mechanisms would have to suffice, suggesting that safety violations were not only deemed acceptable, but that both authorities and corporate leadership preferred to ignore safety regulations aimed at prevention.

In a Chatham House Report by Stevens et al., the authors contextualize aspects of the Soviet Union's / Russia's old and new extractive industry regimes to consider factors that distract from effective safety related, (among other) extractive industry policies. They note an absence of strategic focus owing to natural resource management having become embroiled in political competition and conflict among elites.[32] A lack of consensus among the elites about the best form of subsoil (including shelf) management will likely cause regulatory regimes to remain in flux.[33] Incompetence and corruption within key regulatory and enforcement institutions lead to

[30] Emma Wilson, "New Frontiers for the Oil and Gas Industry: Company-Community Relations on Sakhalin Island," *Cambridge Anthropology* (2006): 25.
[31] Ibid., 26.
[32] Paul Stevens et al., "Conflict and Coexistence in the Extractive Industries" in *Chatham House Report* (London, UK: Royal Institute of International Affairs, 2013), 73.
[33] Ibid.

inequalities in resource distribution as well as public distrust, further detracting from effective, responsible natural resource management.[34]

Spiridonov provides an analysis of the number and effectiveness of impact studies concerning offshore production in the Circumpolar North. He notes that the absence of a strategic environmental assessment regarding Arctic hydrocarbon production leaves a significant gap in understanding the risks involved with extraction and transport that could negatively affect the environment.[35] He concludes that a strategic environmental assessment, as well as environmental impact statements, could benefit and strengthen the regulatory regime of the Russian petroleum industry.

Greenpeace has focused heavily on Russian oil production. In a strongly worded report accusing the Russian Federation of being the worst pipeline managers in the world, the NGO attacks its safety patterns and record to discourage much needed foreign investments in the industry. Greenpeace presents a dismal record of terrestrial oil spill violations to construct an argument that Russia should not be trusted to conduct safe operations in the far more complex environment of the Arctic offshore region. The executive summary clearly states:

If Russian oil and gas industry for an extended period of time could not bring regulations to the existing fields, there is no reason to hope that it will show any more responsible attitude to environmental issues when developing the Arctic Shelf[36]

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[34] Ibid., 80.
[35] Vassily Spiridonov, "Large-Scale Hydrocarbon-Related Industrial Projects in Russia's Coastal Regions: The Risks Arising from the Absence of Strategic Environmental Assessment," *Sibirica* 5, no. 2 (2006).
[36] "Russian Arctic - Offshore Hydrocarbon Exploration: Investment Risks", (2012).

Furthermore, the NGO argues that the higher operation costs in the Arctic will make financial investments in safety even less likely. Efforts to reduce risks in offshore operations greatly increase exploration and production costs. Especially as other sectors of the Russian economy are contributing less to its GDP, pressure will mount to extract offshore oil and gas as efficiently as possible.[37] Lastly, the inherent difficulties of operating in the Arctic will inevitably cause project time lines to extend. The temptation to reduce the time period between licensing and production by circumventing environmental impact and safety measures will be great.[38]

Moe compares Russian and Norwegian Arctic offshore endeavors and finds Russian attitudes about environmental management to be essentially *laissez-faire*. The focus is often on the actual situation and associated past experiences with an aversion to hypotheticals. The phrase "let us wait and see what happens" is not an uncommon Russian response to dilemmas.[39] Moreover, Russia tends to emphasize expert opinion, which disenfranchises many stakeholders and those with legitimate environmental input and concern.[40]

Leon Aron writes in "The Political Economy of Russian Oil and Gas" that Putin's steadfast determination that Russia should become "a great [global] economic power" relies in Putin's words, on the "extraction, processing and exploitation of mineral raw resources." Aron writes that: "oil and gas were paramount politically as guarantors of the security and stability of the Russian state."[41] Achieving and demonstrating a long-term energy balance enhances Russia's

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[37] Ibid., 19.
[38] Ibid., 21.
[39] Arild Moe, "Russian and Norwegian Petroleum Strategies in the Barents Sea," *Arctic Review on Law and Politics (UiT: The Arctic University of Norway)* 1, no. 2 (2010): 237.
[40] Ibid., 2.
[41] Leon Aron, "The Political Economy of Russian Oil and Gas", ed. American Enterprise Institute (Washington, D.C.: American Enterprise Institute for Public Policy Research, 2013), 1-2.

ability to project confidence in foreign policy. Russian perceptions of power, prestige, and national identity have all reinforced the determination to move ahead with Arctic regional (energy) development.[42]

5.2.2.1 Findings

The Russian case study relies on perspectives gained from decades of petroleum-related activity prior to operations in the Barents Sea. The lack of current operations or disasters in this region provides the rationale for drawing inferences from the historical record. The data for the Russia case study illustrate four consistent conditions: 1) the energy sector is the most important component of Russia's economy; 2) the Russian state deliberately positioned itself as the majority owner and controlling entity in the energy sector: 3) Russia relies on a prescriptive regulatory approach for operational control and the capacity to balance safety requirements against production needs; and 4) Russia's energy strategy requires coercive, political influence over both upstream and downstream oil-production and related activities.

Russia has lofty global objectives and requires energy revenues to realize them. The oil industry supports these goals through less prudent, or restrictive, and more permissive practices to maximize production levels. Russia's poor record with oil pollution suggests a degree of acceptance of what others would deem irresponsible behavior as a result of the importance of maintaining optimal production levels. Recognizing this dynamic is essential to understanding the connection between Russia's global political economic interests and oil-production operational risks. Russia has control of every aspect of upstream activity short of the operations

[42] Katarzyna Zysk, "22. Russia Turns North, Again: Interests, Policies and the Search for Coherence," *Handbook of the Politics of the Arctic* (2015): 437.

themselves. The evidence strongly suggests that Russia intentionally allows its oil companies to assume the relatively high risks. Legislative language necessarily allows subordinate executives to interpret and implement intent. With regard to regulation of oil production, the evidence suggests that Russia wants to appear to have officially required a high degree of responsibility in the energy sector, while it permits enough exploitable gaps in the regulatory regime to facilitate progress toward national goals. Maintaining this strategy now includes the Northwestern waters of Russia.

The Arctic has become a high Russian priority in domestic and foreign policies, acknowledged as strategically important to future socio-economic development, and hence Russia's position in international affairs.[43] Through the first decade of the twenty-first century, most oil production efforts took place in the western onshore Siberian fields, but Russian companies were positioning themselves for offshore activity, especially in the Barents.[44] Advanced petroleum industries and state actors tend to try to maintain a balance between current production (hydrocarbons being extracted) and future reserves (hydrocarbons to be extracted). As terrestrial production in Western Siberia is waning, Russia is keenly interested in exploiting its continental shelf resources.

Yet Russia is directing significant energy revenues toward defense spending in the Arctic, rather than reinvesting in desperately needed offshore operational capacities, in particular research and development of exploratory phase technologies and industrial sector manufacturing

[43] Ibid.
[44] Kristian Åtland, "Russia's Northern Fleet and the Oil Industry - Rivals or Partners? Petroleum, Security, and Civil-Military Relations in the Post-Cold War European Arctic," *Armed Forces & Society* 35, no. 2 (2009): 368.

capabilities[45] (i.e. platforms, rigs and ships [retooling legacy naval yards]),[46] which suggests an inability or willingness to prioritize effectively. This deficit in manufacturing capacity is closely tied to the lack of organizational capacity and capital – which, when combined with technological inexperience, leaves Russia in a tenuous position. Budget allocations are far more focused on developing Arctic military capabilities (offshore included) as opposed to offshore production capabilities. Russia's national defense budget has risen from $15.6 billion in 2006 to $51.8 billion in 2015.[47] Forecasts submitted by the defense minister show an anticipated rise to $57.6 billion by 2018.[48] This emphasis on military, rather than oil production, capacity suggests that investment in reducing risks involved with oil production activities will not be a priority.

5.2.3 Norway: Global Political Economics and Oil Production

As Norway's oil industry expanded in the 1970s its leaders strove to avoid the "Dutch Disease" by maintaining a balanced economy. Gelb et al. observe that 'Mainland Norway' worked to maintain competitiveness in other economic sectors as the excitement surrounding oil and gas prospects built.[49] Rural interests in non-oil tradeables and cautious government investment in the energy sector allowed Norway's economy to remain stable in the long term. Much of the revenue from the oil funds goes into sovereign wealth savings in part to prevent

[45] Jon Rytter Hasle, Urban Kjellén, and Ole Haugerud, "Decision on Oil and Gas Exploration in an Arctic Area: Case Study from the Norwegian Barents Sea," *Safety Science* 47, no. 6 (2009).
[46] Clifford G. Gaddy and Barry W. Ickes, *Bear Traps on Russia's Road to Modernization* (New York, NY: Routledge, 2013), 98-99.
[47] Margarete Klein, "Russia's Military: On the Rise?" in *Transatlantic Academy Paper Series* (Washington, DC: Transatlantic Community, 2016), 25.
[48] Julian Cooper, "Military Expenditure in the Russian Ministry of Finance's New 'Basic Directions of Budget Policy for 2016 and the Planned Period of 2017 and 2018'," (London, United Kingdom: Centre for Russian, European and Eurasian Studies, University of Birmingham, 2015), 2.
[49] Alan Gelb, Benn Eifert, and Nils Borje Tallroth, "The Political Economy of Fiscal Policy and Economic Management in Oil-Exporting Countries," *World Bank Policy Research Working Paper*, no. 2899 (2002): 8.

deindustrialization.[50] Such strategic choices enhance Norway's ability to maintain macro-economic stability and reasonable growth even under unfavorable oil market conditions.[51]

Mjøset and Cappelen studied the integration of the Norwegian oil economy into the world economy over a four-decade span. They found that Norway could have been susceptible to the Dutch Disease and Resource Curse had it chosen to emphasize oil production over its traditional, non-oil industries, such as fish, timber and hydro. Excessive exploitation of oil too quickly would have strangled the non-petroleum sectors without a disciplined fiscal policy to control the reliance on oil income.[52] Norway's early commitment to long-term stability as its economy transformed in the 1970s paid off in its maintaining a diversified economy.

Rutland's contribution to the Russian case study also offered a comparative glance at Norway. His findings conclude that Norway, as a mature, developed society, effectively adapted to the arrival of oil riches. He concludes that even though the oil industry can bring out environmental and 'Dutch Disease' concerns, Norway avoided the pitfalls through technological achievements in the industry as well as confidence in the democratic processes that focus on channeling back oil wealth to the nation's collective benefit.[53]

In 2005 Listhaug conducted an analysis of whether Norway experienced any of the symptoms of a resource curse following the addition of oil as an abundant natural resource in its economy. Although Norway clearly avoided the larger problems associated with resource curses,

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[50] Economist, "The Rich Cousin," *The Economist*, 2 February 2013. http://www.economist.com/news/special-report/21570842-oil-makes-norway-different-rest-region-only-up-point-rich (accessed 12 June 2016).
[51] Steven Barnett and Rolando Ossowski, *Operational Aspects of Fiscal Policy in Oil-Producing Countries* (International Monetary Fund, 2002), 18.
[52] Lars Mjøset and Ådne Cappelen, "The Integration of the Norwegian Oil Economy into the World Economy," *Comparative Social Research* 28 (2011): 12.
[53] Rutland, "Petronation? Oil, Gas, and National Identity in Russia," 69.

the author investigated whether it completely avoided associated problems. He found that Norway suffered only a mild form of the economic ailment. A significant portion of the public pushed for using the new oil wealth to finance a higher proportion of current government expenditures than the government deemed prudent.[54] This tension threatened to undermine public trust in government, but the Norwegian government stood relatively firm in its long-term goals of managing the country's petroleum wealth with an eye toward long-term stability, regardless of the short-term political risks.

Bjerkholt and Niculescu outline Norway's political commitments in their study of fiscal policy and non-renewable natural resources. They begin from a foundation of studies concerning weak economic performances of resource-abundant economies that led to lower per capita growth rates. They found that resource abundance tended to distract states from maintaining competitive manufacturing as well as establishing financial institution to help save and invest resource income. In contrast, Norway focused primarily on net-worth risk[55] by saving oil revenue in their unique fund and creating simple transparent rules to deal with market-related fluctuations.[56] Eventual consensus allowed Norway to install and maintain a rules-based framework even during economic recessions.

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[54] Ola Listhaug, "Oil Wealth Dissatisfaction and Political Trust in Norway: A Resource Curse?," *Western European Politics* 28, no. 4 (2005): 835-36.

[55] While net worth is generally understood as assets minus liabilities, net-worth *risk* refers to the difference between the best-case information equilibrium relative to other situations resulting in losses as a result of information asymmetry.
Ben Bernanke and Mark Gertler, "Agency Costs, Net Worth, and Business Fluctuations," *The American Economic Review* (1989).

[56] Olav Bjerkholt and Irene Niculescu, "Fiscal Rules for Economies with Nonrenewable Resources: Norway and Venezuela," in *Rules-Based Fiscal Policy in Emerging Markets: Background, Analysis, and Prospects*, ed. George Kopits (New York, NY: Palgrave MacMillan, 2004), 164, 77-78.

Mehlum et al. also reference the resource abundance of a nation as a common cause of poor economic performance.[57] The authors consider Norway's positive economic development a result of early industrialization and late oil discovery. Strong rule of law, property rights and a well-functioning state bureaucracy further supported oil income as an asset rather than liability. Broad political participation and representation created conditions that allowed the emerging oil industry to remain beyond the grasp of narrow interest groups. With a well-established labor movement at the time, other industries remained stable and resource wealth from oil benefited society broadly.

Holden opens his analysis in similar fashion by stating that the literature suggests that countries with abundant natural resources generally experience lower economic growth than other countries.[58] Larsen also concurs in this observation in a case study of Norway's success in avoiding the resource curse.[59] The lessons from the 1970s showed that Norway began to experience the Dutch Disease when petroleum wealth led to increased public consumption, creating inflationary pressure on domestic manufacturing sectors and disadvantaging them relative to trade partners – all resulting in further economic problems.[60] The Norwegian government formed a commission headed by the deputy governor of the central bank to study the impacts of oil development on the economy and suggest ways to avoid repeating the cycle.[61] Along with supporting the special fund concept and the framework rules, the commission argued that oil production should be undertaken at a moderate pace to ensure that resource wealth was

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[57] Halvor Mehlum, Karl Moene, and Ragnar Torvik, "Mineral Rents and Social Development in Norway," in *Mineral Rents and the Financing of Social Policy* (Springer, 2012).
[58] Steinar Holden, "Avoiding the Resource Curse the Case Norway," *Energy Policy* 63 (2013).
[59] E Røed Larsen, "Are Rich Countries Immune to the Resource Curse? Evidence from Norway's Management of Its Oil Riches," *Resources Policy* 30, no. 2 (2005).
[60] Holden, "Avoiding the Resource Curse the Case Norway," 871-72.
[61] Ibid., 873.

saved for the future. In addition to the benefits of this fiscal discipline on the broader economy, the monetary policy focused on stable and diverse economic strategies led to reduced pressure on the oil industry to prioritize maximum production.[62]

Strømsnes et al. studied the presence and effectiveness of Greenpeace in Norway and found that their presence and following were largely non-existent. The authors attributed this to two anomalies: 1) the state-friendly society, and 2) the local community support for oil policies.[63] Greenpeace simply has very little cause or standing in Norway given strong local support for existing policies and lack of egregious incidents that the organization identifies as warranting its attention. The contrast between Greenpeace concerns in Norway and Russia is striking.

Because Norway has prioritized a stable macro-economy and has committed administrative resources to this objective, it has established an agency to manage statutory intent. The Petroleum Safety Authority (PSA) of Norway, an independent government regulator responsible for safety, emergency preparedness and the working environment in the Norwegian petroleum industry, issued risk reduction principles as part of Norway's Health, Safety, and Environment (HSE) regulatory frameworks. This section of the framework mandates compliance with HSE legislation accountable to internal requirements and acceptance criteria, meaning that the agency sets the conditions, and the oil companies are allowed and expected to implement requirements in a self-regulatory manner.[64] Furthermore, in cases of uncertainty and conditions

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[62] Ibid.
[63] Kristin Strømsnes, Per Selle, and Gunnar Grendstad, "Environmentalism between State and Local Community: Why Greenpeace Has Failed in Norway," *Environmental Politics* 18, no. 3 (2009).
[64] "Risk Reduction Principles," in *Chapter II*, ed. Petroleum Safety Authority (Stavanger, Norway: Petroleum Safety Authority, 2013).

that contribute to potentially negative consequences, producers must choose solutions that reduce risk. The application of this principle illustrates that Norway's regulations for petroleum operations are risk-based with the aim to minimize the threat of accidents and environmental damage.[65] They emphasize optimal outcomes, rather than simply following rules.

During her second of three terms as Prime Minister and prior to becoming the Director General of WHO, Gro Harlem Brundtland published an article concerning the politics of oil. In keeping with a speech she gave at Harvard in 1987, she stated the following: *To be able to play a positive and stable role in the global energy picture, and to avoid becoming too dependent on the petroleum sector, we have decided to deplete our petroleum resources at a moderate and long-term basis. Orderly conditions and operations are significant for global economic development, and important if oil is to be exploited in an environmentally sound manner.*[66] This economically prudent and environmentally responsible attitude contrasts starkly with Putin's emphasis on exploiting its oil deposits to bolster Russia's strategic interests.

5.2.3.1 Findings

The following principles characterize Norway's energy strategies: 1) Norway transitioned out of foreign assistance while bolstering the domestic workforce culture contributed to prudent, responsible energy policy and norms; 2) Norway relies on a performance-based regulatory regime to manage expectations of oil-production operations that relies on agency competence and integrity and emphasizes optimal safety and environmental outcomes; 3) Norway is a

[65] "Regulatory Principles," Petroleum Safety Authority. http://www.psa.no/regulatory-principles/category932.html (accessed 30 March, 2015).
[66] Gro Harlem Brundtland, "The Politics of Oil a View from Norway," *Energy Policy* 16, no. 2 (1988): 104, 06.

relatively small state in the international community but a big player in the global energy spectrum; and 4) economic, rather than political, objectives guide Norway's engagement in the global economy. The fourth factor extends to Norway's management of its oil wealth; from integration four decades ago to sustainment today. Adopting the economic models that helped ensure a diverse economy provided opportunities for the petroleum sector to responsibly manage risk in operations. Norway is repeatedly used as the model of prudent, rational management of oil wealth, or "what right looks like." The Macondo incident – the *Deepwater Horizon* explosion in the Gulf of Mexico – highlighted the lack of preparedness elsewhere. Even then, Norway did not rest on its laurels. Although safety trends had improved in the previous ten years, the *Deepwater Horizon* incident prompted the Norwegian oil industry to further emphasize proactive key performance indicators to better manage risks. Norway's response to the *Deepwater Horizon* disaster reflects the same principles that explain the success of the Nordic Model: a culture of trust, dialogue, egalitarianism and democratic principles present in Norwegian work life.[67]

The integration of substantial oil revenues into the Norwegian economy in the 1970s tested the capacities of institutions and society itself to manage the new wealth prudently. Early in its energy wealth, Norwegian policymakers understood that market forces left to themselves would produce a crowding out effect with petroleum revenue gradually supplanting other industrial income. Oil exports tend to inhibit other exports while stimulating imports, leading to a less diversified and less developed economy that is ill prepared to handle oil market downturns.[68] Committing to a diversified economy and sound fiscal policies has helped Norway weather such

[67] I. B. Dahle et al., "Major Accidents and Their Consequences for Risk Regulation," in *Advances in Safety, Reliability and Risk Management* (Taylor and Francis London, 2012), 40.
[68] Øystein Noreng, "Energy Policy and Prospects in Norway," *Annual Review of Energy* 11, no. 1 (1986): 403.

difficult times. Norway effectively managed inflation, employment, wage control, trade and the value of the krone through monetary policy aimed in part at macroeconomic stabilization.[69] Norway had the advantage of a diversified economy when its oil boom began in the 1970s, and purposely maintained that diversity. Systemically, Norway established the necessary conditions to maintain economic stability so as to avoid strong urges for quick, but risky, oil revenues. This steadfast approach required political and social commitment. Numerous other countries have failed in this regard, including Russia, Denmark, Venezuela, Angola, Liberia, and Nigeria being an especially disturbing case.[70]

Norway's managed approach through the Petroleum Safety Authority (PSA) indicates that this representative of the principal (as a regulatory authority for the Norwegian Continental Shelf [NCS]) does not rely on vertical, superordinate authority but rather horizontal cooperation with other actors for regulatory development and implementation success. In this sense, the PSA acts just as much as a mediator as it does administrative authority. Although Norway as principal retains authority to administer punishment for violations, there is likely to be greater understanding and acceptance of such actions because of the cooperative nature of the regime structure.

Moe describes very different constraining forces between Russia and Norway with regard to offshore development in the Arctic. In Norway's case, constraints translate into environmental

[69] Lars E. O. Svensson et al., "An Independent Review of Monetary Policy and Institutions in Norway" in *Norges Bank Watch 2002*, ed. Centre for Monetary Economics (Oslo, Norway: Centre for European Studies, 2002), 29.
[70] Michael Watts, "Resource Curse? Governmentality, Oil and Power in the Niger Delta, Nigeria," *Geopolitics* 9, no. 1 (2004).

precautions that slow the pace of development and otherwise control oil production activities in favor of safety.[71]

[71] Moe, "Russian and Norwegian Petroleum Strategies in the Barents Sea," 245.

Chapter 6: Conclusion

Russia and Norway are committed partners and determined stewards of the Barents Sea. Yet they exhibit fundamentally different approaches toward offshore oil-spill prevention.

Although this study focuses on foreign policy-related influences on Russia's and Norway's oil-spill prevention policies in the Barents Sea, numerous domestic dynamics and forces clearly contribute to differences in the two countries' approaches to oil spill prevention. This thesis does not attempt to present one hypothesis as the single explanation to policy differences in this shared offshore region. Rather, it is an effort to confirm or deny whether the proposed dynamic does indeed have strong explanatory power. Examining the relationships between Russia and Norway and the respective oil producers with regard to oil-spill prevention measures in this singular area requires a deliberate focus. The global nature of the argument separates itself as a foreign-level independent variable from other domestic-level independent variables, such as comparative influences of rule of law, other governance principles, corruption, and other intrastate factors, for example. The profound differences in the political cultures of Norway and Russia provide significant opportunity for additional research in this policy arena. A long established rule of law, democratic principles and transparency, corporatism, and a strong commitment to environmental responsibility in Norway, versus no history of rule of law, authoritarianism, instability, and a strong disregard of environmental responsibility in Russia presents multiple options to compare and analyze other contributing factors. Russia's oil production culture since the fall of the Soviet Union has been one of government and major industries brokering deals with one another. In addition to these historical, political and cultural differences, the two states' relative stature among oil producers and exporters explains much

about their different approaches to oil development in the Arctic, especially oil spill prevention policy.

Nevertheless, this thesis has endeavored to thoroughly examine a single, enabling variable in order to confirm or deny a critical attribute of these complex relationships and behaviors. Using agency theory and case-study methodology, I find that the differences in oil-spill prevention policy are partially a function of their relative status in the international economic system. Russia is a global economic power due to its high oil production, and it wields power primarily through its oil exports. Norway, on the other hand, does not rely on oil to maintain its political position in the global economic community. Nor is it as dependent on oil production for domestic social and economic stability. These differences explain much about Russia's riskier oil-spill prevention policy and Norway's stronger policy.

Russia pursues its global objectives by taking advantage of other countries' dependence on its oil and gas exports. For instance, Russia strives to increase European dependence on Russian gas and oil to lessen the likelihood of EU sanctions on Russian foreign policy.[1] Europe's dependence on *Russian* gas particularly advantages Russia in this regard. Russia's oil is more diluted in the world market, but its importance to Russia's economy and to financing its military and other strategic sectors is no less critical to Russia's ability to wield power and achieve its strategic aims. Norway focuses on integrating into international systems through conventional, market-based economic influence. Although energy leads Norway's exports, government and Norwegian society have come to consensus in constraining that industry to prevent classic economic challenges experienced by other resource-rich nations. Thus, oil can be viewed a

[1] Frank Umbach, "Russian-Ukrainian-EU Gas Conflict: Who Stands to Lose the Most," *NATO Review* (2014).

commodity used by Norway to achieve domestic economic and social well-being, rather than as a tool to gain geopolitical leverage.

These dissimilar conditions and objectives influence the level each state's willingness to tolerate relatively risky approaches to oil-production operations, and they reveal fundamentally different attitudes about preventing pollution. In each case, the principal has full authority and latitude to prioritize and fund safety systems that support and promote prevention measures. The evidence compiled in these cases illustrates the contrasting forces, processes and objectives that drive the two nations' respective oil production systems.

Russia uses oil and gas production and exports to maintain its status as a major economic power and to fulfill its geo-strategic aims. Maintaining its status as a high-ranking oil producer in the world is essential to meeting its strategic goals. Sustaining its high production levels almost compels Russia to allow relatively risky practices. Under these circumstances, the state prioritizes output over environmental protection.

After Norway experienced devastating offshore accidents in 1977 and 1980, policy reform shifted Norway's regulatory approach from the established reactive regime based on prescriptive and technical requirements toward a risk-based, proactive regime with functional legal requirements.[2] The new approach encouraged collaboration between public regulators and industry, required government supervision of the industry, fostered self-regulation by industry, and involved the labor force and other stakeholders in the decision making. Significantly, the current regulatory regime holds producers morally and legally responsible for outcomes, spurring

[2] Ole Andreas Engen and Preben H. Lindøe, "The Nordic Model Revisited: Focusing Events and Regulator as Proactive Agent in the Norwegian Petroleum Industry," (Durham, NC: Kenan Institute for Ethics, 2014), 1.

them to have a vested interest in workforce and environmental safety. All of these efforts have contributed to a mutual trust among parties,[3] a hallmark of Nordic governance. Norway prioritizes minimizing risks because it strives to participate in the global political economy through conventional, monetary institutions rather than exploiting demand for oil. As a result, Norway's oil production industry has become the world's gold standard in terms of offshore oil production safety. It has deliberately established a complex, transparent, collaborative system that promotes overall safer operations. Norway has proved that a balance between a robust oil production industry and environmental responsibility can be achieved. Its success also illustrates the importance of democratic institutions, environmental values, political will to diversify and emphasize safety, heavy investment in safety mechanisms, transparency, and inclusion of multiple stakeholders to achieving such a rational, socially and environmentally responsible system. The demonstrated validity of principle-agent theory in this case study suggests its value for other comparative studies.

[3] Ibid.

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