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Natural Resources Law, Law of the Sea, International Law: History, Oil, Gas, and Mineral Law

OIL AND SUSTAINABILITY IN THE ARCTIC CIRCLE

Caroline M. Rixey*

Remaining one of the last untouched environments on Earth, the Arctic Circle is home to a vast number of natural resources and wildlife. Yet as a result of climate change, the unique environment of the Arctic is rapidly shifting, uncovering more and more of the continental shelf as the ice sheets melt away.¹ This melting allows for greater access to the Arctic land beneath, and the resources it provides, that was unavailable before.

One of the largest untapped natural resources of the Arctic is oil. It is estimated that the Arctic Circle, while covering only six percent of the Earth's surface, holds approximately twenty-two percent of the Earth's oil and natural gas reserves.² As the ice sheet covering the Arctic begins to melt, more of the continental shelf is exposed and the possibility of exploiting this resource becomes a feasible possibility.³

This paper sets out to discuss the issues surrounding Arctic oil, the interests of the stakeholders involved, and sustainability challenges of the project. Part I provides a brief background of the Arctic Circle and the presence of unexplored oil reserves. Part II explores the perspectives of the different stakeholders involved in Arctic oil exploration, including the eight Arctic states and different various non-governmental organizations ("NGOs"). Part III discusses the current international agreements governing the Arctic Circle, focusing on the work of the Arctic Council. Part IV discusses sustainability issues surrounding Arctic oil drilling and the preservation of the Arctic environment. Part V provides an analysis of the international framework surrounding Arctic oil exploration, taking into account the different stakeholder opinions, sustainability issues, and the current international framework governing this area. Finally, Part VI draws conclusions on this issue.

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1. Vladimir Isachenkov, *Russia Submits Vast Territorial Claims on Arctic Ocean Shelf to UN*, ALASKA DISPATCH NEWS (Aug. 4, 2015), available at <http://www.adn.com/article/20150804/russia-submits-vast-territorial-claims-arctic-ocean-shelf-un> ("Rivalry for Arctic resources has intensified as shrinking polar ice is opening new opportunities for exploration").

2. *Oil and Natural Gas Resources of the Arctic*, GEOLOGY.COM, <http://geology.com/articles/arctic-oil-and-gas> (last visited May 24, 2015).

3. Isachenkov, *supra* note 1.

I. THE ARCTIC ENVIRONMENT AND OIL RESERVES

Geographically, the Arctic is defined as the region located north of the Arctic Circle.⁴ This area is unique in that sunlight is present or absent for twenty-four continuous hours on the summer and winter solstices.⁵ The Arctic contains the land area of eight states: Canada, Finland, Greenland, Iceland, Norway, the Russian Federation, Sweden, and the United States.⁶ However, only the Russian Federation, Norway, the United States, Canada, and Denmark through their jurisdiction over Greenland, have a territorial right to the Arctic. The other two states do not border the Arctic Ocean.⁷

The most striking feature of the Arctic is the sea ice, which covers approximately eight million square kilometers during the winter months and approximately twice that area during the spring and summer months.⁸ The ice cover extends to most of the continental shelves during a majority of the year.⁹

The Arctic is home to hundreds of plant species that have adapted to live in the harsh tundra environment.¹⁰ Many animal species have adapted to live in the tundra conditions as well, including polar bears, arctic foxes, and caribou.¹¹ These species either hibernate during the winter months and escape the most severe weather conditions of the north or migrate further south until the spring months.¹² In addition, approximately four million people call the Arctic Circle their home.¹³ Most of these people live in a few post-Soviet cities, while the rest are scattered about living in tiny coastal communities.¹⁴

The Arctic is host to a large number of untapped oil reserves. The United States Geological Survey ("USGS") estimates that the oil resources of the Arctic Circle are equal to approximately 412 billion barrels of oil.¹⁵ Arctic oil and natural gas discoveries began in Russia in 1962 at the Tazovskoye Field, and then in the United States in 1967 at the Alaskan Prudhoe Bay Field.¹⁶ Since then, sixty-one

4. *Arctic Oil and Natural Gas Potential*, U.S. ENERGY INFO. ADMIN. (Oct. 19, 2009), available at <http://www.eia.gov/oiaf/analysispaper/arctic>.

5. *Id.*

6. *New Awareness of and Opportunities for UNEP to Address Climate Change in the Arctic*, U.N. ENVTL. PROGRAMME 5 (Feb. 18, 2013).

7. *Arctic Oil and Natural Gas Potential*, *supra* note 4.

8. United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Seas Meeting, *Protecting the Environment of the Arctic Ecosystem by Olav Orheim*, 2 (June 2, 2003).

9. *Id.*

10. *The Arctic Environment*, NAT'L WILDLIFE FED'N 3, http://niconline.com/downloads/national_wildlife/ecosystems/arctic_environment.pdf.

11. *Id.* at 5.

12. *Id.* at 5.

13. *The Melting North*, THE ECONOMIST (June 16, 2012), available at <http://www.economist.com/node/21556798>.

14. *Id.*

15. *Oil and Natural Gas Resources of the Arctic*, *supra* note 2.

16. *Arctic Oil and Natural Gas Potential*, *supra* note 4.

large oil and natural gas fields have been discovered in Russia, Alaska, Canada, and Norway.¹⁷ The USGS states that the Arctic holds approximately twenty-two percent of the undiscovered oil resources in the world; yet while the Arctic is rich in unexplored oil resources, the fields are concentrated in a few sedimentary provinces.¹⁸

II. STAKEHOLDERS OF THE ARCTIC OIL SUPPLY

The oil resources of the Arctic are limited to a few sedimentary provinces and are not evenly distributed among the Eurasia and North American continents.¹⁹ Of the discovered oil fields in the Arctic, forty-three lie in Russia, eleven in Canada, six in Alaska, and one in Norway.²⁰ This inequality, along with increasing territorial disputes regarding sovereignty over the Arctic Circle and North Pole, will lead to conflict and disagreement among the stakeholders of the Arctic oil supply.

A. State Interest

Under the United Nations Convention on the Law of the Seas (“UNCLOS”),²¹ the territorial seas of the nations extends only twelve nautical miles from shore and those twelve miles are considered the sovereign territory of that state.²² The exclusive economic zone of the state extends from a state’s baseline up to 200 nautical miles and gives states control of the natural resources, including oil and gas, within this area.²³ A state may extend its economic zone beyond this if it can prove that “the underwater ridges of the seafloor are a geological extension of the country’s own continental shelf.”²⁴ This right of sovereignty and control over the natural resources of the oceans has led to many of the Arctic states attempting to gain more territorial control of the Arctic circle, its marine waters, and the resources it holds.

In 2007, a Russian polar expedition planted a titanium Russian tricolor on the seabed beneath the North Pole, claiming the Arctic for Russia.²⁵ On December 15, 2014, Denmark staked a claim for the North Pole as well, through its jurisdiction over Greenland, stating that 900,000 square kilometers of the Arctic Ocean above

17. *Id.*

18. *Id.*

19. *Id.*

20. Uri Friedman, *The Arctic: Where the U.S. and Russia Could Square Off Next*, ATLANTIC (Mar. 28, 2014), available at <http://www.theatlantic.com/international/archive/2014/03/the-arctic-where-the-us-and-russia-could-square-off-next/359543/>.

21. United Nations Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397, 21 I.L.M. 1261 [hereinafter U.N. Convention].

22. *Id.* art. 2-3; *New Awareness of and Opportunities for UNEP*, *supra* note 6, at 5.

23. *New Awareness of and Opportunities for UNEP*, *supra* note 6, at 5.

24. *Id.*

25. *Frozen Conflict*, THE ECONOMIST (Dec. 20, 2014), available at <http://www.economist.com/news/international/21636756-denmark-claims-north-pole-frozen-conflict>.

Greenland, including the North Pole, belonged to it under UNCLOS.²⁶ Canada also intends to assert sovereignty over a portion of the polar continental shelf.²⁷ These territorial claims of sovereignty all conflict with one another and as more Arctic states become involved in staking claims over the Arctic, disputes will arise.²⁸ The claims over the Arctic are based on the desire to declare sovereignty over the vast unexploited resources the Arctic holds, and as the ice sheet continues to melt due to climate change these resources become more readily available and more contested.

The Arctic states hold differing positions with regard to the development of their oil reserves in the Arctic Circle. Russia continues to lead and dominate the development of exploration and extraction of Arctic resources due to its large reserves of oil, gas, and ore in northern Siberia.²⁹ Gazprom Neft, one of Russia's fastest growing companies,³⁰ owns the world's first Arctic oil rig involving a stationary platform on Russia's Prirazlomnaya platform.³¹ Gazprom Neft began production in the Arctic in 2013 and reached a total output of approximately 5,000 barrels per day in 2014.³² Russia has several more projects under development in the Arctic, including Gazprom Neft's Novy Port, Bashneft and Lukoil's Trebs and Titov, as well as Gazprom Neft and Novatek's Severenergia.³³ Russia is likely to continue intensifying exploration of the continental shelf and extend deeper into the Arctic waters as programs are supported by the investments from private Russian oil and gas companies in addition to continuing to extend its territory into

26. *Id.*

27. *Id.*

28. In addition to disputes over territorial claims over the continental shelf, disputes have also arisen due to an opening of trade routes between Europe and Asia. As the ice cap melts over the summer, shipping lanes open up that could rival conventional routes during the summer months. *Id.* A voyage from Shanghai to Hamburg, Germany along the Northern Sea Route shaves roughly 30% off the distance from a similar trip through the Suez Canal. Jonathan Masters, *The Thawing Arctic: Risks and Opportunities*, COUNCIL ON FOREIGN REL. (Dec. 16, 2013), available at <http://www.cfr.org/arctic/thawing-arctic-risks-opportunities/p32082>.

29. Benjamin Bidder, Matthias Schepp, & Gerald Traufetter, "*The Black Plague*": *Russia Plays Game of Arctic Roulette in Oil Exploration*, SPIEGELONLINE (Aug. 24, 2012), available at <http://www.spiegel.de/international/business/russian-oil-exploration-in-arctic-circle-causes-major-environmental-damage-a-851617-druck.html>. "In 2007, Moscow staked a symbolic claim to the Arctic seabed by dropping a canister containing the Russian flag on the ocean floor from a submarine at the North Pole. The Kremlin also has moved to beef up Russian military forces in the Arctic. The effort has included the restoration of a Soviet-era military base on the New Siberian Islands and other military outposts in the Arctic. Earlier this year, the military conducted sweeping maneuvers in the Arctic that involved 38,000 servicemen, more than 50 surface ships and submarines and 110 aircraft. As part of the drills, the military demonstrated its capability to quickly beef up its forces on the Arctic Novaya Zemlya and Franz Josef Land archipelagos." Isachenkov, *supra* note 1.

30. *Gazprom Neft at a Glance*, GAZPROM NEFT, <http://www.gazprom-neft.com/company/> (last visited Mar. 7, 2016).

31. Colin Chilcoat, *Is Russia the King of the Arctic by Default?*, OILPRICE.COM (Oct. 22, 2015), available at <http://oilprice.com/Energy/Crude-Oil/Is-Russia-The-King-Of-Arctic-Oil-By-Default.html>.

32. *Id.*

33. *Id.* Gazprom Neft, Bashneft, Lukoil, and Novatek are Russian oil companies, and Novy Port, Trebs, Titov, and Severenergia are Russian oil fields.

the Arctic.³⁴

In the United States, much of the Arctic's oil and gas resources remain unexplored due to concerns about environmental impact of oil drilling.³⁵ In 2005, the oil in the United States' territory of the Arctic was estimated to be worth \$374 billion.³⁶ However, it was estimated that the oil would not be available for five years and peak output would not be reached until 2025, thus not having a large effect on the domestic oil market.³⁷ Despite these costs and delayed entrance to the domestic oil market, standards on exploratory drilling for oil and gas in United States Arctic waters were proposed in February 2015, which focused on protecting the environment from dangerous oil spills.³⁸

The conflicting state interests of producing oil and spending capital on a project that might not yield enough product to be worthwhile can be clearly seen through the interests of Russia and the United States with regard to Arctic oil. Until recently, remoteness and technical difficulty of drilling through the Arctic tundra, along with low-cost petroleum, have kept exploratory oil drilling to a minimum.³⁹ However, the melting of the ice sheet across the Arctic has made the possibility of such drilling more feasible, and with this the environmental impact of Arctic oil drilling becomes more contested.⁴⁰

B. NGO Interest

As states increase their oil exploration presence in the Arctic Circle, NGOs whose primary focus is on protecting the environment have begun to increase their presence to protect one of the last remaining untouched areas on Earth.⁴¹ The risk

34. *Arctic Oil and Gas*, ERNST & YOUNG 7 (2013), http://www.ourenergypolicy.org/wp-content/uploads/2013/09/Arctic_oil_and_gas.pdf.

35. Bidder, *supra* note 29, at 11.

36. *Current State of Arctic Oil Drilling in the U.S.*, EBSCO HOST CONNECTION, <http://connection.ebscohost.com/science/arctic-drilling/current-state-arctic-oil-drilling-us> (last visited May 24, 2015).

37. *Id.*

38. Timothy Gardner, *U.S. Proposes First Rules for Arctic Oil, Gas Drilling*, THOMSON REUTERS (Feb. 20, 2015), available at <http://sustainability.thomsonreuters.com/2015/02/23/u-s-proposes-first-rules-arctic-oil-gas-drilling/>.

39. Donald L. Gautier et al., *Assessment of Undiscovered Oil and Gas in the Arctic*, 324 SCI. 1175, 1176 (2009).

40. For example, Royal Dutch Shell submitted a plan in 2014 to the United States federal government to explore for oil in the Alaskan Arctic. Environmentalists groups were quick to say they would oppose Shell's plan, as they argue drilling in the Arctic is overly risky. Clifford Krauss, *Shell Submits a Plan for New Exploration of Alaskan Arctic Oil*, N.Y. TIMES (Aug. 28, 2014), available at <http://www.nytimes.com/2014/08/29/business/shell-submits-a-plan-for-new-alaskan-arctic-oil-exploration.html>.

41. In response to Shell oil exploration, a coalition of seventeen conservation groups called on the Obama administration to suspend offshore drilling and oil exploration in the Alaskan Arctic in 2013. Jeremy Hance, *NGOs call on Obama Administration to Suspend Arctic Oil Drilling After Series of Blunders*, MONGABAY (Jan. 10, 2013), available at <http://news.mongabay.com/2013/01/ngos-call-on->

of a devastating spill on the Arctic environment is too great for these groups to allow oil exploration and drilling to continue, as it would be almost impossible to contain and clean up the oil.⁴² An oil spill in the Arctic could contaminate one of the largest freshwater supplies of water on Earth.⁴³ Additionally, oil presence on the surface of ice could cause the ice to melt faster, as the dark surface would absorb more heat.⁴⁴ This could lead to rising sea levels around the world.

Greenpeace International has worked to stop or slow the progress of oil drilling in the Arctic for this reason. In 2011, Greenpeace boarded a vessel carrying the world's second largest oil rig to Greenland that was to drill among the icebergs in an attempt to stop the rig from being put to use.⁴⁵ Since then, Greenpeace has launched Save the Arctic, a project that is aimed at stopping oil drilling in the Arctic to prevent environmental harm.⁴⁶ Similarly, the World Wildlife Foundation ("WWF") has urged that oil exploration and drilling should stop until a stringent prevention and response system is in place.⁴⁷

NGOs like Greenpeace and WWF work to stop or halt the progress of oil exploration in order to address major concerns and shortcomings surrounding Arctic oil exploration. While these groups are working towards awareness of the environmental concerns of Arctic oil drilling, they are also putting the lack of international agreements surrounding the issue to light.

III. THE INTERNATIONAL FRAMEWORK FOR REGULATING ARCTIC OIL

The international framework surrounding Arctic oil drilling focuses on balancing the sovereign interests and rights of states with international environmental protections of the Arctic Circle. While these agreements address broad environmental and territorial concerns, they do little with regard to

obama-administration-to-suspend-arctic-oil-drilling-after-series-of-blunders/.

42. John Vidal, *Activists Occupy Oil Rig in Fight to Prevent Arctic Drilling*, THE GUARDIAN (Apr. 22, 2011), available at <http://www.theguardian.com/environment/2011/apr/22/activists-occupy-arctic-oil-rig>.

43. See generally, *Protecting the Arctic*, WWF, http://wwf.panda.org/about_our_earth/teacher_resources/best_place_species/current_top_10/alaska.cfm?uProjectID=9E0077 (last visited Mar. 7, 2016) ("The Arctic stores the world's largest freshwater reserves in its glaciers.").

44. *Controlled Fires, Chemical Dispersants the Only Solutions*, BLUE PLANET WATER SOLUTIONS, <http://bpws.com/uncategorized/arctic-oil-spills-spell-big-headaches-for-responders-controlled-fires-chemical-dispersants-the-only-solutions/> (last visited Mar. 7, 2016) ("The question of whether a large inadvertent spill of oil into the Arctic Ocean could change the world's climate is of great concern. The perceived danger is that the dark-coloured oil would melt off large areas of sea ice in summer. Although localized in its effect at first, the accident might trigger changes in a complex and perhaps unstable system which could lead to a dramatic reduction or even elimination of Arctic sea ice' The warming effect of summer sunlight on the spilled oil could result in an ice-melt area up to 10 times the size of the actual size of the spill.".) *Id.*

45. Vidal, *supra* note 42.

46. See SAVETHEARCTIC, <https://www.savethearctic.org/> (last visited May 24, 2015).

47. Ellen R. Delisio, "Arctic Update" Interview with Steffen Weber in *Nordic Cleantech Review*, ARCTIC F. FOUND., <http://eu-arctic-forum.org/publications/arctic-update-interview-with-steffen-weber-in-nordic-cleantech-review/> (last visited May 24, 2015).

specifically regulating Arctic oil exploration and drilling.

A. UNCLOS

The main international agreement governing marine territory, including the Arctic Ocean, is UNCLOS.⁴⁸ Article 193 gives states the sovereign right to exploit natural resources within their marine territory pursuant to a general obligation of preserving the marine environment.⁴⁹ Thus, the Arctic states have a sovereign right to exploit the oil resources within their territory. However, there are many disputes as to where the marine territory of states ends, as states attempt to expand their territory into the Arctic Ocean through an extension of the continental shelf.⁵⁰

UNCLOS puts an additional requirement on states to protect the marine environment from pollution.⁵¹ This provision is particularly important with regard to oil exploration and drilling. As the risk of an oil spill is extremely dangerous for this environment, states must take necessary measures to prevent pollution to the Arctic marine environment.⁵² However, UNCLOS does not specify the measures that should be taken to prevent such pollution of the Arctic Ocean, but only provides that states themselves should create these regulations.⁵³ Additionally, states are in charge of enforcement of these rules and regulations.⁵⁴ This can lead to inconsistent environmental regulations and procedures across the Arctic Circle, as well as inconsistent enforcement of these rules when the desire for new oil resources is high and enforcement might wane.⁵⁵

While UNCLOS provides broad agreement and international law regarding marine environments, it does not specifically address the unique environment of the Arctic, nor does it provide strict or uniform regulations regarding pollution from states' activities on their seabed.

48. *UNCLOS and CLCS*, RIGHT ARCTIC, <http://arcticcontroversy.weebly.com/unclos-clcs.html> (last visited Mar. 7, 2016).

49. U.N. Convention, *supra* note 21, art. 193.

50. For example, Canada, Denmark, through Greenland, and Russia has each asserted that the Lomonosov Ridge is an extension of their own continental shelf. The United States, however, claims that this Ridge is an oceanic shelf and therefore refutes any claim to its ownership. *Evolution of Arctic Territorial Claims and Agreements: A Timeline (1903-Present)*, STIMSON (Sept. 15, 2013), <http://www.stimson.org/content/evolution-arctic-territorial-claims-and-agreements-timeline-1903-present>.

51. U.N. Convention, *supra* note 21, art. 194, ¶ 1.

52. *The Dangers of Arctic Oil*, GREENPEACE INT'L, <http://www.greenpeace.org/international/en/campaigns/climate-change/arctic-impacts/The-dangers-of-Arctic-oil/> (last visited Mar. 7, 2016); *Responsible Economic and Resource Development in the Arctic*, ARCTIC COUNCIL (Apr. 17, 2015), available at <http://www.arctic-council.org/index.php/en/our-work/2/8-news-and-events/291-responsible-economic-and-resource-development-in-the-arctic>.

53. See U.N. Convention, *supra* note 21, art. 208.

54. *Id.* art. 213–14.

55. Elena Gladun, *Environmental Protection of the Arctic Region: Effective Mechanisms of Legal Regulation*, 3 RUSSIAN L.J. 92, 97–104 (2015) (comparing the environmental regulations surrounding the Arctic region in Russia, Canada, the United States, and Norway).

B. Arctic Council

To address the specific concerns of the Arctic region, the Arctic Council was formed in 1996 as a means of “promoting cooperation, coordination and interaction among the Arctic States, with the involvement of the Arctic Indigenous communities and other Arctic inhabitants on common Arctic issues, in particular issues of sustainable development and environmental protection in the Arctic.”⁵⁶ Member states include Canada, Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden, and the United States.⁵⁷

In 2013, the Arctic Council signed the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic, an agreement that requires each party to maintain a national system for promptly and effectively responding to oil pollution incidents in the Arctic.⁵⁸ This agreement recognizes the particular challenges responders to oil spills and pollution face due to the harsh Arctic conditions and addresses these specific risks.⁵⁹ While the agreement addresses the aftermath of oil pollution, it does not address or provide regulations for oil exploration or drilling in the Arctic.

The Arctic Council historically relied on soft-law principles to govern and for international cooperation in the Arctic region.⁶⁰ However, with the increased threat from climate change and global warming, the Council has begun to move towards legally binding agreements to govern and protect the area.⁶¹ The Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic, along with one other, are the only two legally binding agreements thus far to specifically protect the Arctic environment.⁶²

IV. SUSTAINABILITY IN THE ARCTIC CIRCLE

With such a unique environment, the Arctic poses many sustainability concerns for any development in the area.⁶³ The two driving sustainability principles regarding Arctic oil exploration are the sustainable use of natural resources and the precautionary approach.⁶⁴ Both of these principles originated

56. *History of the Arctic Council*, ARCTIC COUNCIL (Apr. 7, 2011), available at <http://www.arctic-council.org/index.php/en/about-us/arctic-council/about-arctic-council>.

57. *Member States*, ARCTIC COUNCIL (July 10, 2015), <http://www.arctic-council.org/index.php/en/about-us/member-states>.

58. Press Release, U.S. Dept. of State, Fact Sheet: Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic, Art. 4 (May 15, 2013), <http://www.state.gov/r/pa/prs/ps/2013/05/209406.htm>.

59. Press Release, *supra* note 59.

60. Timo Koivurova, *Increasing Relevance of Treaties: The Case of the Arctic*, AM. SOC. OF INT'L L. (May 6, 2014, 3:03 PM), available at <http://www.asil.org/blogs/increasing-relevance-treaties-case-arctic-agera-end-treaties>.

61. *Id.*

62. *Id.*

63. Francesco Stipo, et al., *The Future of the Arctic: A Key to Global Sustainability*, 1 CADMUS J. 42, 47–48 (2012).

64. Natalia Loukacheva & Matthew D. Garfield, *Sustainable Human Rights and Governance: The Quest of an Arctic Entity in Transition*, 1 Y.B. POLAR L. 283, 293 (2009) (“It also implies a

from the New Delhi Principles of International Law Relating to Sustainable Development, which were presented in 2002.⁶⁵

Principle 1 of the New Delhi Principles states that all states are under a duty to manage their natural resources in a rational, safe, and sustainable way, and the protection, preservation, and enhancement of the natural environment is a common concern for all humankind.⁶⁶ The precautionary approach, Principle 4, states that states are committed to avoid human activity, which may cause significant harm to human health, natural resources, or ecosystems even in the light of scientific uncertainty.⁶⁷

With regard to Arctic oil exploration and drilling, states should proceed in a safe and sustainable manner. This includes ensuring that the potential for oil spills is or is almost nonexistent, a major concern for NGOs and other interested parties, as oil spills are extremely dangerous.⁶⁸ The devastating effects of an oil spill in the Arctic have not been calculated as of yet, but the unique environment of the Arctic suggests that a spill there would be more detrimental to environments and people around the globe than other local oil spills.⁶⁹ Additionally, sustainable oil drilling consists of not expending all of the oil resources available in the Arctic as fast as possible, but preserving some of these resources for future generations that may come to need them in the future.⁷⁰

One of the most pressing sustainability issues of Arctic oil exploration is preserving and protecting the Arctic environment.⁷¹ The Arctic is one of the last untouched areas of the Earth and to contaminate this area that holds much of the freshwater for the planet and that largely controls global climate could be

responsible use of natural resources while maintaining the environmental balance of the Arctic ecosystem and protecting the interests of future generations.”); Melissa A. Verhaag, *NOTE: It Is Not Too Late: The Need for a Comprehensive International Treaty to Protect the Arctic Environment*, 15 *GEO. INT’L ENVTL. L. REV.* 555, 578 (2003) (“The precautionary approach of an international treaty would cause nations on the opposite side of the globe to think before they pollute. And it will aid in saving the pristine Arctic environment from total degradation in the future.”).

65. New Delhi Declaration of Principles of International Law Relating to Sustainable Development, Res. 3/2002, INT’L L. ASSN., (Apr. 6, 2002), <http://cisdl.org/tribunals/pdf/NewDelhiDeclaration.pdf>.

66. *Id.*

67. *Id.* at princ. 4.

68. *The Dangers of Arctic Oil*, *supra* note 53.

69. *Id.*; see also John Vidal, *Why An Oil Spill in Arctic Waters Would be Devastating*, *THE GUARDIAN* (Apr. 22, 2011), <http://www.theguardian.com/world/2011/apr/22/oil-spill-arctic-analysis>.

70. GRO HARLEM BRUNDTLAND, REPORT OF THE WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT: OUR COMMON FUTURE 16 (1987) (“Sustainable development requires that humanity meets the needs of the present without compromising the ability of future generations to meet their own needs.”).

71. *The Arctic*, OCEAN CONSERVATORY, <http://www.oceanconservancy.org/places/arctic/?referrer=https://www.google.com/> (last visited Mar. 31, 2016).

detrimental.⁷² The species of plants and animals that currently inhabit the Arctic are already being affected by climate change; the effects of oil exploration might result in these species not being able to adapt to the rapidly changing climate or environment quickly enough.⁷³ Thus, following the New Delhi Principles, states and corporations seeking to drill in the Arctic should be aware of these risks and perform extensive environmental impact assessments to account for them.

Taking a precautionary approach to Arctic oil exploration and drilling is critical, as the effects of large-scale disruption to the ice sheet and environment are unknown.⁷⁴ In the event of an oil spill, toxic traces of oil would linger for much longer periods as oil behaves differently in the cold water and cannot be contained under large icebergs.⁷⁵ A precautionary approach is thus necessary for Arctic oil drilling. Companies should take care when drilling deep for oil, disturbing the environment, and placing equipment far below the ice into the marine waters.⁷⁶ A shift in the environment or land structure could occur and bring about unknown, devastating consequences. Therefore, companies and states should participate in clear, advance planning and provide these plans, disaster plans, and environmental impact assessments for transparency of their projects.

The sustainability issues surrounding Arctic oil exploration and drilling focus on the protection and preservation of the unique Arctic environment and using precaution when developing drilling plans and executing them.⁷⁷ Because the Arctic contains so many unknowns as to how it affects the global climate, environment, and population, if states should choose to engage in oil exploration and drilling, it must be in a sustainable manner.

V. ANALYSIS

Is the framework surrounding Arctic oil exploration and drilling effective? Not entirely. Currently there are no uniform requirements or regulations for oil operators in the Arctic.⁷⁸ While the Arctic Council provides a binding agreement regarding oil pollution and response to oil spills, it does not yet have a binding agreement directly addressing oil exploration and drilling.⁷⁹ As there are no other

72. *Id.*

73. Elise Wolf, *Oil and Water: The Arctic Seas Face Irreversible Damage*, EARTH ISLAND J., http://www.earthisland.org/journal/index.php/eij/article/oil_and_water/ (last visited Mar. 7, 2016) (“For Arctic species, changes are occurring too quickly to allow adaptation. Oil and gas exploration and development will only make matters worse.”).

74. COMM. ON EMERGING RESEARCH IN THE ARCTIC ET AL., *THE ARCTIC IN THE ANTHROPOCENE: EMERGING RESEARCH QUESTIONS* 37 (2014).

75. *The Dangers of Arctic Oil*, *supra* note 53.

76. *Arctic Oil and Gas*, WWF, http://wwf.panda.org/what_we_do/where_we_work/arctic/what_we_do/oil_gas/ (last visited Mar. 31, 2016).

77. *See id.*

78. Delisio, *supra* note 48.

79. Ed King, *Arctic Council Decision Leaves Region Open for Oil and Gas Drilling*, CLIMATE HOME (May 15, 2013), available <http://www.climatechangenews.com/2013/05/15/arctic-council-decision-leaves-region-open-for-oil-and-gas-drilling/>.

international treaties addressing this issue⁸⁰, the framework surrounding this issue is ineffective.

As the ice sheet surrounding the Arctic Circle continues to melt due to rising temperatures, more of the continental shelf below is exposed, creating new opportunities for states and corporations to exploit the natural resources below.⁸¹ Additionally, as the oil reserves in other parts of the world continue to be depleted and the demand for oil products continues to increase, the need to find a new oil supply is essential for some states.⁸² These factors alone suggest that an international framework is needed to protect and regulate the oil reserves that are present in the Arctic Circle, especially in light of the territory disputes and commonality of the Arctic Circle that exist.

An international agreement is also needed to address the unique environmental concerns regarding the Arctic and the effects oil exploration and drilling might have. Protection of the environment, including plant and animal species, should be a top priority, as should be protecting the cleanliness of the environment from pollution and manmade objects and intrusions. This environmental agreement should also address the potential impacts deep sea oil mining could have on the continental shelves that intersect at the pole as well as the effects drilling might have on the icebergs and land that is present. The principles of sustainable development of oil drilling and the precautionary approach should be incorporated into an agreement regarding the environmental concerns of this activity, due to the global importance of the Arctic Circle.

In addition to an international framework addressing the environmental concerns of Arctic oil exploration, a regional binding agreement should be put in place addressing regulations for oil exploration and drilling. Even though a state has the sovereign right to exploit their own natural resources,⁸³ the Arctic states as a whole should come together to agree upon not only oil spill responses but also other protections surrounding oil exploration. A uniform approach should be taken with regard to regulations on where on the continental shelf oil drilling can occur, if deep sea mining is allowed, whether oil drilling can continue into the winter months when the land is once again covered in ice, and regulations surrounding the release of toxins and chemicals into the environment. Because the Arctic Circle is

80. Ed Struzik, *As the Far North Melts, Calls Grow for Arctic Treaty*, YALE ENV'T 360 (June 14, 2010), [available at http://e360.yale.edu/feature/as_the_far_north_melts_calls_grow_for_arctic_treaty/2281/](http://e360.yale.edu/feature/as_the_far_north_melts_calls_grow_for_arctic_treaty/2281/).

81. Isachenkov, *supra* note 1.

82. Andrew Critchlow, *Arctic Drilling is Inevitable: If We Don't Find Oil in the Ice, Then Russia Will*, THE TELEGRAPH (Sept. 7, 2014), [available at http://www.telegraph.co.uk/finance/newsbysector/energy/11080635/Arctic-drilling-is-inevitable-if-we-dont-find-oil-in-the-ice-then-Russia-will.html](http://www.telegraph.co.uk/finance/newsbysector/energy/11080635/Arctic-drilling-is-inevitable-if-we-dont-find-oil-in-the-ice-then-Russia-will.html) ("Despite the significant environmental concerns surrounding oil companies drilling offshore in the Arctic, demand for energy and the scarcity of similar opportunities elsewhere oil companies are increasingly prepared to take the risk accessing the region.").

83. U.N. Convention, *supra* note 21, art. 56.

a unique area in which these states come together and surround the North Pole, a regional agreement addressing these areas should be implemented to protect the environment and reduce conflict in the area.

As the current international framework regarding Arctic oil exploration is ineffective, an international framework is needed to address both the environmental concerns the activity would have on the Arctic as well as the regional disputes and potential conflicts surrounding regulations of oil exploration and drilling. These agreements should be binding upon the parties, as preserving and protecting the Arctic environment is essential for the global environment.

VI. CONCLUSION

Oil exploration and drilling in the Arctic Circle raises many sustainability and environmental issues. Because drilling is becoming more feasible due to the ice sheet melting and exposing the continental shelf below, now is the time to put in place binding agreements on the regulation of oil exploration and drilling and the protection of the environment during such activity. The Arctic's untouched resources provide a wealth of opportunities for the Arctic states to exploit them for their gain, however states should put sustainability of the environment first when engaging in these activities. A new international framework should be agreed upon to address the concerns of both the states and NGOs involved and to protect one of the last untouched areas on Earth.