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I. Introduction

Climate change and anthropogenic stresses on our environment, such as pollution and overfishing, are not mutually exclusive. Their synergistic effects transcend state boundaries creating universal problems that only a combined international effort can address. Unfortunately, the severest impacts are occurring in remote locations placing international responses on the periphery of most nations' agendas.

The Arctic is one of these remote regions, whose uniquely intense impacts have culminated in its recognition as a barometer for climate change and the earth's health.[1] Due to the Arctic's extensive snow and ice coverage, the Arctic - like the Antarctic - is more sensitive to climate change and has a critical role in regulating global weather patterns.[2] For instance, melting of reflective snow and ice increases the Arctic's energy absorption resulting in warmer temperatures worldwide.[3] The region itself has already suffered from severe coastal erosion, increased exposure to storms, ground destabilization, loss of species habitat, invasion of non-native species, and reductions in food sources.[4] Moreover, anthropogenic stresses on the environment in other regions have unleashed a new dimension of problems for the Arctic.[5]

Overexploitation throughout the world of such resources as fish, oil, gas, and minerals has made the Arctic and access to its resources a highly

1. *Inuit in Global Issues: Speaking to the World About Climate Change*, ICC JOURNAL SILARJUALIRINIQ NO. 17 (Jul.-Dec. 2003), http://inuitcircumpolar.com/index.php?auto_slide=&ID=253&Lang=En&Parent_ID=3&current_slide_num=. In 2003, the United Nations Environment Programme's Governing Council passed a resolution for increased monitoring in the Arctic due to the intense effects climate change had on the region. *Id*. The Arctic is now seen as a warning of the future to come and as providing information to aid the world in changing or adapting to that fate. *Id*.

2. Warming in the Arctic causes a chain of events that result in increased warming or cooling known as "albedo feedback." Mark Serreze, *Why is the Arctic So Sensitive to Climate Change and Why do We Care*, Nat'l Snow and Ice Data Ctr., Aug. 2008, http://www.arctic.noaa.gov/essay_serreze.html. Albedo is how reflective or white a surface is. *Id*. The higher an albedo, the more of the sun's energy is reflected back to space. *Id*. Therefore, as Arctic snow and ice melts leaving less white areas to reflect energy, it gets warmer and increased melting results. *Id*.

3. SUSAN JOY HASSOL, ACIA, IMPACTS OF A WARMING ARCTIC: ARCTIC CLIMATE IMPACT ASSESSMENT, 10 (Cambridge Univ. Press 2004), *available at* http://www.amap.no/acia/index.html [hereinafter ACIA].

4. *Id*. at 10-11.

5. *Id*. at 11.

contentious topic.[6] The Arctic contains an estimated one-fourth of the world's remaining energy reserves,[7] as well as important fish stocks like cod and herring.[8] As warming causes pole-ward migration of marine species, the Arctic emerges as a prime target because it has no binding regional fisheries program.[9] Likewise, there are no binding regional regulations over any of the Arctic's resources. With 52 percent of the world's fisheries already overexploited,[10] oceans are under stress and depletion of the remaining fish stocks is accelerating due to synergies between overfishing, pollution, ocean warming, and infestation of invasive species.[11] The decline in fish has led to an increase in international, regional, and domestic regulations, which has caused a search for less regulated fishing areas and fish stocks - like the Arctic.[12] Thus, increased access and exploitation in the Arctic could not only exhaust its resources, but could cause unparalleled environmental destruction.

The impacts on the Arctic affect its indigenous and coastal populations the most. Their plights have given momentum to increased research on adaptation and mitigation as well as litigation.[13] For coastal communities, sea level rise and the melting of sea ice and permafrost have caused extensive coastal erosion requiring abandonment of homes, closure of businesses, and relocation of entire towns.[14] For example, the town of

6. *See generally* Scott G. Borgerson, *Arctic Meltdown: The Economic and Security Implications of Global Warming*, FOREIGN AFFAIRS, Mar./Apr. 2008, *available at* http://www.foreignaffairs.org/20080301faessay87206/scott-g-borgerson/arctic-meltdown.html.

7. Paul Reynolds, *Russia Ahead in Arctic 'Gold Rush'*, BBC NEWS, Aug. 1, 2007, *available at* http://news.bbc.co.uk/2/hi/6925853.stm.

8. ACIA, *supra* note 3, at 62.

9. U.N. ENV'T PROGRAMME, RAPID RESPONSE ASSESSMENT: IN DEAD WATER, MERGING OF CLIMATE CHANGE WITH POLLUTION, OVER-HARVEST, AND INFESTATIONS IN THE WORLD'S FISHING GROUNDS 38 (Christian Nellemann, Stefan Hain & Jackie Alder eds., 2008), *available at* http://www.unep.org/pdf/InDeadWater_LR.pdf [hereinafter UNEP's IN DEAD WATER]; U.N. Env't Programme: Reg'l Seas Programme, Arctic Region Governing Instruments, www.unep.org/regionalseas/programmes/independent/arctic/instruments/default.asp (last visited Apr. 19, 2009).

10. DAVID HUNTER, JAMES SALZMAN & DURWOOD ZAELKE, INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 754 (3d ed. 2007).

11. John Tibbetts, *Ocean Commotion*, *in* INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 756, 756 (3d ed. 2007). Invasive species are introduced from a ship's release of ballast water. As tourism and shipping in the Arctic increases, so will the threat from invasive species.

12. UNEP'S IN DEAD WATER, *supra* note 9, at 46.

13. *See also* Randall S. Abate, *Climate Change, the United States, and the Impacts of Arctic Melting: A Case Study in the Need for Enforceable International Environmental Human Rights*, 26A STAN. ENVTL. L.J. 4 (2007); Svitlana Kravchenko, *Right to Carbon or Right to Life: Human Rights Approaches to Climate Change*, 9 VT. J. ENVTL. L. (ISSUE 3) 514 (2008).

14. ACIA, *supra* note 3, at 78-81. Since sea ice acts as a barrier from storms, loss of it allows more and harsher storms to reach the coast line. *Id.* In addition,

Shishmaref, Alaska, located on an island near northern Alaska, has been inhabited for 4,000 years, but now may be required to evacuate as its homes, businesses, and water supply are damaged by erosion and storms.[15] Here, just one storm can have a huge impact, as witnessed by a resident named Leona Goodhope, who returned from school one day to find her home relocated to prevent it from falling into the ocean.[16]

The effects on indigenous communities are even more severe due to these communities' dependence on hunting and fishing for their culture, food, and identity.[17] These communities are experiencing riskier travel due to thawing ice, reduced habitat and hunting grounds from melting sea ice, migration of land mammals and sea birds, and reduction of freshwater fish from draining lakes and rivers.[18] The indigenous peoples are accustomed to adjusting to changes in the environment; however, changes brought by climate change are occurring rapidly.[19] The gravity of these conditions has even inspired a new legal theory that seeks to combine human rights law and environmental law in an attempt to redress or mitigate such damages.[20]

The Arctic's indigenous populations are on the frontlines of what is in store for the rest of the planet. They unfairly "shoulder the burden of the rest of the world's development, with no corresponding benefit,"[21] while the world concentrates on ways to exploit their shipping routes and resources. For example, the Saami and other indigenous groups rely on reindeer herding in the boreal forests as their food source, livelihood, and way of life.[22] Unfortunately, massive clear-cutting and logging are leaving only fragmented sections of forest, and killing off lichens, the reindeer's main food source.[23] The indigenous peoples depend on the Arctic's ecosystem, the same ecosystem that is susceptible to overfishing, pollution from increased shipping, and much more. If the Arctic is allowed to be exploited like other regions in the world, not only will one of the last pristine areas be destroyed, but it could be fatal for the planet.

warmer waters cause permafrost to thaw, destabilizing coastal areas and adding to erosion. *Id.* Sea level rise, of course, adds to the loss of land as well. *Id.*

15. *Id.* at 80.

16. *Id.*

17. *Id.* at 92-95.

18. *Id.* at 94-95.

19. *Id.* at 92-93.

20. Abate, *supra* note 13, at 7.

21. Inuit Circumpolar Conference, *Petition to the Inter-American Commission on Human Rights Seeking Relief from Violations Resulting from Global Warming Caused by Acts and Omissions of the United States*, Dec. 7, 2005, at 21, *available at* http://www.inuitcircumpolar.com/files/uploads/icc-files/FINALPetitionICC.pdf.

22. Lars-Anders Baer, *Boreal Forest Dwellers: the Saami in Sweden*, 47 UNASYLVA NO. 186 (Mar. 1996), *available at* http://www.fao.org/docrep/w1033e/w1033e00.HTM.

23. *Id.*

In order to protect the indigenous communities, valuable resources, and research opportunities in the Arctic, a binding treaty must be created to enforce conservation, preservation, and sustainable use of its resources. Other proposed solutions fall short. Specifically, a protocol to an existing treaty would fail to comprehensively address the full range of issues in the Arctic. Moreover, a regional agreement would fail to provide the requisite international cooperation for combating the transboundary harms. The Antarctic Treaty System ("ATS"), which features similar goals and the necessary scope, provides helpful insight into creating such a system. Despite a common assumption that the Arctic and Antarctic are alike, the legal community frequently emphasizes their differences and concludes that their governing structures must differ as well. While a treaty system for the Arctic could not be identical to the ATS, the same fundamental principles and structure are necessary to combat the threats facing the Arctic's peoples and resources.

Part I of this Article examines the physical environment of the Arctic and Antarctic regions and the threats to their survival. Part II describes each region's existing legal framework and political climate. Part III analyzes the Arctic's legal regime deficiencies and explores lessons the ATS can offer. Part IV proposes an Arctic treaty for preservation, conservation, and sustainability. The proposed treaty addresses guiding principles, party structure, jurisdiction and sovereignty, fisheries management, enforcement and dispute resolution, and pollution.

II. The Weather Stations of the World

While the poles share striking similarities in their physical environments, they also have critical differences. Both the parallels and differences, however, provide compelling reasons to use the Antarctic Treaty System as the model for a new legal regime in the Arctic. Climate change and anthropogenic stresses will continue to damage both regions' uniquely valuable ecosystems, which present similar needs for protection and preservation.

A. The Arctic Environment

Snow- and ice-covered seas surrounded by land with varying terrain comprise most of the Arctic region.[24] An expansive tundra separates the forest-lined outer edges, known as the sub-arctic, from the high north's ice-

24. ACIA, *supra* note 3, at 4; U.N. ENV'T PROGRAMME, ARCTIC REGION at 2, http://www.unep.org/regionalseas/programmes/independent/arctic/instruments/r_profile_pame.pdf [hereinafter ARCTIC PROFILE] (last visited Apr. 19, 2009).

covered seas.[25] The Arctic also has mountains, wetlands, and permafrost (ground that remains frozen for at least two years.)[26] The Arctic's climate, unsurprisingly, is characterized by frigid temperatures largely due to its latitude and abundant snow and ice coverage.[27] Its freezing temperatures and remote location make the Arctic ideal for research. Ice core samples provide critical data for determining past weather patterns and greenhouse gas emissions.[28] In addition, despite its harsh climate, numerous plants and animals - including humans - have managed to adapt and flourish in these extreme conditions.[29]

The Arctic has limited diversity among its species, but manages to support "some of the largest seabird populations in the world," "over 150 species of fish," and numerous land and marine mammals such as reindeer, caribou, seals, polar bears, whales, and dolphins.[30] The Arctic is also home to approximately four million people and consists of eight nations: Norway, Sweden, Finland, Denmark, Iceland, Canada, Russia, and the United States ("the Arctic Eight").[31] Dozens of indigenous groups make up about 10 perecnt of the Arctic's population.[32] Disparities between the numerous cultures and increases in immigration, however, are triggering conflicts over use and ownership of the land and resources.[33] In addition, climate change and pollution are exacerbating current problems and adding new ones for the people and wildlife in the Arctic.[34]

Warming from climate change is causing the land ice and permafrost to melt, slowly changing the landscape by exposing and destabilizing the

25. Tundra consists of "treeless plains over frozen ground" with a variety of plant species like shrubs, grasses, lichens, and mosses. ACIA, *supra* note 3, at 4; ARCTIC PROFILE, *supra* note 24, at 4.

26. ARCTIC PROFILE, *supra* note 24, at 2. For an overview of permafrost, see generally National Snow and Ice Data Center (NSIDC), State of the Cryosphere: Permafrost, http://nsidc.org/sotc/permafrost.html (last visited Apr. 19, 2009).

27. ARCTIC PROFILE, *supra* note 24, at 2. S*ee generally* National Snow and Ice Data Center (NSIDC), Factors Affecting Arctic Weather and Climate: Latitude and Solar Radiation, http://nsidc.org/arcticmet/factors/ (last visited Apr. 19, 2009). While ice and snow are responsible for reflecting solar radiation during the summer and keep temperatures low, in the winter there is little to no solar radiation to reflect. ARCTIC PROFILE, *supra* note 24, at 2. In addition, the Arctic has extensive cloud coverage that also deflects incoming solar radiation. I*d*.

28. ACIA, *supra* note 3, at 3; CHRISTOPHER READINGER, CSA DISCOVERY GUIDES: ICE CORE PROXY METHODS FOR TRACKING CLIMATE CHANGE, at 2-4 (Feb. 2006), http://www.csa.com/discoveryguides/icecore/review.pdf.

29. ACIA, *supra* note 3, at 4; ARCTIC PROFILE, *supra* note 24, at 5-6.

30. ARCTIC PROFILE, *supra* note 24, at 5-6.

31. ACIA, *supra* note 3, at 6.

32. I*d*.

33. I*d*.

34. I*d*. at 11.

land.[35] These warmer temperatures are reducing the sea ice, which opens up navigable waters, like the Northwest Passage, and access to resources.[36] Melting ice caps and glaciers are adding freshwater to the ocean, which raises sea levels and could slow ocean circulation that would affect climates.[37] Additionally, thawing lakes and rivers are draining into the ocean, which is decreasing freshwater fish populations.[38] The Arctic's patterns of seasonal changes, precipitation, wind, and ice formation have also changed and become unpredictable, making travel and navigation increasingly difficult.[39] Overall, this altered environment is providing some opportunities for increased shipping and resource exploitation, while at the same time destroying villages and ecosystems.

Pollution, mainly occurring outside the Arctic, is having huge impacts on the Arctic's people and environment. Wind patterns and ocean currents funnel pollution from other regions to the Arctic, causing elevated ultraviolet radiation levels ("UV") and higher concentrations of persistent organic pollutants ("POPs") and toxics.[40] Animals and people inhale and ingest these pollutants, which bioaccumulate in them at alarming levels.[41] One indigenous group, the Inuit, "have the highest levels of POPs of any human population on earth - seven times higher . . . than those living in non-Arctic regions."[42] Health effects from the UV and POPs include weakened immune systems, endocrine disruption, skin cancer, and cataracts.[43] In addition, some pollutants are released directly into the Arctic, such as oil discharges or spills and abandoned radioactive waste like

35. *Id*. at 10-11.

36. Borgerson, *supra* note 6.

37. *Id*. at 36-37, 40-41.

38. ACIA, *supra* note 3, at 36-37. As more freshwater runs into the Arctic Ocean and its temperatures warm, the ocean's salinity and density are reduced. *Id*. The current ocean currents bring warm, less dense waters from the Atlantic and Pacific northward to the Arctic where the warmer waters become colder (denser) and sink. *Id*. This sinking motion draws more warm water to the north and pushes the cold water out of the Arctic. *Id*. Salinity also affects this process because the higher the salt content, the denser the water. *Id*. Sea ice formation increases salinity because as seawater freezes the salt is extracted back into the water. *Id*. Thus, freshwater enters the ocean and warmer temperatures prevent sea ice formation, reducing salinity and the sinking effect. *Id*.

39. *Id*. at 11, 22; ARCTIC PROFILE, *supra* note 24, at 2.

40. HUNTER ET AL., *supra* note 10, at 1150. UV is a "growing concern in the Arctic, largely due to depletion of stratospheric ozone caused by emissions of chlorofluorocarbons (CFCs) and other manmade chemicals over the last 50 years." ACIA, *supra* note 3, at 98. Thus, as more emissions are funneled up to the Arctic, UV becomes a bigger concern.

41. HUNTER ET AL., *supra* note 10, at 1150-51.

42. *Id*. at 1150.

43. *Id*. ACIA, *supra* note 3, at 11.

nuclear reactors left by the former Soviet Union.[44] Since oil degrades much more slowly in the Arctic due to cold water temperatures, and the base of the Arctic food chain - lichen - is highly susceptible to radioactive pollution, many states have become more proactive to address these two pollutants.[45] However, sources and types of pollution will only increase in the future as tourism, logging, shipping, and oil exploration continue to grow.

"Like Antarctica, the Arctic is one of the last remote areas remaining on earth, and one of the most threatened."[46] Although many of the Arctic's communities attempt to live in harmony with its environment, pollution is deteriorating their health and climate change makes their travel, hunting, and traditional customs dangerous or impossible.[47] Besides its people, the Arctic's resources are also under attack due to depleted fish stocks and overexploited resources around the world. More and more, countries are turning their sights on the Arctic, whose sea routes and resources are slowly being stripped of their protective ice.

B. Antarctica's Environment

On the other side of the world from the Arctic lies another pristine and remote region suffering equally intense impacts from climate change. A geographical inverse of the Arctic, the Antarctic region consists of a large ice covered land mass surrounded by the southern ocean's sea ice.[48] Antarctica's ice sheet comprises 90 percent of the world's ice and 70 percent of the world's fresh water.[49] This reality is a staggering statistic, especially considering that if it were to melt, the global sea level would rise by approximately 200 feet.[50] Like the Arctic, the Antarctic also critically affects the earth's climate, ocean circulation, and sea levels.[51] Antarctica's ice and snow coverage coupled with its surrounding sea ice reflect solar radiation necessary for regulating the world's temperature and maintaining regional

44. HUNTER ET AL., *supra* note 10, at 1150-51.

45. *Id.* Specifically, negotiations for funding are underway to aid Russia in cleaning up its radioactive waste. *Id.* Also, Canada passed an Arctic Waters Pollution Prevention Act in 1970. Arctic Waters Pollution Prevention Act, R.S.C., ch. A-12 (1985), *available at* http://laws.justice.gc.ca/en/showtdm/cs/A-12.

46. HUNTER ET AL., *supra* note 10, at 1150.

47. ACIA, *supra* note 3, at 92-97.

48. U.S. NATIONAL SCIENCE FOUNDATION, 3.0 ANTARCTICA (1997), http://www.nsf.gov/pubs/1997/antpanel/3enviro.htm (last visited Apr. 19, 2009).

49. HUNTER ET AL., *supra* note 10, at 1124.

50. U.S. NATIONAL SCIENCE FOUNDATION, *supra* note 48.

51. Jacques-Yves & Bertrand Charrier, *The Antarctic: A Challenge to Global Environmental Policy*, *in* INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 1125, 1125 (3d ed. 2007).

temperature disparities vital for atmospheric and marine currents.[52]

Unlike the Arctic, Antarctica has no permafrost, tundra, or forests.[53] The only variations in terrain consist of volcanoes, mountains, and deserts covered by ice and snow.[54] Although this creates a harsh climate similar to the Arctic's, Antarctica is the "coldest, driest, highest (on average) and windiest continent on earth."[55] Winds frequently reach eighty miles per hour and cyclones form quickly with little warning.[56] Not surprisingly, Antarctica has no terrestrial mammals, no indigenous peoples, and only a few marine mammals - whales, porpoises, and seals.[57] The sparse plant life and other living creatures include bacteria, lichens, mosses, insects, and birds such as penguins and albatrosses.[58] Antarctica's sea ice zone, conversely, offers "one of the most dynamic biological systems on Earth" and prolific fisheries.[59] As the pack ice expands and contracts, interconnected ecosystems of the ice and ocean move accordingly.[60] The foundation of the food chain for these marine mammals, birds, and species of fish is a small shrimp named krill.[61]

Much like the Arctic, the Antarctic's ecosystems and resources have undergone similar changes and have been subject to damage due to warming temperatures and mankind's activities. Warming in the Antarctic is causing loss of habitat for many species, such as the emperor penguin, due to the reduction of sea ice; it has dramatic implications for global sea level rise.[62] Besides the dangers from melting ice, another highly publicized and potentially devastating issue involves the major decline in krill due to overfishing and loss of their main food source, phytoplankton.[63] Despite measures to limit krill harvesting, technological improvements in equipment and higher demand from the aquaculture and pharmaceutical industries

52. *Id.*

53. U.S. NATIONAL SCIENCE FOUNDATION, *supra* note 48.

54. *Id.*

55. *Id.* The mean annual temperature of the Arctic is zero degrees Fahrenheit, whereas Antarctica's is negative 58 degrees Fahrenheit. *Id.*

56. *Id.*

57. *Id.*

58. *Id.*

59. *Id.* U.N. ENV'T PROGRAMME, ANTARCTIC REGION at 7, http://www.unep.org/regionalseas/programmes/independent/antarctic/instruments/r_profile_antic.pdf [hereinafter ANTARCTIC PROFILE] (last visited Apr. 19, 2009).

60. ANTARCTIC PROFILE, *supra* note 59, at 6.

61. ANTARCTIC PROFILE, *supra* note 59, at 7-8; Virginia Gascón & Rodolfo Werner, CCAMLR *and Antarctic Krill: Ecosystem Management Around the Great White Continent*, 7 AM. U. SUSTAINABLE DEV. L. & POL'Y 14, 14 (2006).

62. U.S. NATIONAL SCIENCE FOUNDATION, *supra* note 48.

63. *See* Gascón & Werner, *supra* note 61.

have increased fishing.[64] In addition, warming oceans, increased acidification, and ultraviolet-B radiation from the Antarctic ozone hole have reduced phytoplankton productivity and damaged krill reproduction.[65] Greenhouse gases and overfishing are not the only anthropogenic stressors on the Antarctic's ecosystems; it also faces marine debris pollution, sea bird by-catch, and illegal fishing.[66]

The Antarctic's frigid temperatures and remote location make enforcement, cleanup, and surveillance of activities cumbersome. However, due to these same traits, the Antarctic contains information vital for understanding climate change and anthropogenic effects on the environment.[67] Its unscathed ice sheets have trapped air bubbles that provide statistics on carbon dioxide levels, temperature and other atmospheric compositions from centuries ago.[68] Layers of volcanic ash in ice core and sea sediment samples act as time markers, allowing scientists to map out changes over time.[69] Findings derived from seabed drilling clarify our understanding of ice sheet adjustments over time, sea level rise, climatic processes, and future climate changes.[70]

Both the Arctic and Antarctic share four important characteristics: priceless research, abundant resources, unique ecosystems, and

64. Gascón & Werner, *supra* note 61 at 16. The Norwegian aquafeed and fishing industries are leading the way with their simultaneous catch and onboard processing. *Id.* Krill is seen as an exceptional food source for the aquaculture industry, (including farmed salmon), and for use in pharmaceuticals due to its high protein, fatty acids, and amino acids. *Id.* *See also* Reuters.com, Neptune Krill Oil, NKO(R), Enters Walgreens, Sep. 15, 2008, http://www.reuters.com/article/pressRelease/idUS72681+15-Sep-2008+PRN20080915 (last visited Apr. 19, 2009).

65. U.S. NATIONAL SCIENCE FOUNDATION, *supra* note 48; *Ozone Depletion May Leave a Hole in Phytoplankton Growth*, AUSTL. ANTARCTIC MAGAZINE, Spring 2006 at 6, *available at* http://www.aad.gov.au/MediaLibrary/asset/MediaItems/ml_390854214351852_006%20phytoplankton_krill.pdf.

66. ANTARCTIC PROFILE, *supra* note 59, at 21-22.

67. Jacques-Yves & Charrier, *supra* note 51; Interview by Miguel Llanos & Kriss Chaumont with Tom Wagner, Antarctic Research Program Manager, Nat'l Science Found., MSNBC, *available at* http://www.msnbc.msn.com/id/15850535/ [hereinafter Tom Wagner Interview].

68. Jacques-Yves & Charrier, *supra* note 51; Tom Wagner Interview, *supra* note 67; READINGER, *supra* note 28.

69. Tom Wagner Interview, *supra* note 67; Peter Tyson, Stories in the Ice, NOVA Online, http://www.pbs.org/wgbh/nova/warnings/stories/ (last visited Apr. 19, 2009).

70. ScienceDaily, Climate Warming Affects Antarctic Ice Sheet Stability, Mar. 22, 2009, http://www.sciencedaily.com/releases/2009/03/090318140522.htm (last visited Apr. 19, 2009); ANDRILL.org, About ANDRILL, http://www.andrill.org/about (last visited Apr. 19, 2009); PhysOrg.com, From Beneath Antarctica's Ross Sea: Scientists Retrieve Pristine Record of The Continent's Climate Cycles, Apr. 16, 2007, http://www.physorg.com/news95953592.html (last visited Apr. 19, 2009).

exceptionally sensitive environments. Regardless of the Antarctic's differences in geography, issues, and life forms, both regions require protection and sustainable use of their resources in order to prevent disastrous consequences to their environment. Harvesting of resources in the Antarctic has occurred for over 200 years and has led to severe reduction in fish stocks, seals, and whales.[71] Luckily for the Antarctic, concerns arising over its valuable resources and research potential led to binding international law to protect its sensitive ecosystems.[72]

III. Existing Legal Framework

The legal regimes in the two poles contrast starkly in their operation and effect. While their geographical differences played a pivotal role in creating their differing legal regimes, their shared dilemmas inspired similar underlying principles and goals. The Arctic's regime has lagged behind the Antarctic's in protecting its environment and the time has come for it to catch up.

A. The Legal Regime in the Arctic

The Arctic has no binding regional convention, but instead a hodgepodge of a few international treaties, various regional bilateral and multilateral agreements, and domestic laws. Although in need of a binding treaty like the ATS, the inability of the Arctic nations to reach a consensus on sovereignty claims and other issues has perpetuated the reliance on soft law in the region.[73] Currently, the major sources of binding law are the United Nations Convention on the Law of the Sea ("UNCLOS"),[74] the Straddling and Highly Migratory Fish Stocks Convention ("Fish Stocks Treaty"),[75] and the International Convention for the Prevention of Pollution

71. ANTARCTIC PROFILE, *supra* note 59, at 3.

72. *Id.*

73. For instance, the Arctic Environmental Protection Strategy, Guidelines for Environmental Impact Assessment in the Arctic, and the Ilulissat Declaration. Arctic Council, Arctic Environmental Protection Strategy, June 14, 1991, 30 I.L.M. 1624, *available at* http://arctic-council.org/filearchive/arctic_environment.pdf [hereinafter AEPS]; Finnish Ministry of the Env't, *Arctic Environmental Protection Strategy 1997: Guidelines for Environmental Impact Assessment* (EIA) *in the Arctic*, *available at* http://ceq.hss.doe.gov/nepa/eiaguide.pdf [hereinafter EIA *Guidelines*]; Ilulissat Declaration, Arctic Ocean Conference Ilulissat, Greenland, May 28, 2008, *available at* http://arctic-council.org/filearchive/Ilulissat-declaration.pdf.

74. United Nations Convention on the Law of the Sea, Dec. 10, 1982, 21 I.L.M. 1245, 1833 U.N.T.S. 397 [hereinafter UNCLOS].

75. Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea of 10 December 1982, Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, Aug. 4, 1995, 34 I.L.M. 1542, 2167 U.N.T.S. 88 [hereinafter UNFSA].

from Ships ("MARPOL").[76]

1. Jurisdiction and Sovereignty

Often referred to as "the constitution for ocean governance," UNCLOS establishes rights and duties regarding navigation, pollution, conservation, deep seabed mining, dispute resolution, jurisdiction, and exploitation of resources like fish and oil.[77] UNCLOS is a self-executing treaty that provides general rules for behavior on the world's oceans and occasionally requires "issue-specific agreements" to address unique problems.[78] Since the Arctic consists mostly of an ocean surrounded by sovereign lands, UNCLOS provides the most help in settling jurisdictional boundaries in Arctic waters. Although not all Arctic states have ratified UNCLOS, UNCLOS is a codification of customary international law and therefore binds all states.[79]

The backbone of UNCLOS lies in its delineation of jurisdictional zones and types of water bodies. Specifically, UNCLOS creates four zones: from the coastline to 12 nautical miles offshore is the territorial zone, from 12 to 24 miles is the contiguous zone, from 12 to 200 miles is the exclusive economic zone ("EEZ"), and beyond the EEZ are the high seas.[80] UNCLOS also provides methods for establishing these boundaries and other boundaries, like continental shelves or archipelagic states, when overlaps or uncertainties occur.[81] Each zone and, sometimes, water body categories, have corresponding rights and duties. For example, the right of passage changes from transit passage in international straits, to sea-lane passage in archipelagic waters, to innocent passage in territorial seas, and finally to navigational freedom in the EEZ and high seas.[82]

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76. Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973, Feb. 17, 1978, 17 I.L.M. 546, 1340 U.N.T.S. 61 [hereinafter MARPOL]. Other treaties applicable to the Arctic include the Fur Seal Treaty of 1911, the Spitzbergen Agreement of 1920, and the Polar Bear Treaty of 1973. HUNTER ET AL., *supra* note 10, at 1153.

77. HUNTER ET AL., *supra* note 10, at 739.

78. *Id.*

79. *Id.* LINDA NOWLAN, INT'L UNION FOR CONSERVATION OF NATURE (IUCN), ARCTIC LEGAL REGIME FOR ENVIRONMENTAL PROTECTION 19 (IUCN 2001), *available at* http://data.iucn.org/dbtw-wpd/edocs/EPLP-044.pdf. Although the United States still has not ratified UNCLOS, the new administration has vowed to work towards U.S. ratification. John B. Bellinger III, U.S. Dep't of State Legal Advisor, Address at the Univ. of Cal., Berkeley School of Law's Law of the Sea Inst. Conf. (Nov. 3, 2008), *available at* http://ilreports.blogspot.com/2008/11/bellinger-united-states-and-law-of-sea.html.

80. UNCLOS, *supra* note 74, pts. II-VII; HUNTER ET AL., *supra* note 10, at 740.

81. UNCLOS, *supra* note 74, arts. 3-16, 33, 47-48, 56-57, 76.

82. HUNTER ET AL., *supra* note 10, at 741 (citing D.G. Stephens, *The Impact of the 1982 Law of the Sea Convention on the Conduct of Peacetime Naval/Military Operations*, 29 CAL.

Duties and rights also vary according to whether a party is from a coastal state or flag state.[83] Generally, a coastal state has complete sovereignty over its territorial sea, internal waters, seabed, and airspace, and has exclusive fishing, exploration, and management of natural resources within its EEZ.[84] Coastal states may adopt laws for their territorial seas regarding navigation safety or traffic; protection of navigational aids, cables, or pipelines; conservation of living resources; preservation of the environment; pollution control; and prevention of infringement on their fisheries, immigration, sanitary, customs, or fiscal laws.[85] Also, coastal states must ensure conservation of living marine resources within their EEZ and have the right to create stricter pollution regulations within their internal waters and territorial sea as long as they do not interfere with innocent passage.[86] Thus, conflict may arise when a coastal state determines stringent pollution or conservation laws are needed, but others claim it will hamper passage perhaps due to required structural changes to ships or operation practices. However, a coastal state can impair a vessel's innocent passage if there is "willful and serious pollution" or illegal fishing activities.[87]

Flag states, or vessels not carrying the flag of the coastal state, are limited to innocent passage through territorial waters and the right to navigation, overflight, and laying cables and pipelines in an EEZ.[88] Flag states are responsible for ensuring all ships flying its flag are registered, carry onboard certification, have safe construction and operation practices, and comply with international pollution regulations.[89] Ships are under the jurisdiction of their flag state, and all crew members are bound by its law.[90] Flag states must implement and enforce pollution control rules or measures for their ships.[91] Additionally, flag states must investigate and punish violations of any pollution rule or standard implemented pursuant to UNCLOS regardless of where the violation occurred.[92] Again, disputes between flag states and coastal states may occur if a flag state only haphazardly complies with its duties, thereby allowing ships to escape

W. INT'L L.J. 283 (1999)). *See generally* UNCLOS, *supra* note 74, arts. 17, 18, 38, 53, 58, 87 (explaining different types of passages respectively).

83. UNCLOS, *supra* note 74, arts. 21, 24, 31, 46, 73, 77, 94, 142, 217, 218, 220, 248.

84. *Id*. at arts. 2, 56.

85. *Id*. at art. 21.

86. HUNTER ET AL., *supra* note 10, at 741-42; UNCLOS, *supra* note 74, art. 24, 211(3)-(4).

87. HUNTER ET AL., *supra* note 10, at 741; UNCLOS, *supra* note 74, art. 19(2)(h)-(i).

88. UNCLOS, *supra* note 74, art. 17, 58.

89. *Id*. at arts. 94, 217.

90. *Id*. at art. 94.

91. *Id*. at art. 217.

92. *Id*. at art. 217.

punishment, ignore pollution prevention practices, or evade certification requirements.

There are also general duties applicable to all states to regulate sources of pollution; to prevent, reduce, and control pollution; and to refrain from introducing harmful alien species.[93] All states enjoy a right to exploit fish, engage in navigation and overflight, conduct research, construct artificial islands, and lay cables or pipelines in the high seas in accordance with international laws.[94] Lastly, all signatories must settle disputes peacefully and follow certain dispute resolution methods.[95] UNCLOS creates its own International Tribunal ("ITLOS"), an arbitral tribunal, and a technical arbitral tribunal to hear disputes between parties, but states may also choose to peacefully settle their dispute by themselves or take their complaint to the International Court of Justice ("ICJ").[96] If the parties disagree over where to take their complaint, Annex VII of UNCLOS requires compulsory arbitration.[97]

2. Fisheries Management, Pollution, and Environmental Protection

The only binding law for fisheries management in the Arctic is the Fish Stocks Treaty, which is an implementing agreement to UNCLOS regarding the ownership and exploitation of straddling and highly migratory fish stocks.[98] Specifically, UNFSA limits fishing rights in the high seas, sets out standards for creating regional organizations to enforce conservation measures, and increases states' investigatory and enforcement authority in the high seas.[99] The UNFSA incorporates the precautionary principle and cooperation requirement,[100] two well-established international principles.[101] Despite its standards for creating regional organizations, an organization to

93. *Id*. at art. 207-12, 196.

94. *Id*. at art. 87.

95. HUNTER ET AL., *supra* note 10, at 745; UNCLOS, *supra* note 74, art. 279-85.

96. HUNTER ET AL., *supra* note 10, at 745.

97. *Id*.

98. UNCLOS, *supra* note 74, art. 87(2). Straddling fish stocks are species of fish whose migratory paths lie across the imaginary line between an EEZ and the high seas. Highly migratory fish stocks are fish species that cross through several EEZs and perhaps the high seas during their migration. The nature of these two fish stocks creates conflicts on how much can be harvested and when. In order to ensure their survival, a region-wide management strategy must be taken.

99. HUNTER ET AL., *supra* note 10, at 777.

100. UNFSA, *supra* note 75, arts. 5, 6, 8.

101. LAKSHMAN D. GURUSWAMY, INTERNATIONAL ENVIRONMENTAL LAW: LAW IN A NUTSHELL 17 (2d ed., West 2003) (1997).

manage the Arctic's fisheries has not yet been developed.[102]

In regards to pollution, UNCLOS provides general regulation but no detailed pollution standards. UNCLOS directs states to adopt laws and regulations to reduce, prevent, and control pollution from land-based sources, sea-bed activities, dumping, vessels, and from or through the atmosphere.[103] Essentially, these articles set a floor for pollution standards requiring the states to follow and be no less stringent than accepted international standards.[104] Of special importance, Article 234 of UNCLOS allows costal states to adopt laws to prevent, reduce, or control marine pollution from vessels for ice-covered areas within their EEZ as long as they are non-discriminatory.[105] Known as the "[A]rctic exception,"[106] conflicts over sovereignty between Canada and the United States largely led to its negotiation and adoption.[107] To qualify under this article, the area must be covered with ice for most of the year and the laws adopted must "have due regard to navigation."[108] Although "due regard to navigation" has not been clearly defined, the International Maritime Organization has prepared guidelines for navigation in Arctic waters that may provide some aid.[109] Russia and Canada have been the only states to take advantage of this article,[110] which may soon become irrelevant due to warming waters.

102. However, the U.S. Congress has recently passed a joint resolution that directs the United States to "initiate international discussions and take necessary steps . . . to negotiate an agreement for managing migratory and transboundary fish stocks in the Arctic Ocean." Managing Migratory and Transboundary Fish Stocks in the Arctic Ocean, Pub. L. No. 110-243, 122 Stat. 1569 (2008) (hereinafter U.S. Arctic Law).

103. UNCLOS, *supra* note 74, arts. 207-12.

104. *Id*. at arts. 207(1), 208(3), 209(2), 210(6), 211(2), 212(1). Other international agreements that address pollution include: the London Convention, the Paris Convention, MARPOL, and the Fund Convention. 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, Dec. 29, 1972, 26 U.S.T 2403, 1046 U.N.T.S. 120; 1974 Convention on the Prevention of Marine Pollution from Land-Based Sources, June 4, 1974, 13 I.L.M. 352; 1973 International Convention for the Prevention of Pollution from Ships, Nov. 2, 1973, 12 I.L.M. 1319; 1971 International Convention on the Establishment of an International Fund for Compensation of Oil Pollution Damages, Dec. 18, 1971, 11 I.L.M. 284, 1110 U.N.T.S. 57.

105. UNCLOS, *supra* note 74, art. 234.

106. Penny Becklumb, Bill C-3: An Act to Amend the Arctic Waters Pollution Prevention Act, LS-629E, Canada's Library of Parliament at 8, Feb. 13, 2009, *available at* http://www2.parl.gc.ca/Content/LOP/LegislativeSummaries/40/2/c3-e.pdf.

107. *Id*. at 96. Canada claims it was included at its insistence. *Id*.

108. UNCLOS, *supra* note 74, art. 234.

109. Int'l Mar. Org. [IMO], *Guidelines for Ships Operating in Arctic Ice-Covered Waters*, IMO Doc. CIRC\MSC\1056-MEPC-Circ399 (Dec. 23, 2002), *available at* http://www.imo.org/includes/blastDataOnly.asp/data_id%3D6629/1056-MEPC-Circ399.pdf.

110. Canada enacted and has extended its Arctic Waters Pollution Prevention Act pursuant to Article 234, whereas Russia adopted guidelines for navigation through its northern sea route. Becklumb, *supra* note 106, at 8, 13; *see also* Coalter G.

MARPOL also supplies applicable pollution regulations, which cover a ship's operational discharges of pollution and accidental spills or releases.[111] MARPOL provides design and equipment standards for ships, requires flag states to certify ships for compliance, grants port states inspection rights, and sets release allowances for pollution.[112] MARPOL governs pollution from all ships except ocean dumping of waste and pollution from seabed mineral activities.[113] MARPOL's Annex I and II provide stringent protection for "special areas" and ban all releases of oil and noxious liquid substances.[114] Unlike MARPOL's other four annexes, Annex I and II are not optional for signatories.[115]

Because the existing treaties mostly establish broad guidelines, the Arctic Eight adopted a non-binding agreement in 1991 to more thoroughly protect the Arctic in light of the growing harms from pollution.[116] The Arctic Environmental Protection Strategy ("AEPS") identifies six sources of pollution and creates programs to monitor, reduce and research pollution, and to conserve wildlife.[117] The AEPS did not address climate change or ozone depletion despite their massive effects on the Arctic because other forums addressed them.[118] Several years after the AEPS, Canada led the way to form the Arctic Council, which is now the major source of non-binding law for the Arctic.[119]

The Arctic Council, an intergovernmental forum, provides a soft law regime with a regional focus intended to promote cooperation and research to address the problems facing the Arctic.[120] The Arctic Council allows indigenous peoples to participate in meetings and non-Arctic nations, inter-governmental organizations, and non-governmental organizations to observe meetings; however, none have actual voting power.[121] The Arctic

Lathrop & Scott Borgerson, *The Road to the Arctic*, FOREIGN AFFAIRS, May/June 2008, *available at* http://www.foreignaffairs.com/articles/64298/coalter-g-lathrop-scott-borgerson/the-road-to-the-arctic?page=show.

111. HUNTER ET AL., *supra* note 10, at 791; MARPOL, *supra* note 76.

112. HUNTER ET AL., *supra* note 10, at 350-54.

113. *Id*. at 351.

114. *Id*. at 352.

115. *Id*. MARPOL, *supra* note 76, art. 16(f)(i-v).

116. HUNTER ET AL., *supra* note 10, at 1153.

117. AEPS, *supra* note 73. The dissolution of the U.S.S.R. and catastrophic events such as Chernobyl and the Exxon Valdez oil spill prompted the creation of AEPS. NOWLAN, *supra* note 79, at 7.

118. NOWLAN, *supra* note 79, at 8.

119. *Id*. at 9.

120. ARCTIC PROFILE, *supra* note 24, at 9.

121. HUNTER ET AL., *supra* note 10, at 1155; Erika Lennon, *A Tale of Two Poles: A Comparative Look at the Legal Regimes in the Arctic and the Antarctic*, 8 SUSTAINABLE DEV. L. & POL'Y 32, 34 (2008).

Council created six working groups to implement the AEPS: Protection of the Arctic Marine Environment ("PAME"), Conservation of Arctic Flora and Fauna ("CAFF"), Arctic Monitoring and Assessment Program ("AMAP"), Arctic Contaminants Action Program ("ACAP"), Emergency Prevention, Preparedness, and Response ("EPPR"), and, the latest addition, Sustainable Development Working Group ("SDWG").[122] The groups in turn create programs aimed at protecting the environment, such as PAME's Arctic Marine Strategic Plan, that endorse sustainable development and ecosystem approaches for protecting the seas.[123] Nevertheless, these groups - like the Arctic Council - only create soft law and function as individual entities with their own meetings, research mechanisms, and secretariats.[124]

One notable policy created by the Arctic Council is the Arctic Environmental Impact Assessments Guidelines ("EIA").[125] Similar to the United States National Environmental Policy Act ("NEPA"),[126] the EIA aims to avoid adverse environmental impacts from proposed actions by providing a uniform set of procedures for considering such impacts, mitigation efforts, and monitoring requirements.[127] The EIA is uniquely tailored for the Arctic environment. It emphasizes the vulnerability of the Arctic's ecosystems, and the importance of considering cumulative effects and abiding by the precautionary principle.[128]

The last dimension of law in the Arctic stems from domestic sources. While domestic law can play an important role in protection, it is ineffective at addressing transboundary problems and only adds to the multiplicity of laws affecting the region. Per UNCLOS, only coastal states can create regulations affecting territorial waters, EEZs, and ice-covered waters.[129] Thus, the Arctic coastal states - the United States, Canada, Russia, Norway, and Denmark for Greenland - have no jurisdiction over the high seas. Moreover, domestic laws may have hidden agendas like strengthening sovereignty claims. For instance, Canada's Arctic Waters Pollution Prevention Act was enacted only after a "direct threat to Canadian sovereignty which required an immediate Canadian response."[130] Finally, domestic conservation attempts provide only piecemeal protections for the

122. For a brief overview of each working group's functions, *see* ARCTIC PROFILE, *supra* note 24, at 10-13.

123. ARCTIC PROFILE, *supra* note 24, at 10.

124. Lennon, *supra* note 121, at 34.

125. EIA *Guidelines*, *supra* note 73 (adopted in 1997 by the Arctic Council in its Alta Declaration).

126. National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4370 (2009).

127. *Id*. at 4.

128. *Id*. at 9.

129. UNCLOS, *supra* note 74, arts. 2, 56, 234.

130. Becklumb, *supra* note 106, at 7-8.

environment and include marine protected areas ("MPAs"), national parks, and sanctuaries.[131] Approximately 14 percent of land in the Arctic "has some form of protected status."[132]

B. The Legal Regime in the Antarctic

In contrast to the Arctic, the Antarctic is a global commons and is mainly governed by the binding law of the Antarctic Treaty System ("ATS"). In the context of the Cold War and in the wake of increased international scientific cooperation from the International Geophysical Year ("IGY"), twelve nations adopted the Antarctic Treaty ("AT") as a means to continue their research in the Antarctic peacefully.[133] Since its adoption, the ATS has evolved to encompass environmental protection and resource conservation as its primary goals.[134] The later protocols include the 1991 Protocol on Environmental Protection to the Antarctic Treaty ("Madrid Protocol"), the Convention for the Conservation of Antarctic Seals ("CCAS"), and the Convention on the Conservation of Antarctic Marine Living Resources ("CCAMLR").

1. Antarctic Treaty of 1959, Madrid Protocol, and CCAMLR.

The AT applies to the area south of sixty degrees south latitude and embodies three main principles: "non-militarization, nuclear-weapon free, and unrestricted scientific cooperation."[135] The AT freezes all sovereignty claims for the duration of its enforcement, requires peaceful resolution of disputes, and creates a consultative versus non-consultative party structure, which allows only the former voting rights.[136] The party structure, by allowing only states conducting "substantial scientific research" to become consultative parties, indirectly discriminated against poorer, developing

131. ARCTIC PROFILE, *supra* note 24, at 7-9 (citing L. Esping & G. Grönqvist, A *Global Representative System of Marine Protected Areas: Region 6: Baltic*, 1995). *See generally* Randall S. Abate, *Marine Protected Areas as a Mechanism to Promote Marine Mammal Conservation: International and Comparative Law Lessons for the United States*, 88 OR. L. REV. (forthcoming Oct. 2009) (advocating for a regional approach to MPA governance).

132. HUNTER ET AL., *supra* note 10, at 1160.

133. *Id.* at 1126-27 (citing Comment, *The Balance of Nature and Human Needs in Antarctica: the Legality of Mining*, 9 TEMP. INT'L. & COMP. L.J. 387 (1995)). The twelve nations were Argentina, Australia, Belgium, Chile, the French Republic, Japan, New Zealand, Norway, the Union of South Africa, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States. Antarctic Treaty, June 23, 1961, 12 U.S.T. 794, 402 U.N.T.S. 71, *available at* http://www.scar.org/treaty/at_text.html.

134. NOWLAN, *supra* note 79, at 41.

135. HUNTER ET AL., *supra* note 10; Antarctic Treaty, *supra* note 133, art. VI.

136. Antarctic Treaty, *supra* note 133, art. IV, XI, VIII; HUNTER ET AL., *supra* note 10, at 1132.

countries, which caused controversy.[137]

After negotiations failed to enact an aggressive response to the exploitation of mineral resources, the focus of negotiations changed towards conservation and the Madrid Protocol was adopted.[138] Publicity of pollution at research stations by groups like Greenpeace, and concerns regarding increased tourism, also encouraged the protective measure.[139] The Madrid Protocol turned the global commons into "a natural reserve, devoted to peace and science."[140] It mandates that all activities be "planned and conducted" to limit or avoid adverse impacts and "[a]ny activity relating to mineral resources . . . [is] prohibited."[141] The Protocol embraces well-established international principles of cooperation and peaceful dispute resolution and allows compliance inspections.[142] The parties must also create a liability scheme to address damages caused by activities allowed under the Protocol within the AT area.[143]

The Madrid Protocol currently has five annexes. Annex I creates the procedures for environmental impact assessments ("EIA") and requires one for any activity causing more than a minor impact.[144] Annex II provides measures for the conservation of flora and fauna.[145] Annex III involves procedures for waste disposal and waste management for past and present work sites.[146] Annex IV addresses the prevention of marine pollution and works in tandem with MARPOL.[147] Finally, Annex V outlines designation and management of specially protected and managed areas.[148] If disputes arise under one of the annexes, the dispute resolution procedures outlined in the Protocol become mandatory and unsuccessful attempts at peaceful settlement are sent to the ICJ or Arbitral Tribunal.[149] This exception also applies to disputes regarding mineral research activities, environmental

137. HUNTER ET AL., *supra* note 10, at 1132.

138. *Id.* at 1139-40 (citing Jonathan D. Weiss, *The Balance of Nature and Human Needs in Antarctica: The Legality of Mining*, 9 TEMP. INT'L & COMP. L.J. 387, 398-99 (1995)).

139. NOWLAN, *supra* note 79, at 45.

140. Protocol on Environmental Protection to the Antarctic Treaty, art. 2, Oct. 4, 1991, 30 I.L.M. 1461 [hereinafter Madrid Protocol].

141. *Id.* at arts. 3, 7.

142. *Id.* at arts. 6, 14, 20.

143. *Id.* at art. 16.

144. *Id.* at annex I. The environmental impact procedures are considered to be some of strictest, possibly surpassing the United States' National Environmental Policy Act's requirements. HUNTER ET AL., *supra* note 10, at 1141.

145. Madrid Protocol, *supra* note 140, annex II.

146. *Id.* at annex III; NOWLAN, *supra* note 79, at 47.

147. Madrid Protocol, *supra* note 140, annex IV; NOWLAN, *supra* note 79, at 47.

148. Madrid Protocol, *supra* note 140, annex V.

149. HUNTER ET AL., *supra* note 10, at 1146; Madrid Protocol, *supra* note 140, art. 20.

impact assessments, emergency response actions, and compliance issues.[150]

Concerns regarding overfishing of krill, the basis of the Antarctic's food chain, led to the negotiation and subsequent adoption of CCAMLR by the AT parties.[151] Open to non-parties of the AT, CCAMLR takes an ecosystem approach to prevent overexploitation of all living resources except for seals and whales, which are addressed by other conventions.[152] CCAMLR embraces the precautionary principle and extends its coverage north of sixty degrees south latitude to include "waters dependent upon the massive upwelling of nutrients and phytoplankton growth."[153] CCAMLR establishes a commission to facilitate research, set catch limits, implement an inspection system, and adopt conservation measures, which may include protected species designations, limited fishing seasons, marine protected areas, and regulations on types of gear or methods of fishing.[154]

2. UNCLOS and the Fish Stocks Agreement

UNCLOS and the Fish Stocks Agreement ("UNFSA") also apply to the Antarctic, although the ATS implements many of UNCLOS's provisions with more specific guidelines and regulations. First, the UNFSA only governs those species of fish classified as straddling or highly migratory that can be found in the high seas.[155] Therefore, the high seas within the AT's area are subject to its mandates. In addition, UNCLOS's duties and rights in the high seas apply to the AT's area.[156] Since Antarctica is non-sovereign land pursuant to the AT, there are no territorial seas.[157]

150. HUNTER ET AL., *supra* note 10, at 1146; Madrid Protocol, *supra* note 140, art. 20.

151. NOWLAN, *supra* note 79, at 44; MEAM.net, Marine Ecosystems and Management, Krill, the Antarctic Ecosystem, and CCAMLR, Vol. 2, No. 2, Dec. 2008-Feb. 2009, http://www.krillcount.org/pdf/MEAM_krill_article.pdf.

152. NOWLAN, *supra* note 79, at 45 (Seals are covered by Convention for the Conservation of Arctic Seals, and whales are covered under the International Convention for the Regulation of Whaling.); HUNTER ET AL., *supra* note 10, at 1135 (The ecosystem approach recognizes the interconnectedness between species and their habitats.).

153. HUNTER ET AL., *supra* note 10, at 1135.

154. Convention for the Conservation of Antarctic Marine Living Resources, arts. VII, VIII, IX(1)-(2), Apr. 7, 1982, 33 U.S.T. 3476, 1329 U.N.T.S. 48 [hereinafter CCAMLR].

155. UNFSA, *supra* note 75, art. 2.

156. Antarctic Treaty, *supra* note 133, art. VI ("[N]othing in this Treaty shall prejudice or in any way affect the rights, or the exercise of the rights, of any State under international law with regard to the high seas within that area.").

157. While there is debate over whether an EEZ can be claimed within the AT's area, EEZs most likely would not be allowed due to the AT's prohibition on extending or asserting new claims. Donald R. Rothwell, *The Law of the Sea and the Antarctic Treaty System: Rougher Seas Ahead for the Southern Ocean*, *in* J. Jabour-Green & M. Howard (Eds.), *The Antarctic: Past, Present and Future*, Antarctic CRC Research Report

The rights of the high seas include freedom of navigation, overflight, fishing, laying cables and pipelines, constructing artificial islands, and scientific research.[158] However, these rights are limited and must be exercised with "due regard for the interests of other States" and "under the conditions laid down by this Convention and by other rules of international law."[159] This language, therefore, allows other international treaties to restrict or "condition" the application of high sea freedoms. Moreover, Article 116 of UNCLOS further states that the right to fish is subject to the parties' "treaty obligations."[160] Thus, although the ATS may seem to interfere with the rights of the high seas, these restrictions are permissible.

IV. Need for an Arctic Treaty Regime

The soft law regime in the Arctic fails to give the proper level of protection to its unique resources and its people. Since the ATS has proven over time that a comprehensive regional treaty focused on the environment can be successful, studying its development and implementation provides a number of lessons for the advancement of an Arctic treaty.

A. Existing Framework Stops Short

To understand how the current soft law regime has fared, one only needs to consider the expansive pollution and the plights of the Arctic's indigenous and coastal communities for the answer. While good intentions underlie the Arctic Council, the AEPS, and other agreements, they will never achieve their goals without binding obligations and enforcement. The current legal framework in the Arctic, with its mixed sources and non-binding nature, leaves compliance up to the individual. This voluntary approach, while a good first step, is insufficient given the numerous interests at stake. The lack of legal mandates, timelines, specific standards, and enforcement measures allows the Arctic states and foreign parties to continue their "business as usual" approach with a short-term focus on resource extraction and military security. Given the consistent over-exploitation of resources and frequent shortsightedness of states, the lack of binding regional regulations on resource management practically places an all-you-can-eat buffet sign on the Arctic.

Although some claim UNCLOS sufficiently addresses the Arctic's concerns, its general guidelines are often inadequate to address specific

#28, at 113, 118 (Hobart 2002) *available at* http://eprints.utas.edu.au/2661/19/17_Rothwell.pdf; Antarctic Treaty, *supra* note 133, art. IV.

158. UNCLOS, *supra* note 74, art. 87(1).

159. *Id.* at arts. 87(1)-(2).

160. UNCLOS, *supra* note 74, art. 116(a).

issues.[161] First, UNCLOS fails to provide rules tailored to the Arctic's unique ecosystem. For instance, it does not provide specific catch limits for Arctic fisheries, pollution discharge standards specific to the Arctic's uniquely vulnerable seas, or management systems for its living and mineral resources. Second, while a protocol or agreement to UNCLOS could address these concerns, UNCLOS's scope is too limited to fully combat all problems facing the Arctic. Since a protocol only executes the goals and mandates set forth in its associated treaty, a protocol or agreement under UNCLOS could not expand beyond the ocean governance umbrella.[162] To properly attack the Arctic's problems, an agreement will need to encompass several cross-cutting issues like security interests, human rights, sustainability of living and non-living resources on land and water, and transboundary pollution from the air and ocean. An attempt to address these areas through a protocol approach, whether under UNCLOS or another treaty, would result in a piecemeal response because no existing treaty covers such wide-ranging topics.

On this front, the Arctic Council and its working groups have accomplished several critical steps toward protecting the Arctic and its people by providing customized guidelines to combat many of the Arctic's problems. However, without binding authority or enforcement, further success is unlikely. While publicity and concern over climate change impacts in the Arctic have risen, daily necessities like food and energy distract states' attention and derail support for, and compliance with, the Arctic's soft law mandates. The substantive laws and research generated by the Council and its sub-groups are not useless, however, and will be of vital importance for the next stage. For example, the AEPS and its annexes supply many of the principles needed to protect the Arctic's environment, and their circulation may aid in the international communities' acceptance of them. Repetition and circulation of the same principles can eventually become binding as customary law through incorporation into a treaty or significant international acceptance and compliance.[163]

Although the legal regime's non-binding nature is the root of the problem, its scope also fails to address two critical areas.[164] First, military

161. HUNTER ET AL., *supra* note 10, at 739 (UNCLOS "often requires issue-specific agreements to give its provisions concrete meaning.").

162. For example, UNFSA extended UNCLOS to provide sufficient protection and sustainable fishing practices for the dwindling fish stocks worldwide. However, this issue fell squarely within ocean governance.

163. GURUSWAMY, *supra* note 101, at 16-17.

164. Another shortcoming of the Arctic's legal regime is its failure to give the indigenous communities a sufficient voice or proper rights. Modern civility and recognition of past injustices to native peoples demand that the Arctic Council accord these groups the rights and status they deserve. The indigenous peoples should have voting rights and be treated as equals at the negotiation table. With far

operations have been major sources of pollution and an impediment to the creation of binding regional environmental regulations. The Arctic Council's regime leaves regulation of military affairs to domestic law, which has proven to be inadequate as evidenced by the corroding nuclear submarines and reactors left from the Cold War.[165] In addition, increased military operations will mean increased risks of accidents with potentially catastrophic consequences.[166] Although military operations must continue - as it is unlikely this will become a de-militarized zone - uniform regulations are needed to ensure that minimal adverse impacts occur. Second, only domestic law governs mining for resources in the Arctic.[167] Mining, which obliterates habitats and ecosystem functions, can have devastating impacts on the Arctic's sensitive environment. Since the Arctic's ecosystems are interconnected, a uniform set of regulations and, perhaps, "no-mining area" designations are needed. While PAME has recommended such measures, they have no binding authority.[168]

Another shortfall of the soft law regime is its lack of special designations for the Arctic's sensitive environment. While the world has witnessed this region's vulnerability to climate change, mechanisms to classify the Arctic as a sensitive area by the Arctic Council have not yet been implemented. This designation can have important ramifications for existing international laws. For example, MARPOL's Annexes I and II ban discharges of oil and noxious liquids in "special areas."[169] While domestic attempts for preservation like marine protected areas and national parks exist, they are few and mostly involve land. Canada, however, has taken the lead in protecting marine areas and has proposed an extension of its Arctic Waters Pollution Prevention Act territory from 100 to 200 nautical miles.[170] Nevertheless, domestic law is ill-equipped to provide sufficient protection for the expansive Arctic Ocean, and unilateral action will likely lead to conflicts over fishing and navigation rights.

Although domestic law fills some gaps left by treaties like UNCLOS and provides binding regulations in the Arctic, this piecemeal approach has

more to lose than anyone else, these groups bear the world's burdens and, as such, should be compensated with land and resource rights. For further exploration of this human rights dimension, see Abate, *supra* note 13, at 1-35, 69-74; Kravchenko, *supra* note 13, at 513.

165. Although not technically abandoned, Russia's inability to remove these highly hazardous wastes has resulted in practical abandonment as negotiations have continued for over a decade to secure funding for their removal. HUNTER ET AL., *supra* note 10, at 1151.

166. NOWLAN, *supra* note 79, at 52.

167. *Id*. at 51-52.

168. *Id*.

169. *Id*. at 51.

170. Becklumb, *supra* note 106, at 11.

and will continue to fail. First, the source of most of the Arctic's problems does not originate within the Arctic itself. Specifically, most pollution reaching the Arctic comes from distant sources.[171] The relatively undeveloped Arctic has contributed only minimally to greenhouse gas emissions and the other pollutants infesting its lands, oceans, and people.[172] Since the cause lies largely outside the Arctic states' boundaries, domestic laws are powerless to address it. Second, a transboundary problem like climate change requires worldwide cooperation to reduce greenhouse gas emissions and provide mitigation to those areas most affected. Although states could potentially enforce stricter rules than existing international standards under UNCLOS, unified action is needed. More importantly, widespread strict standards are unlikely. For example, Canada and Russia are the only two Arctic states whose regulations for domestic shipping are "significantly stricter" than those set by the International Maritime Organization.[173] Third, to protect and sustainably use the Arctic's resources, an ecosystem approach and region-wide scope is needed, which independently acting states cannot provide or enforce.[174] Finally, relying on domestic law results in an uncoordinated mishmash of regulations of varying scales. The differences in priorities and resources cause disparities in levels of protection. These inequalities allow actors to just move to areas with less stringent controls, which can defeat the benefits derived from areas with stricter rules. This phenomenon can then instigate a race-to-the-bottom among states, where to gain an economic advantage environmental standards are purposely relaxed to attract business or deflect costs.[175] Moreover, sole reliance on domestic laws can induce the free-rider syndrome. Specifically, states have an incentive to "free ride" off measures enacted by others at no cost to them, as opposed to spending their own resources on pollution prevention and enforcement.[176]

Even if all these shortcomings were negligible, the expected increases in tourism, fishing, marine traffic, and resource development - such as hydrocarbon and mineral exploration - magnifies the risks and guarantees further damage to the Arctic's environment. Although the current soft law regime is a first step, it has proved itself inadequate to protect the Arctic so far; thus, a stronger regime is needed to confront these current and future harms.

171. HUNTER ET AL., *supra* note 10, at 1150.

172. *Id*.

173. News Release, Transport Canada, Canada Moves to Further Protect its Sovereignty and Safeguard Arctic Waters From Pollution, (Dec. 3, 2008) (on file with author), *available at* http://www.tc.gc.ca/mediaroom/releases/nat/2008/08-h233e.htm; Becklumb, *supra* note 106, at 11.

174. NOWLAN, *supra* note 79, at 47.

175. GLICKSMAN ET AL., ENVIRONMENTAL PROTECTION: LAW AND POLICY 86 (Aspen Publ'g 2007).

176. *Id*. at 12.

B. Lessons From the Antarctic Regime

As outlined above, the hard and soft laws relevant in the Arctic insufficiently protect its environment from climate change, pollution, and growing stresses on its ecosystem. Coincidentally, due to the poles' similarly vulnerable environments and central role in regulating the Earth's climate, the ATS has a structure, focus, and scope suitable for the Arctic's needs. The ATS provides protective laws with binding force to guard the Antarctic's environment and addresses issues common to both poles: research, national security concerns, sovereignty interests, and the environment.[177]

First, the ATS's structure creates a hard law regime with mandatory duties, enforcement measures, inspection rights, and specific standards. Its non-voluntary approach does not permit priority balancing or necessity defenses to its mandates. Taking a comprehensive approach, the ATS covers a broad range of topics and affords flexibility with the incorporation of subsequent protocols and annexes that respond to research improvements or new problems. Since the main obstacle to implementing the Arctic Council's guidelines is its non-binding nature, the Arctic could only benefit from following the ATS's lead. The Arctic's problems also need the flexibility the ATS structure supplies because further research is still needed to create accurate standards in many areas like the protection of marine mammals.[178] With the help of the Madrid Protocol, the ATS has had considerable success in managing the numerous parties operating within its environment.[179] A quick review of Antarctica's history and the harmful practices that occurred there prior to the Madrid Protocol - even after recognition of its valuable research potential - only further substantiates peoples' disinclination to act in an environmentally sensitive manner on their own accord.

Second, the underlying principles forming the AT and the Madrid Protocol resolve several hindrances to forming an Arctic treaty and address the very goals of the Arctic Council. Foremost, sovereignty disputes hamper states' desires to join an international treaty because of the fear that they will lose territorial claims. The AT, however, provides a solution to this impasse that could settle the territorial disputes in the Arctic. The AT appeased parties by freezing all sovereignty claims and guaranteeing their renewal upon the dissolution of the treaty.[180] Although the types of claims differ in the poles - land versus maritime territory - this basic proposition

177. NOWLAN, *supra* note 79, at 49 (citing DONALD ROTHWELL, THE POLAR REGIONS AND THE DEVELOPMENT OF INTERNATIONAL LAW 44 (Cambridge Univ. Press 1996)).

178. M. SIMPKINS, NAT'L OCEANIC AND ATMOSPHERIC ADMIN. (NOAA), ARCTIC REPORT CARD 2008 at 42-43, (2008), *available at* http://www.arctic.noaa.gov/reportcard/Arctic ReportCard_full_report.pdf.

179. NOWLAN, *supra* note 79, at 42.

180. Antarctic Treaty, *supra* note 133, art. IV.

would still have the same effect. The unique opportunities and functions that influenced parties to set aside sovereignty issues in the Antarctic also exist in the Arctic.

Moreover, the AT's focus on research and the Madrid Protocol's focus on environmental protection encompass two of the Arctic's primary needs. Like the Antarctic, the Arctic has a sensitive environment where further research is needed to fully understand its complexities. In addition, without binding mandates in place to limit man's actions, the Arctic will suffer costly if not irreversible harm. It took decades of unrestricted research activities causing harm to the Antarctic before protection emerged as the focus.[181] The Arctic can avoid this pitfall by adopting this principle in a binding treaty similar to the Madrid Protocol. Although the Arctic must also address sustainable use of its resources, this added principle goes hand in hand with protection. An ecosystem cannot be protected when its resources are being harvested or used for science, like in the Antarctic, without employing sustainability principles.

Lastly, the ATS's scope includes a wide range of subjects - fisheries management, waste disposal, and special status designations - that need similar proactive attention in the Arctic. As fisheries around the world continue to decline and eyes turn to the Arctic for help, Arctic fisheries management becomes a serious concern for those living in the Arctic. The ATS, specifically CCAMLR, provides innovative management for its living resources that would fit the Arctic's needs. CCAMLR follows an ecosystem approach to managing its living resources by recognizing the interconnectedness between species and considering all ecological factors affecting a species' survival.[182] The harsh climate in the Antarctic, like the Arctic, creates a uniquely interdependent ecosystem due to the low diversity and low number of species that can survive in such extremes.[183] Moreover, the ecosystem approach requires international cooperation to fulfill its mandates, which the Arctic's current legal regime could not implement.

Likewise, due to the similarly vulnerable environments in both poles, the rationale behind the ATS's handling of waste disposal and establishment of special status designations applies with equal force in the Arctic. The frigid temperature makes oil break down much more slowly in both poles and their icy, remote locations make cleanup of pollution

181. NOWLAN, *supra* note 79, at 45.

182. HUNTER ET AL., *supra* note 10, at 1135.

183. PROTECTION OF THE ARCTIC MARINE ENVIRONMENT (PAME) INT'L SECRETARIAT, ARCTIC MARINE STRATEGIC PLAN 5-6 (Creative Solutions Commc'ns eds., Nov. 24, 2004) [hereinafter ARCTIC MARINE STRATEGIC PLAN], *available at* http://arcticportal.org/uploads/vx/IW/vxIWcyCi_7UnSBwZDbPVug/AMSP-Nov-2004.pdf.

difficult if not impossible.[184] Since the poles vitally affect the Earth's processes, the Antarctic's more stringent standards offer insightful examples that could prevent further harm in the Arctic and, thus, in the world as a whole. First, Annex III of the Madrid Protocol sets rigorous standards for waste disposal in the Antarctic, requiring practically all waste to be shipped away.[185] Also, the Madrid Protocol designates the Antarctic as a nature reserve[186] and Annex V creates a special protective status for certain areas within the treaty territory.[187] These designated areas receive higher levels of protection under the ATS, as well as under several other international treaties.[188]

The ATS illustrates the feasibility of creating an Arctic treaty. The ATS confronted similar barriers to its formation, such as competing sovereignty claims and desires for resources, but still held peaceful negotiations despite the countries being at war during the negotiation period.[189] The shared concern for the Antarctic's environment and recognition of its role in the Earth's climate forced national priorities to be set aside for the greater good.

V. Proposed Arctic Treaty: Convention on Arctic Protection and Sustainability

To ensure that "one of the last of Earth's great wilderness areas remains intact,"[190] a comprehensive treaty addressing all of the Arctic's major battles is needed. The existing patchwork quilt of domestic, soft, and international laws in the Arctic fails to provide proper protection and management of its resources. The Arctic has a unique ecosystem that offers vital research opportunities for understanding the earth's changes and that plays a crucial role in the earth's processes. Surprisingly, however, there is no binding agreement addressing this extraordinary region in its entirety like there is for the Antarctic.

To make matters worse, the current political climate seems to be heading in the wrong direction. First, the Ilulissat Declaration adopted in

184. HUNTER ET AL., *supra* note 10, at 1150; World Wildlife Found., *Lessons Not Learned: 20 Years After the Exxon Valdez Disaster*, at 3, *available at* http://www.wwf.fi/wwf/www/uploads/pdf/exxon_valdez_report.pdf.

185. Madrid Protocol, *supra* note 140, annex III.

186. *Id.* at art. 2.

187. *Id.* at annex V.

188. For example, MARPOL Annexes I and II prohibit releases of oil and noxious liquid substances in "special" areas and the Basel Convention prohibits transport of hazardous wastes to the Antarctic. MARPOL, *supra* note 76, annex I-II; Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal, art. 4(6), Mar. 22, 1989, 28 I.L.M. 657, 1673 U.N.T.S. 125 [hereinafter Basel Convention].

189. Scott G. Borgerson, *An Ice-Cold War*, N.Y. TIMES, at A19, Aug. 8, 2007, at A19.

190. NOWLAN, *supra* note 79, at 59.

2008 acknowledges the Arctic's perilous condition and the unique position the five coastal states - Canada, Denmark, Norway, the Russian Federation and the United States - are in to address them.[191] Ultimately, however, the declaration just reiterates a commitment to rely on the UNCLOS framework for governance, jurisdictional dispute settlement, and cooperation, protection, and research.[192] Second, in 2008, the European Commission concluded that UNCLOS and the existing legal instruments would sufficiently address the Arctic's problems, although some modifications may be needed.[193] Both positions will result in future bilateral or regional agreements and/or protocols to current legal instruments. This approach will only add more layers to the already confusing multitude of laws in the Arctic.

While many argue a regional agreement or simple protocol to an existing treaty like UNCLOS would suffice,[194] the transboundary harms affecting the Arctic encompass a broad range of issues and need an international response. Although the success of the Arctic treaty seems to imply that a regional agreement is enough, this regional focus is misleading. First, much like the Antarctic, changes in the Arctic affect the entire world and, as such, are an international problem. The international community not only has an interest in reaping the benefits the Arctic offers in resource availability and science, but it also has a stake and duty in maintaining the Arctic's health. Next, the Arctic may consist mostly of ocean, but solutions to its problems require an ecosystem approach involving the land and the sea, like in the Antarctic. The interconnectedness between the terrestrial and marine life is even more complex in the Arctic than in the Antarctic due to the added element of humans. Lastly, like the Antarctic, the research needed to aid the world's understanding of the earth's operations requires international funding, information sharing, and cooperation. The transboundary nature of the Arctic's problems cannot be resolved without international cooperation, which renders regional agreements insufficient.

While a regional agreement fails to incorporate all interested stakeholders, a protocol to an existing treaty would fail to cover the full spectrum of issues.[195] There are only a handful of treaties affecting the

191. Ilulissat Declaration, *supra* note 73.

192. *Id.* at 1-2.

193. *Commission of the European Communities, Communication from the Commission to the European Parliament and the Council: The European Union and the Arctic Region*, 9-10, COM (2008) 763 final (Nov. 20, 2008), *available at* http://ec.europa.eu/external_relations/arctic_region/docs/com_08_763_en.pdf [hereinafter Commission Report].

194. Ilulissat Declaration, *supra* note 73, at 1; Commission Report, *supra* note 193; NOWLAN, *supra* note 79, at 58.

195. *See supra* Part III(B).

Arctic,[196] and none provide the necessary scope to encompass the cross-cutting issues in the Arctic. UNCLOS comes the closest, but still fails.[197] Protocols merely implement the goals and mandates set forth in their associated treaties, so utilizing this method would result in a piecemeal response to the multitude of issues. Thus, a protocol approach would only add to the mishmash of laws causing confusion and uncertainty, which would hinder the effectiveness of a response.

One should also consider the wisdom behind treating the poles, whose vulnerable environments provide such valuable functions, differently. The world came together over concerns for the Antarctic's environment and created an international treaty with a regional focus. If anything, the Arctic's increased development, more severe impacts, and human inhabitation should not push negotiations away from a treaty like the ATS, but towards it. Although forming a treaty can be a daunting task, much of the work has already been done. The Arctic Council's guidelines, UNCLOS, and the ATS supply most of the substantive laws required and later protocols can address the remaining gaps and areas requiring research. In addition, the heightened awareness among the nations due to the Arctic Council's work and publicity of the Arctic's impacts has already built consensus among states to act.[198]

A. Guiding Principles and Party Structure

To respond properly to the Arctic's problems, a comprehensive treaty embodying three main principles - preservation, conservation, and sustainability - is needed.[199] While conservation embodies sustainable use of resources, preservation seeks to protect "without reference to natural changes in living systems or to human requirements."[200] Combining these principles will enable the states to protect some habitats from human interactions while also allowing the utilization of resources in other areas. Thus, this approach deflates a major argument against forming an Arctic treaty. While the Arctic cannot be treated exclusively as a nature preserve like Antarctica, it can embody the same principles even if some additional

196. Treaties that apply to the Arctic include UNCLOS, the Polar Bear Treaty of 1973, North Pacific Fur Seal Treaty of 1911, and the Spitzbergen Agreement of 1920.

197. S*ee supra* notes 155-56 and accompanying text.

198. S*ee* Ilulissat Declaration, *supra* note 73; Commission Report, *supra* note 193.

199. Conservation is "[t]he maintenance of environmental quality and resources or a particular balance among the species present in a given area." MICHAEL ALLABY, THE CONCISE OXFORD DICTIONARY OF ECOLOGY 92 (Oxford Univ. Press 1994). Sustainability is "[e]conomic development that takes full account of the environmental consequences of economic activity and is based on the use of resources that can be replaced or renewed and therefore are not depleted." I*d*. at 376.

200. I*d*. at 92.

ones are needed.[201] This approach acknowledges the world's need for resources, which will be crucial for gaining state membership. To aid the treaty's success and ensure the least amount of damage results from increased navigation and resource exploitation, the precautionary principle, the polluter and user pays principle, environmental impact assessment ("EIA"), and the ecosystem-based approach should also be incorporated.[202]

The precautionary principle is a preventative approach that addresses when decisions or policies can be implemented, but not what type.[203] Under this principle, states must act "to avoid environmental harm before it occurs" and cannot use scientific uncertainty as an excuse for delaying cost-effective action.[204] Although standards on the type of policies are not given, most versions of the principle require the policy to prevent environmental harm in a cost-effective manner.[205] Thus, this principle does not dictate impracticable preventative responses; it merely requires cost-effective action in the face of "serious or irreversible damage."[206] The Arctic has already suffered serious damage. Additional damage may pose irreversible harm to not only the Arctic region but also to the rest of the world. Although there is

201. NOWLAN, *supra* note 79, at 58.

202. Although beyond the scope of this article, the common but differentiated responsibilities concept should also be incorporated, albeit with a slight twist. Instead of developing countries - although this may also be needed - the indigenous peoples in the Arctic should receive special considerations. First, as the Rio Declaration acknowledges, indigenous peoples have unique knowledge of their environment and can provide a "vital role in environmental management" and "the achievement of sustainable development." Rio Declaration, U.N. Conference on Environment and Development, Principle 22, June 13, 1992, 31 I.L.M. 874. They also have higher stakes in sustainable use of their environment since they depend on it for their livelihood, culture, and identity. Therefore, an Arctic treaty should grant them equal voting rights and co-management opportunities. NOWLAN, *supra* note 79, at 61. Moreover, the Arctic treaty could address their higher dependence on living resources and their unfair suffering from pollution caused by the developed countries by compensating indigenous peoples with a "subsistence preference" and laxer standards. *Id*. The subsistence preference would provide indigenous peoples with higher priority for certain fish stocks and terrestrial mammals when catch or take limits are considered. *Id*. In addition, property rights or special permits for additional activities and access rights could be employed to aid the indigenous peoples' cultural survival.

203. HUNTER ET AL., *supra* note 10, at 511.

204. *Id*. at 510.

205. *Id*. at 511.

206. Rio Declaration, *supra* note 202, Principle 15. "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." *Id*. Principle 15 of the Rio Declaration "is the most widely accepted elaboration of the precautionary principle." HUNTER ET AL., *supra* note 10, at 510.

still much research needed, the stakes are too large to justify any further delay in action.

While preventative action to protect the Arctic and its resources seems to imply a ban on use or access, this is not practical or possible given the reliance indigenous peoples and Arctic states already have on these resources. The polluter and user pays principle will help balance these needs by requiring protection and leaving the Arctic open to exploitation and navigation at the same time. This principle allows environmental protection and economic activities to coincide by making the user or polluter internalize the costs of its actions.[207] Since these costs pass to consumers through price increases, consumers will naturally prefer environmentally friendly products due to the lower cost.[208] Thus, environmentally destructive activities will not be profitable, making sustainable use of resources more attractive. The Arctic's inhabitants already rely on its resources and melting ice will only increase activity and exploitation. Thus, this principle will create a natural incentive to prevent environmental damage regardless of the actor's ultimate goal.

Like the polluter pays principle, an EIA mandate will also help conservation, preservation, and sustainability goals override contradictory private interests. An EIA "is a process for identifying, predicting, evaluating, and mitigating the biophysical, social and other relevant effects of proposed projects and physical activities prior to major decisions and commitments being made."[209] Since sustainable use of the Arctic's resources requires planning and research, the EIA mandate provides an ideal method for ensuring current use does not compromise future needs.[210] The Arctic treaty could model its mandate after the Madrid Protocol's EIA regulation, which requires an assessment for all activities determined to have more "than a minor or transitory impact."[211] Similar to the Madrid Protocol, if an assessment is needed, the findings should be subject to public comment and review by the other parties to the treaty.[212] If the activity is found to have significant impacts or pose a risk of such impacts, the precautionary principle should be invoked and the action should not be conducted. Due to the different agendas and priorities among states, the EIA will provide transparency for all activities and guarantee actions are not taken haphazardly. The Arctic Council has already developed EIA Guidelines for the Arctic, which will greatly assist an Arctic treaty in creating its mandate.[213]

207. HUNTER ET AL., *supra* note 10, at 516.
208. *Id.*
209. EIA G*uidelines*, *supra* note 73, at 47.
210. *Id.* at 4.
211. Madrid Protocol, *supra* note 140, annex I, art. 1(2).
212. *Id.* at annex I, art. 3.
213. EIA G*uidelines*, *supra* note 73.

An ecosystem approach is also an essential principle for an Arctic treaty. Basically, the ecosystem approach focuses on an entire ecosystem as opposed to an individual species.[214] This approach takes into account the interdependence and relationships between species and their physical environments.[215] Like the Antarctic, the Arctic's harsh climate prevents high diversity among species, which causes increased interdependence among the species that can endure it.[216] Not only is the Arctic's environment highly sensitive, but so are the life forms that inhabit it. Thus, in order to protect and sustainably use the Arctic's fish and other species, regulations will need to address how activities with one species will affect others to prevent destruction of food chains and other disastrous consequences. Moreover, this approach necessitates that the Arctic Eight states join the treaty to ensure that the full range of the Arctic's ecosystem is covered.[217]

The need for international action, compliance, and support will also influence the party structure of an Arctic treaty. To achieve this broad-based response, the treaty should include the Arctic Eight, the Arctic's indigenous peoples, and other nations as voting parties, as well as scientists and non-governmental organizations as non-voting participants. While many non-coastal states will likely prefer equal voting rights for all involved nations, the coastal states may need some incentives to join to overcome their fear of the rest of the world's hunger for resources located in their backyard. The non-nation participants, on the other hand, do not require voting rights or incentives to join as their inclusion is solely for improving the quality of negotiations and the foundational science. Although the five Arctic coastal states will likely prefer independent control or cooperative action amongst themselves,[218] broad-based international cooperation and compliance is

214. HUNTER ET AL., *supra* note 10, at 1135.

215. *Id*.

216. ARCTIC MARINE STRATEGIC PLAN, *supra* note 183.

217. CAFF, a working group of the Arctic Council, has already researched the most probable boundary for addressing ecosystem protection in the Arctic, which includes all eight Arctic states. UArctic Atlas, Arctic Boundaries, Univ. of the Arctic, http://www.uarctic.org/AtlasMapLayer.aspx?m=642&amid=5955 (last visited Apr. 19, 2009.

218. The only regional treaty - the Polar Bear Treaty of 1973 - and most other agreements or declarations affecting the Arctic involve some combination of only these five coastal states: the United States, Russia, Canada, Denmark, and Norway. Specifically, the following agreements only involve the five coastal states: the Ilulissat Declaration, Polar Bear Treaty of 1973, Agreement between the Government of the United States of America and the Government of the Russian Federation on the Conservation and Management of the Alaska-Chukotka Polar Bear Population of 2000, Agreement between the Government of Canada and the Government of the United States of America on Arctic Cooperation of 1988, and Joint Statement by the United States of America and the Union of Soviet Socialist Republics on the Uniform Interpretation of Norms of International Law Governing Innocent Passage of 1989.

needed to tackle this international problem. Opening up a treaty to the international community will make the negotiation process harder. Nevertheless, to ensure the Arctic's survival - and the sustainability of life on Earth - more than five states need to be bound by the new measures.

While an Arctic treaty will encompass a broad range of issues, the sub-parts of the analysis below explore only a few in order to illustrate how an Arctic treaty might operate.[219]

B. Jurisdiction and Sovereignty

Sovereignty claims among the Arctic Eight present a contentious area that must be resolved in order for a binding treaty to operate effectively. Luckily, a plausible solution already lies within the ATS and UNCLOS. Following the same logic of the ATS, the Arctic Eight, who have already recognized the vital importance of protecting the Arctic and the need for quick action, should agree to freeze their territorial claims. While slightly different from the freezing of rights under the ATS, the rights in an Arctic treaty would be reserved and locked-in without precise boundaries. Since five of the Arctic states have already recognized UNCLOS's ability to settle their territorial disputes,[220] the treaty would bind the parties to resolve the final boundary lines in the future pursuant to UNCLOS's parameters. In addition to the states' inability to currently agree on precise boundaries, further research and mapping is needed before final boundaries could be set for the continental shelf. Instead of wasting precious time, the Arctic states can be assured their territorial claims will be honored pursuant to the means most commonly accepted by them - UNCLOS. Although not all Arctic states have ratified UNCLOS, UNCLOS embodies many principles of international customary law and thus binds all parties.

UNCLOS provides a valuable baseline, but there will inevitably be conflicts over the boundaries. To address this concern, the treaty could expressly require parties to enter into peaceful settlements and create an independent tribunal with binding authority to hear disputes. An independent tribunal's non-biased nature would be pivotal in calming fears and gaining state approval. Moreover, simple principles for settling common disputes, such as overlapping claims, can be negotiated and included within the treaty itself. For example, to assure that all states receive their fair share, the parties can agree to split the disputed area into equal halves in the event of an overlap.

Sovereignty claims in the Arctic are more controversial than in the Antarctic because of their closer proximity to states, thereby creating

219. While beyond the scope of this article, three other crucial issues an Arctic treaty should encompass are biodiversity, financing, and research.

220. Ilulissat Declaration, *supra* note 73.

national security concerns. Therefore, this approach incentivizes the parties by establishing their claims - just not the precise details - and allowing their future resolution while the treaty is in effect. Although sovereignty interests pose an obstacle to the treaty's formation, the imminent nature of the Arctic's problems will likely boost the parties' willingness to set aside their differences for now as long as they have assurances that they will receive their rightful territory.

Defining the Arctic region can be done in several ways, such as using the 10 degree July Isotherm or treeline,[221] but for purposes of this treaty the Arctic's ecosystem and all its interdependent parts must be encompassed. Following the ATS's lead, the Arctic Circle - all area north of sixty-six degrees north latitude - could be used for purposes of simplicity, but this would exclude vital areas.[222] Thus, similar to the purpose behind CCAMLR's boundary of the Antarctic convergence,[223] the Arctic treaty should use CAFF's boundary line because it aims to include all of the Arctic's ecosystem[224] to promote "conservation . . . and the sustainable use of living resources."[225] The inclusion of the high seas and sovereign areas will cause tension, but should not be fatal to the treaty formation. Although numerous regional and international agreements hamper contracting parties' autonomy, treaties merely create floors or minimum standards to ensure protection in most instances, while granting the states rights to impose stricter requirements within limits.[226]

C. Fisheries Management

A critical area for an Arctic treaty to address is fisheries management. Due to northward migration of marine species, lack of regulations, and increased navigability in the Arctic's high seas, the Arctic will become a

221. UArctic Atlas, *supra* note 217.

222. National Snow and Ice Data Center (NSIDC), Arctic Climatology and Meteorology Primer, http://nsidc.org/arcticmet/basics/ arctic_definition.html (last visited Apr. 19, 2009). "The Arctic Circle is an imaginary line that marks the latitude above which the sun does not set on the day of the summer solstice (usually 21 June) and does not rise on the day of the winter solstice (usually 21 December)." I*d*. The actual location is north of 66 degrees north latitude, 32 minutes North. I*d*. AT, art VI ("the area south of 60 [degrees] South latitude").

223. CCAMLR, *supra* note 154, art. I(1). "This Convention applies to . . . the area south of 60 degrees South latitude and to . . . the area between that latitude and the Antarctic Convergence which form part of the Antarctic marine ecosystem." I*d*.

224. UArctic Atlas, *supra* note 217.

225. ARCTIC PROFILE, *supra* note 24, at 11; *see also* UNEP/GRID-Arendal, Arctic: AMAP and CAFF Area, http://maps.grida.no/go/graphic/arctic-amap-and-caff-area (last visited Apr. 19, 2009).

226. E.*g*., UNCLOS, *supra* note 74, art. 56.

prime fishing ground.[227] Based on the interconnectedness and sensitivity of the Arctic's ecosystem, fisheries management should adhere to the ecosystem approach as under CCAMLR. The Arctic's harsh climate results in fewer food sources for terrestrial animals and a stronger relationship between marine and terrestrial life.[228] In addition, the human residents, especially the indigenous peoples, rely heavily on the fisheries for their economies, food, and culture.[229] Proper protection and sustainability of the fisheries, therefore, must acknowledge all ecological factors like the relationship between predators and prey in order to protect the Arctic's entire ecosystem.

Fisheries management should adopt three basic principles: ecosystem-based management, sustainability, and the precautionary principle. Ecosystem-based management incorporates adaptation, sustainability, and consumptive use principles. Moreover, it treats humans as an integral element of the system, looks at long-term needs, and considers all aspects of a dynamic ecosystem.[230] This approach has already been proposed by the Arctic Council and, therefore, its research and guidelines can enhance negotiations and supply substantive laws for this area.[231] In addition, existing regional fisheries management organizations ("RFMOs"), such as the North Pacific Fishery Management Council, embrace this principle and can provide examples of effective methods and regulations.[232]

Sustainability, although addressed within ecosystem-based management, requires separate attention due to the indigenous peoples' dependence on fish as a major food source and the expected future increases in Arctic fishing. Moreover, the Arctic has some of the most valuable commercial fisheries in the world.[233] Since the Arctic's fisheries must be continually harvested, management practices aimed at yielding a large production while still maintaining a healthy stock and ecosystem are necessary. Harvesting in these fisheries, however, must employ the precautionary principle as well. The precautionary principle will ensure that preventative management practices are taken in the face of incomplete science or research. The Arctic's inextricably linked ecosystem cannot afford haphazard management. The best strategy to guarantee future survival and

227. UNEP'S IN DEAD WATER, *supra* note 9, at 38; U.N. Env't Programme, *supra* note 9.

228. ARCTIC MARINE STRATEGIC PLAN, *supra* note 183.

229. I*d*. at 6.

230. I*d*. at 8.

231. I*d*.

232. North Pacific Fishery Management Council, Current Issues: Information on Ecosystem Management, http://www.fakr.noaa.gov/npfmc/current_issues/ecosystem/Ecosystem.htm (last visited Apr. 19, 2009).

233. ARCTIC PROFILE, *supra* note 24, at 10.

profitability of the fisheries is to act proactively and avoid further damage to the Arctic.

Much like CCAMLR, an Arctic treaty should specify allowable gear, methods, catch limits, and ship specifications. Negotiations should explore innovative techniques, which would optimize conservation and sustainable use of the fisheries. For example, establishing profitable uses for bycatch for either human or animal consumption as opposed to just dumping it overboard would create incentives to stop bycatch discarding.[234] Although data for many of these regulations are still unknown, the precautionary principle should guide behavior until research is available to establish set standards. For instance, a precautionary approach may require a complete ban on fishing, or fishing only specific fish stocks, to ensure no further harm to the Arctic's ecosystem.[235]

Marine Protected Areas ("MPAs") are another effective tool for sustaining fisheries, protecting critical habitat, or protecting biodiversity.[236] This technique can be used to ban fishing or certain activities like resource extraction within a specified area.[237] An Arctic treaty should utilize this tool as a rebuilding method to promote sustainability for the Arctic's ecosystem. Specifically, MPAs should be required to rebuild failing fish stocks and protect highly sensitive or important areas in the Arctic. Other factors to consider when placing limits on activities or access could include an area's productivity potential and response action capabilities in the event of an accident.[238] While temporary MPAs would likely be more common, permanent MPAs may be necessary to preserve ultra-sensitive or important areas where the risks from man are too great. This tool can therefore be used proactively or reactively to maintain the Arctic's ecosystem. Like

234. The term bycatch can encompass many definitions, but is typically used to refer to discarded or wasted fish. Fish may be discarded due to size, sex, species, legal restraints, or other reasons. U.N. FAO Fisheries & Agric. Dep't, A *Global Assessment of Fisheries Bycatch and Discards*: *Terminology*, FAO Fisheries Technical Paper No. 339 (1994) (prepared by Dayton L. Alverson, Mark H. Freeberg, Steven A. Murawski, & J.G. Pope), *available at* http://www.fao.org/docrep/003/T4890E/T4890E02.htm#ch1.1.1.

235. E.*g.*, The North Pacific Fisheries Management Council, which embraces the precautionary approach, recommended such an approach for the Chukchi and Beaufort seas until fisheries management plans could be adopted. U.S. Arctic Law, *supra* note 102.

236. U.N. FAO Fisheries & Agric. Dep't, *Fisheries Topics*: *Governance*, *Marine Protected Areas* (2005) (prepared by K.L. Cochrane) [hereinafter FAO MPA], *available at* http://www.fao.org/fishery/topic/13502/en (last visited Apr. 19, 2009). *See generally* ERICH HOYT, MARINE PROTECTED AREAS FOR WHALES, DOLPHINS AND PORPOISES 43-54 (Earthscan 2005) (discussing how many treaties, conventions or agreements use the MPA tool).

237. FAO MPA, *supra* note 236.

238. *See* World Wildlife Found., *supra* note 184, at 3.

Annex V of the Madrid Protocol, the treaty should require permits for any activities occurring in these areas in order to make enforcement easier.[239]

MPAs have inherent incentives stemming from their ability to sustain marine life and fisheries.[240] MPAs aid tourism based on promoting the continued viability of such marine life, provide eco-tourism jobs, and provide healthier and more productive fisheries for consumption.[241] MPAs have been successful within states' EEZs and it is time to extend this protection to the high seas - especially the Arctic's.[242]

D. Enforcement and Dispute Resolution

An Arctic treaty must necessarily include dispute resolution and enforcement measures to ensure parties will abide by the treaty's terms and provide a venue for addressing noncompliance. Treaties commonly incorporate dispute resolution procedures and the ATS provides an excellent model to follow. Like the ATS, an Arctic treaty should require parties to engage in peaceful negotiations and settlement of disputes.[243] After diplomacy has failed, the treaty should provide for a specialized tribunal to hear disputes or allow such disputes to go to the International Court of Justice ("ICJ") at the parties' request. Additionally, parties should be required to send their claims to the tribunal or ICJ and decisions in areas of special importance like sovereignty claims should be automatically binding. This approach, also followed by the Madrid Protocol, would reassure parties of eventual compliance or settlement of claims in highly contentious areas.[244]

Next, enforcement measures should encompass a broad range of tactics with varying levels of complexity, cost, and ease of implementation. A few notable enforcement mechanisms include an inspection system, fines, and port closures. An inspection system is vital for enforcing regulations and can involve (1) inspectors or video recorders on boats to monitor compliance, (2) mandatory port inspections for all landings, (3) patrolling of protected or highly used areas, and (4) self-reporting requirements for vessels. One method that would increase the feasibility of port inspections is to require consent for landing. Specifically, vessels would have to contact

239. Madrid Protocol, *supra* note 140, annex V, arts. 3, 4, 7.

240. The Nature Conservancy, Protected Areas: How Marine Protected Areas Help Alleviate Poverty, http://www.nature.org/initiatives/protectedareas/howwework/art23185.html (last visited Apr. 19, 2009). *See generally* Abate, *supra* note 131 (discussing the numerous benefits MPAs have to offer).

241. *Id*.

242. Graeme Kelleher & Kristina Gjerde, *High Seas Marine Protected Areas*, 15 PARKS No. 3, 1 (2005), *available at* http://cmsdata.iucn.org/downloads/15_3_lowres.pdf.

243. Antarctic Treaty, *supra* note 133, art. XI.

244. Madrid Protocol, *supra* note 140, art. 20.

port authorities before landing and provide details regarding their vessel such as their nationality, load specifications, and boat name. This approach would enable port inspectors to research the vessel and possibly discover illegal activities.

Due to the expansive monitoring area, international cooperation for funding and manpower would be necessary. On the other hand, fines collected from noncompliance and fees for porting or other activities would not only encourage compliance, but also can fund inspections. Likewise, port closures to repeat offenders and Flag of Convenience ships ("FOCs") would cut costs by reducing inspections needed.[245] Another cost effective measure is to require treaty parties to prevent companies registered under their jurisdiction from owning or operating FOC fishing vessels.[246] FOC vessels contribute significantly to illegal, unregulated, and unreported fishing ("IUU"), which "is one of the most severe problems facing global fisheries."[247] As many non-profit organizations have already implemented, a black list - or a list of IUU vessels and other offenders of international laws - can be utilized to aid identification of such offenders.[248] Lastly, RADARSAT-2, a satellite designed for marine surveillance, can help with monitoring and tracking ships and their activities.[249]

E. Pollution

An Arctic treaty should utilize the most stringent standards for preventing pollution due to the Arctic's vital role in climatic processes and its ultra-sensitive ecosystem, which are the same reasons the Antarctic has some of the strictest pollution regulations. In addition to these justifications, the Arctic has human inhabitants that suffer from transboundary pollution unlike anywhere else in the world.[250] The Arctic's environment, however, lacks the safeguards of the ATS and is treated much differently.[251] Several provisions from the ATS plus other international treaties or documents can greatly assist the formation of regulations under an Arctic treaty.

245. Flag of Convenience vessels ("FOCs") are vessels that register under the jurisdiction of a state with lax standards and are often completely unregulated. HUNTER ET AL., *supra* note 10, at 759.

246. *Id.* (citing recommendations from Greenpeace on combating illegal and unreported fishing.)

247. *Id.*

248. *Id.*

249. RADARSAT-2, Marine Surveillance, McDonald, Dettwiler & Assocs. Ltd., http://www.radarsat2.info/application/marine/index.asp (last visited Apr. 19, 2009).

250. HUNTER ET AL., *supra* note 10, at 1150.

251. For a discussion of the differences in environmental protection, *see* NOWLAN, *supra* note 79, at 50-53.

First, the Madrid Protocol's ban on all discharges of noxious liquid substances, ballast water, and oil except as permitted by MARPOL should apply in the Arctic for the same reasons it does in the Antarctic.[252] Frigid temperatures make oil degrade slowly[253] and environmental conditions shared by both poles make cleanup actions difficult if not ineffective.[254] Next, the Basel Convention's prohibition on the transport of hazardous wastes into the ATS's boundaries[255] would greatly aid the Arctic due to its past and potential future use as a dumping ground by some states.[256] Lastly, like the Antarctic, a special designation for the Arctic should be included so that stricter regulations within other applicable treaties can apply.[257] These rules plus recommendations provided by the Arctic Council, like ACAP,[258] should be followed to the fullest extent possible.

The polluter pays and the precautionary principles should have a particularly strong influence on pollution standards in an Arctic treaty.[259] The polluter pays principle stands for the proposition that the one causing the pollution should pay to clean it up. This principle will prevent unfair cost sharing and encourage compliance. Another well-established international principle, the precautionary principle, would also provide another level of protection. Specifically, the highest level of protection - prevention of release - would be required for any harmful substance regardless of the degree of uncertainty surrounding its impacts. UNCLOS provides some standards, but often only requires the minimum protection as long as it comports with generally accepted international standards.[260] The Arctic's entire ecosystem, however, needs protection from a uniform system of the highest standards.

Finally, an Arctic treaty should take proactive steps by outlining and providing timetables for addressing sources of pollution that cannot be addressed until further research is conducted. For example, land-based pollution, like non-point source pollution and other sources that are difficult to contain, are significant problems that need to be addressed. Without mandatory duties, their complexity could cause states to continuously push aside these concerns.

252. Madrid Protocol, *supra* note 140, annex IV(3)-(4).

253. HUNTER ET AL., *supra* note 10, at 1151.

254. World Wildlife Found., *supra* note 184.

255. Basel Convention, *supra* note 188, art. 4(6).

256. HUNTER ET AL., *supra* note 10, at 1151; NOWLAN, *supra* note 79, at 53.

257. S*ee supra* note 169-70 and accompanying text.

258. ACAP is the Arctic Council Action Plan to Eliminate Pollution of the Arctic and develops recommendations on reducing pollution in the Arctic. ARCTIC PROFILE, *supra* note 24, at 12-13.

259. Rio Declaration, *supra* note 202, principle 15-16.

260. UNCLOS, *supra* note 74, arts. 207-12.

VI. Conclusion

In order to protect the Arctic's communities, valuable resources, and research opportunities, a binding treaty of international scope must be created to enforce conservation, preservation, and sustainability. Climate change and other transboundary harms like pollution have had a substantial impact on the Arctic's environment and its people.[261] Its coastal and indigenous communities face compulsory relocation and destruction of their way of life, while potential benefits such as increased navigation and access to resources open up. The Arctic's abundant resources and sea lanes, however, are bringing new challenges.[262] In addition, the Arctic's current problems from pollution and climate change will only get worse with resource exploitation, increased sea traffic, and warmer temperatures.

The Arctic and Antarctic are the weather stations of the world and, as such, have uniquely valuable ecosystems and resources that create similar needs for protection. The Arctic and Antarctic both provide priceless research, abundant resources, unique ecosystems, and exceptionally sensitive environments. Ironically, however, the Arctic is not protected with a hard law regime like the Antarctic even though these shared attributes were the driving force and rationale for the ATS.

Currently, a soft law regime governs the Arctic in tandem with a blend of domestic law and international treaties.[263] The soft law created by the Arctic Council sets no timelines and has no enforcement measures. Conservation, sustainability, and pollution prevention are left to voluntary compliance. The soft law provides an important first step in creating a regionally focused regime, but it fails to give the requisite protection.[264] Although domestic laws within territorial waters and EEZs, and UNCLOS's general guidance in the high seas, provide some obligatory standards, it is a patchy system that is not tailored to the unique attributes of the Arctic's ecosystem as a whole.

The Antarctic's legal regime, the ATS, provides guidance on protecting such a similarly situated region. Although the Arctic could not be governed like a nature preserve, it has the same needs and goals. The ATS creates a binding hard law regime with timelines, enforcement, and set standards.[265] While the ATS settled contentious sovereignty disputes and shows the feasibility of negotiating an international treaty during tense times, the Madrid Protocol and CCAMLR demonstrate methods for protecting such a unique environment.

261. S*ee supra* notes 4, 13-23 and accompanying text.
262. S*ee supra* notes 6-12 and accompanying text.
263. S*ee supra* notes 74-135 and accompanying text.
264. S*ee supra* notes 164-176 and accompanying text.
265. S*ee supra* notes 136-154 and accompanying text.

In a sense, the Arctic has been left out in the cold and the time has come for the international community to bring its legal regime up to par with the Antarctic's. First, the Arctic needs a hard law regime like the ATS with mandatory duties, enforcement measures, inspection rights, and specific standards. Second, the Arctic can utilize the ATS's approach for issues common to both poles: research goals, sovereignty interests, and environmental protection.[266] Lastly, due to the similarly vulnerable environments in both poles, the justifications for ATS's waste disposal standards, use of special status designations, and application of the ecosystem approach apply with equal force in the Arctic.

Although the Arctic's soft law system is relatively new and the creation of a new treaty may be more cumbersome than other potential options on the table,[267] the sheer importance of the Arctic region to the world's health and the atrocities occurring to its indigenous peoples mandate a thorough and immediate response to protect the Arctic from further harm. Waiting to see if the existing soft law regime will have any effect could take decades and would rely on voluntary goodwill by the rest of the world. Other possible solutions like reliance on domestic laws or a protocol to an existing treaty also prove incomplete.[268] While the crisis in the Arctic requires only a regional focus within an agreement, it is an international problem necessitating international cooperation to resolve. Although the Arctic must be protected, it must also be used by its people and the rest of the world. A binding international treaty is thus required to provide uniform standards for accessing and reaping the benefits of the Arctic in a responsible and sustainable way.

An Arctic treaty combining preservation, conservation, and sustainability principles, and open to all Arctic states, indigenous peoples, and other nations, will provide protection while allowing continued use of the Arctic's resources. Other principles that will aid in a treaty's success include the precautionary principle, the polluter and user pays principle, the EIA mandate, and the ecosystem approach. A treaty should address important areas of concern such as sovereignty rights and jurisdiction, fisheries management, enforcement and dispute resolution, and pollution standards.

The question is not whether we should act, but when and how. The atrocities occurring in the Arctic answer both questions. We must act now or risk the health of the world and we must change the current system from voluntary, soft law to a hard law regime tailored for the Arctic's unique ecosystem and binding on all who wish to use it - the world.

266. NOWLAN, *supra* note 79, at 49.

267. S*ee supra* notes 195-198 and accompanying text. S*ee generally* NOWLAN, *supra* note 79, at 59.

268. S*ee supra* notes 161-176 and accompanying text.

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