

THE POLAR THAW:
An Analysis Of The Impacts Of Climate Change On The Environment And Geopolitics Of The Arctic Polar Region

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Abstract

The issues facing the Arctic region today are of relatively new importance on the agendas of environmentalists, lawyers, and national governments. Global warming is affecting the polar regions at a faster pace than the rest of the world, and is drastically changing the ecosystem and viability of the indigenous groups who depend on the environment of the tundra. The forced adaptation of the natives has led to convictions of human rights and debates over the accountability of the world to affected communities. The retreat of Arctic sea-ice also exposes another area of controversy; the claims to the resources and passageways that are becoming increasingly accessible. The beginnings of an international race to claim sea territory has led to interpretations of the law of the sea. The lack of jurisdiction over a substantial oil reserve in the Arctic Ocean is the core of the debate today, and area of economical value to oil corporations. The changes in the Arctic environment and subsequent effects on the people have implications on global economies, politics, cultures, and ecosystems. Thus, an interdisciplinary approach to future development and regulation of the Arctic is required to meet various interests and to insure regional and global sustainability.

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Preface

The great space-race during from the late 1950's through the 1960's has always been my favorite part of history. It is tremendously intriguing to learn how the nations of the world scrambled to the mysteries of space, to the new frontier beyond the limits of our planet. Eventually, the competitiveness amongst the Soviet Union and the United States augmented into the makings of the Cold War. Today, there is new talk of the Cold War, but in the context of the Arctic. Are we in effect experiencing a modern day ice-race?

It was that exact notion that sparked my interest in the Arctic. I had always imagined the region to be a pristine vast land; an icescape speckled with igloos and polar bears. It seemed so distant and foreign to the rest of the world. Irrelevant to our lives. A place you would only read about in National Geographic or see on the Discovery Channel. So why is the Arctic being compared to a modern-day Cold War? As I began my research, I realized how complex of an issue I had been so ignorant about. From the dramatic toll of climate change to the four million people who have felt its impact, I began to see the importance of the Arctic from a global perspective. Even more intriguing, however, is how the effects of global warming increase the accessibility of fossil fuels under the Arctic sea basin. It seems as if the Arctic presents both possibilities and consequences for our future.

The following report is an analysis of both the environmental and geopolitical issues surrounding the Arctic. It is neither an attempt to advance specific political agendas or the views of any of the contributing experts. The report and research were completed in collaboration with the School for International Training in Geneva, Switzerland during the spring of 2008.

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This project would not have been possible without the help of many individuals who have given their time to my work. Their knowledge, advice, and perspectives are incomparable to the endless stacks of published material available on this subject. I would like to thank each of them for taking the time to meet and speak with me, for recommending useful references, and most of all, for taking interest in my work.

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I would like to thank Johannes Forster, with the International Union for the Conservation of Nature, for meeting with me during my early stages of research. Your patience with teaching me about an area I had yet to know much about was truly appreciated. Thank you for the time you took to listen to my thoughts and my ideas for this project.

I would like to thank Stephen Humphreys, from the International Council on Human Rights Policy, for speaking with me and opening my eyes to the connection between the environment and human rights. Your expert advice on international human rights law was very helpful in understanding the circumstances of the Arctic. Thank you for the time you spending working to include the human dimension in the discussion of climate change.

I would like to thank Gonzalo Oviedo, at the International Union for the Conservation of Nature, for taking the time to meet with me and introducing me to social policy for climate change. The expertise you provided on indigenous groups and international law motivated me to devote part of my report to these issues. Thank you for the additional resources and references that you also provide me with.

I would like to thank Carroll Muffett, with Greenpeace U.S.A., for taking time out of your conference in Geneva to meet with me. The views you provided from an environmental organization was essential to my analysis of the different actors involved with the Arctic. Thank you for listening to my thoughts and contributing your opinions.

I would like to thank Dr. Eduard Sarukhanian, the Special Advisor to the Secretariat-General on the International Polar Year 2007-2008. Your dedication to the Arctic and expertise on both the scientific and geopolitical issues are truly admiring, and were very valuable for my research. I appreciate the multiple times you met and corresponded with me, and for all of the documents you provided me with. The enormous interest you took in work was very encouraging for my project, and is very encouraging for the future.

Finally I would like to thank my advisor Adrian Herrera for your help during the entirety of the development, research, and writing process. Mr. Herrera works for Arctic Power in Washington D.C. and spent countless hours corresponding with me through emails and telephone calls. He always welcomed my comments and provided useful case-studies to help me in my research. His experience with the Arctic people and politics was valuable in helping me present the reality of the situation. Thank you for all of the information, references, documents, and advice that you have provided over the past month. Your willingness to correspond with me and edit my report is truly appreciated, I could not have completed with project without your help.

Thank you to everyone else who has helped me along the way. There are numerous others who have sent me documents, references, and ideas which were all useful throughout the completion of this project.

Thank you.

Introduction: The Arctic Environment, People, and Resources

Immediately before embarking on a journey to the North Pole in 1905, explorer Robert Edwin Peary reminded the world that such an expedition would “open up 3,000,000 miles of absolutely unknown regions,” and that “the race is both sentimental and moral, and if we win we will be victorious in the greatest contest ever engaged in by nation wherein there was no jealousy.” Little did he know that the world would still be in this “race” to the desolate Arctic a century later. Peary’s expedition successfully reached the North Pole in 1909, but not without encountering the region’s extreme temperatures, desolate terrain, and indigenous inhabitants¹. The Arctic region encompasses a vast area of land, sea, and ice surrounding the North Pole above 66°N latitude, including the Arctic Ocean and north coasts of Russia, Alaska, Canada, Greenland, Norway, Sweden, Finland and Iceland. With generally average temperatures near or below freezing, areas with year-round ice cover at sea, and treeless tundra on land, the Arctic ecosystem has developed unique flora and fauna that have adapted to extreme conditions².

The Arctic is most notable in the last decade as climate change affects the icecap’s existence. In the last thirty years, sea ice has decreased by 15-20%, an area larger than the combination of Norway, Sweden and Denmark. Some regions have experienced a 7°F rise in temperature, a figure that is increasing at twice the rate from the

¹ “Robert Peary (1856-1920).” *All Things Arctic*. 1998. 2 April 2008
<<http://www.allthingsarctic.com/exploration/peary.aspx>>

² Hassol, Susan Joy. *Impacts of a Warming Arctic*. Cambridge, United Kingdom: The Press Syndicate of The University of Cambridge, 2004: p5.

rest of the world³. Climate change affects the Arctic faster than most regions because more of the ocean is exposed as ice melts, and water absorbs more heat from the sun than ice, thus heating the region at a faster rate. These changes in landscape and seascape have produced changes in the wildlife and vegetation in the tundra. As climate warms, native species have to adapt to new conditions in weather and soil, which alter growing seasons and migration patterns. Habitats for species not native to the Arctic move northward as climate becomes more suitable to a greater variety of species. The effects of climate change on the Arctic are not only threatening to the region itself, but also to ecosystems around the world⁴. The abnormally fast increase in temperature also accelerates global warming in other regions, through atmospheric and oceanic warming. Crops cycles and water supplies are endangered in areas such as Sub-Saharan Africa and the Middle East⁵. Sea levels rise and engulf small island states, especially the Pacific Ocean, such as the island of Tuvalu⁶. These changes not only effect the physical environment, but also the people who depend on the land and resources for survival. The reality of climate change however goes beyond environmental conservation and sustainability, evolving into a case for human rights and security.

There are over fifty indigenous tribes that live in the Arctic polar region, including the Inuit and Yup'ik, who live largely near on the coast of Arctic states⁷. The

³ Abate, Randall S. "Climate Change, The United States, and the Impacts of Arctic Melting: A Case Study in the Need for Enforceable International Environmental Human Rights." Stanford Journal of International Law. 43 A Stan. J. Int'l L. 3 (2007).

⁴ Förster, Johannes. International Union for the Conservation of Nature. Personal Interview. 2 April 2008.

⁵ Oviedo, Gonzalo. International Union for the Conservation of Nature. Personal Interview. 14 April 2008.

⁶ Paradis en sursis: Tuvalu, les nouveaux réfugiés. Morad Ait-Habbouche et Hervé Corbière. Festival du Film et Forum International Sur les Droits Humains. 11 Mars 2008.

⁷ Fjellheim, Rune S. and John B. Henriksen. "Oil and Gas Exploitation on Arctic Indigenous Peoples' Territories." Journal of Indigenous Peoples Rights. No. 4 (2006): 9-12.

native peoples have always depended on the land and sea for its resources, such as the caribou, whales, and polar bears. Their living settlements, hunting patterns, and cultural traditions have all evolved and adjusted to the extreme temperatures of the Arctic tundra. Now, however, the warming temperatures have drastically changed their way of life. Their living spaces are affected because of the melting ice, as well as their accessibility to resources because of changing migration patterns. The issues with the indigenous tribes have now become question of human rights, and the accountability of developed countries and their respective greenhouse gas emissions. This debate is especially difficult in the Arctic, however, because as both natural and anthropogenic causes of climate change reduce the icecap, accessibility to petroleum resources increases. Scientific evidence from scientists and researchers reveal a vast reserve of oil beneath the Arctic ice⁸. Aside from the extractive resources, the Arctic also has mining, forestry, and fishery industries, which are all important and essential to the economies of the Arctic states and their integration into the international economy⁹. As sea ice melts and untapped resources become available however, more states push for a share of the natural resources and exert power over the area. Since the development of the Arctic and its resources is a relatively new prospect, there are few international laws that define states' rights respective to the territory and resources, especially immediately surrounding the North Pole (the areas outside of the exclusive economic zones (EEZ) of Arctic states)¹⁰. Economic rights of the indigenous population and their respective claims to the land are

⁸ Estimations made by USGS reveal that the Laptev Sea Shelf Province (Russia) holds undiscovered reserves of petroleum resources: 9,300 million barrels of oil, 3,069 million barrels of crude oil, 32,252 billion cubic feet of natural gas, and 861 million barrels of natural gas liquids (Klett).

⁹ Fjellheim, Rune S. and John B. Henriksen. "Oil and Gas Exploitation on Arctic Indigenous Peoples' Territories." *Journal of Indigenous Peoples Rights*, No. 4 (2006): 9-12.

¹⁰ Sarukhanian, Dr. Eduard. World Meteorological Organization. Personal Interview. 15 April 2008.

also issues that are intermingled in the debate of Arctic development. As new resources become more readily available, waterways and routes also open and increase with the melting ice, another aspect that requires the presence of international law.

The Northwest Passage and Northern Sea Route are the two most prominent shipping waterways that are being affected by increasing temperatures and melting ice. These new routes will increase vessels transportation over both North America and Eurasia, and will have impacts on international trade and shipping conventions¹¹. The obstacle here is maritime and international sea law. Several Arctic states have already claimed rights to areas in the Arctic Ocean, but UNCLOS guarantees shipping movement rights within the high seas¹². Thus, parts of the emerging sea routes are under no international jurisdiction and could potentially represent areas of tension between using states the waterways to access resources. Tensions will only augment as states assert unilateral power over the Arctic Sea as new opportunities for sea routes and resource exploitation emerge.

The current situation with the Arctic is a complex issue; an issue which, in fact, demonstrates how climate change can have both negative and positive effects on global economy and environment. It incorporates environmental, ethical, humanitarian, and geopolitical issues, which all intermingle and simultaneously affect one another. Thus, it is difficult to analyze one aspect without considering the rest. This report takes an

¹¹ Borgerson, Scott G. "Arctic Meltdown: The Economic and Security Implications of Global Warming." *Foreign Affairs*. March/April 2008. Vol. 87, No. 2.

¹² United Nations Convention on the Law of the Sea. 10 Dec 1982.
Part VII, Article 90: Right of Navigation: *Every state, whether coastal or land-locked, has the right to sail ships flying its flag on the high seas.*

interdisciplinary approach at analyzing the core concepts and debates that encircle the Arctic region, taking into account past, present, and future outcomes. It will demonstrate the need for an appropriate balance between the environmental movement and its approach to global warming, and the potential economic gains and development rights of corporate interests. The following analysis is neither an attempt to advance environmental preservation or industrial development, but rather to present the reality of the situation and analyze the current debate.

Environmental Changes: Arctic Fauna, Flora, and Global Effects

The current situation and threat to the Arctic begins with the environment. As global warming increasingly affects various locations around the world, the Arctic is especially at risk because of its polar location, an area which receives the sun's rays at the greatest angle. Not only are temperatures increasing at double the rate of the rest of the world, the significance of the Arctic on the global environment increases the pace of global warming elsewhere. The increase in temperature has affected the extent and thickness of the Arctic icecap, but has caused changes in the entire tundra ecosystem, in the vegetation, soil, marine and terrestrial wildlife¹³. All of these environmental affects will prove to have social, political, economic, and cultural implications in future years.

Polar Change

"We're probably 30 years ahead of schedule in terms of the loss of the Arctic sea ice," said Mark Serreze, a senior scientist at the National Snow and Ice Data Center (NSIDC) in Boulder, Colorado¹⁴. Understanding the significance of the Arctic's polar location is crucial in analyzing the abnormally rapid effects of climate change in the region. The *ice-albedo affect* is primarily the cause of such profound changes in temperature. As sea and terrestrial ice melt, more sea-water and dark land are exposed to the sun's radiation. Water and land have lower reflectivity rates (albedo) than ice, thus, more material becomes available to trap and release thermal heat into the atmosphere. The Arctic's thin atmosphere also makes it more susceptible to direct transfer of heat

¹³ Hassol, Susan Joy. Impacts of a Warming Arctic. Cambridge, United Kingdom: The Press Syndicate of The University of Cambridge, 2004, p 2-20.

¹⁴ Roach, John. "Arctic Melt Open Northwest Passage." National Geographic News. 17 Sept. 2007. National Geographic. 9 April 2008 <<http://news.nationalgeographic.com/news/2007/09/070917-northwest-passage.html>>

energy to greenhouse gases¹⁵. Such characteristics of the Arctic have helped to increase average annual temperatures by 7°F, which is expected to reach an 18°F increase by 2100¹⁶. Summer sea-ice has already retreated 15-30% in the last thirty years, leading some people to believe that the Arctic could have ice-free summers by the end of the century¹⁷. Where is all this melting ice going? Into the oceans, increasing the sea level and engulfing coast lines in places such as small islands in Pacific and the Maldives off mainland India. Warmer waters in the Arctic could also affect oceanic and atmospheric circulation in the rest of the world, inevitably having an effect on wildlife and vegetation populations, and increasing the pace of global warming¹⁸.

Changes in Arctic Fauna

There is already scientific evidence of changes in the migration patterns of native Arctic marine and terrestrial wildlife. As climate becomes warmer, foreign species of wildlife migrate northward and invade the niches of native animals. Changes in weather patterns affect food availability and breeding patterns, which forces animals to migrate to different areas and adapt to new food and shelter resources¹⁹. The Sami communities in Finland, Norway and Sweden, for example, depend on the native population of reindeer, which primarily survive on the lichen vegetation. In some places, abnormally wet winter

¹⁵ Hassol, Susan Joy. Impacts of a Warming Arctic. Cambridge, United Kingdom: The Press Syndicate of The University of Cambridge, 2004, p 20.

¹⁶ "Climate Change and Arctic Impacts." 15 Feb. 2005. The Center for International Environmental Law. 9 April 2008 <http://www.ciel.org/Climate/Climate_Arctic.html>

¹⁷ "Fact Sheet 1: What is Happening to the Arctic Climate?" A Different Pattern In the Arctic Than the Rest of the World. 30 Dec. 2004. Center for International Climate and Environmental Research. 10 April 2008 <http://www.cicero.uio.no/fulltext/index_e.aspx?id=3251>

¹⁸ Paradis en sursis: Tuvalu, les nouveaux réfugiés. Morad Aït-Habbouche et Hervé Corbière. Festival du Film et Forum International Sur les Droits Humains. 11 Mars 2008.

¹⁹ Förster, Johannes. International Union for the Conservation of Nature. Personal Interview. 2 April 2008.

seasons freeze the lichen into the ground, leaving it inaccessible to the reindeer populations²⁰:

“It used to be that there would be proper freezing which would dry up the lichen and the snow would fall on top. There would be rain that would form the bottom, which would then freeze properly. Now it rains, and the bottom freezes wet, and this is bad for the reindeers. It ruins the lichen. Ice is everywhere and the reindeer cannot get through. This has meant death to a number of reindeers because they cannot get to the lichen.”

(Niila Nikodemus, 86, oldest reindeer herder in Purnumukka, Finland, 2002)²¹

Sami communities have suffered from the decline in reindeer populations, and are forced to provide artificial food supplements to the reindeer²². Fishing communities in the Aleutian Islands of Alaska and in Nunavut Canada (amongst many others) have been adapting new fishing strategies, relocating fishing areas, and increasing reliance on market-bought products²³. Changes in migration, breeding, and hunting patterns of Arctic wildlife will continue with the warming climate and simultaneous changes in vegetation.

Changes in Arctic Flora

The northward migration of fauna is undoubtedly accompanied by the migration of flora towards warmer temperatures. The tree-line in Alaska is moving northward bringing foreign insects into the Arctic tundra, insects which are now able to breed twice

²⁰ Henriksen, John B. “Report on Indigenous and Local Communities Highly Vulnerable to Climate Change *Inter Alia* of the Arctic, Small Island States and High Altitudes, With a Focus on Causes and Solutions.” Convention on Biological Diversity. UNEP. 31 July 2007.

²¹ Hassol, Susan Joy. Impacts of a Warming Arctic. Cambridge, United Kingdom: The Press Syndicate of The University of Cambridge, 2004, p 96.

²² The Swedish government has spent \$5 million dollars (USD) in emergency funding towards the purchase of fodder, an artificial food supply for the reindeer population (Henriksen).

²³ Henriksen, John B. “Report on Indigenous and Local Communities Highly Vulnerable to Climate Change *Inter Alia* of the Arctic, Small Island States and High Altitudes, With a Focus on Causes and Solutions.” Convention on Biological Diversity. UNEP. 31 July 2007.

as fast because of the warmer temperatures²⁴. Insect infestations, such as the Spruce Bark Beetle infestation in the Kenai Peninsula, leave forests more susceptible to forest fires; there are currently 200,000 Alaskans who are at risk from newly developed forest fire threats²⁵. The northern migrating tree-line could invade species of Arctic lichens and mosses, important food sources for Arctic wildlife. The melting permafrost and subsequent changes in soil composition will alter the grazing habits of animals and change the food chain of the tundra²⁶.

Global Effects

While it is certainly necessary to understand the impacts of climate change on the local region of the Arctic, is imperative that the environmental changes be analyzed in a global context as polar climate change will continue to have effects on global ecosystems, economies, politics, and cultures. Because the situation in the Arctic is a relatively new global prospect, and has generally only received attention within the region, the issue is not of high priority on the political agendas of today's global community. Arctic issues have been more often considered at national levels, but few policies have been effective in counteracting the effects of climate change internationally. The environmental and consequent social changes in the Arctic are often too distant and foreign to the rest of the world. Mitigation strategies need to be implemented to develop resources more responsibly, but in some countries, these priorities are not even on the agenda. States such as Russia do not have the technology or social structure to facilitate mitigation, and

²⁴ Hassol, Susan Joy. Impacts of a Warming Arctic. Cambridge, United Kingdom: The Press Syndicate of The University of Cambridge, 2004, p 54-55.

²⁵ "Climate Change and Arctic Impacts." 15 Feb. 2005. The Center for International Environmental Law. 9 April 2008 <http://www.ciel.org/Climate/Climate_Arctic.html>

²⁶ Herrera, Adrian. Arctic Power. Telephone Interview. 23 April 2008.

are incapable of complying with international measure to curb carbon emissions²⁷. It is not that these states do not acknowledge global warming or that mitigation should be promoted. It is rather that the economy and needs of its national citizens are the immediate interest of the state. It is imperative that states are aware of the situation and future implications, and realize that it is in their immediate interest to invest in mitigation strategies and cooperate with international actors.

Ineffectiveness of International Environment Law

The problem with enforcing global environmentally sustainable policies towards anthropogenic causes of global warming is that greenhouse gases are emitted through the earth's common goods that are under no national or international jurisdiction. The high seas and atmosphere are the two common goods that complicate and paralyze environmental policy for the Arctic. Pollutants and emissions are transferred across national boundaries through the high seas and atmosphere, areas that are not under the direct sovereignty of any nation states²⁸. International law does limit a state sovereignty to activities that may have an effect of the world environment, but it is difficult to assess what activities should be deemed "harmful," to what extent a nation is being "harmed," and what sources of such "harms" come from. This is precisely why there are no consequences for countries that emit enormous amounts of greenhouse gases and why prosecuting states in violation of environmental law is ineffective. It is far too optimistic to think that every nation would sign into international law that allows them to be prosecuted for the emissions of development, considering the number of countries that are just starting to industrialize. Tying consequences, trial-law, or the concept of

²⁷ Herrera, Adrian. Arctic Power. Telephone Interview. 23 April 2008.

²⁸ Oviedo, Gonzalo. International Union for the Conservation of Nature. Personal Interview. 14 April 2008.

“violations” to environmental responsibility does not encourage sustainable industrial development and reform. These methods are concerned with short-term repercussions. It is already a fact that the developed world and emits 70% of global greenhouse gases²⁹; why focus on penalizing what has already happened and is currently inevitable, and not funnel all the attention, energy, money, and research to the future, which is what will ultimately sustain humankind? Rather, international conventions should aim at promoting scientific dialogue amongst nations to foster sustainable development, to both assess the economic needs of nations and maintaining an environmental conscience

Political Agendas

The diverging interests between environmentalists, state governments, indigenous peoples, and national governments represent the problem of “legalizing” environmental responsibility in issues that affect the Arctic. To different interests, there are different interpretations on how the Arctic should be developed or preserved. Evidence that climate change is caused by both anthropogenic and natural factors subsequently polarizes the debate about present and future policy. Environmentalists work to lock up the Arctic National Wildlife Refuge (ANWR) and the outer continental shelf (OCS) while disregarding the reality of extractive industries and global needs³⁰. There are the national governments also, who hold substantial power to run political agendas in ways that often support narrow interests. Russia under President Putin is resource-oriented and sees substantial valuable in exploiting the untapped resources of the Arctic. In 2007, the Russian flag is the first to be placed on the North Pole sea floor, expressing intent to lay

²⁹ “Rich Nations Must Honour Climate Change Pledge: Developing Countries.” Agence France-Presse. 24 Sept. 2007. 21 April 2008

<http://afp.google.com/article/ALeqM5hmEb_7UPNl8zmb_rSquPha8tbBVw>

³⁰ Herrera, Adrian. Arctic Power. Telephone Interview. 23 April 2008.

claim to a wedge of the sea floor³¹. The United States, however, has few policies regarding the Arctic due to national gridlock between the environmental movement and states rights to develop their land and resources; the debate to authorize the construction of the Alaskan Natural Gas Pipeline has been under debate for 25 years³². While politicians continue to debate over policy amidst the battles between interest groups, the Arctic ice undoubtedly continues to retreat. Indigenous people of the area are forced to adjust to dramatic changes, and the global ecosystem is being affected in ways that will cause economic and political dilemmas.

³¹ Reihing, Alexandra. "Russia's Arctic Race." Policy Innovations. 17 August 2007. Carnegie Council. 14 April 2008 <<http://www.policyinnovations.org/ideas/briefings/data/russia>>

³² Herrera, Adrian. Arctic Power. Telephone Interview. 23 April 2008.

Arctic People: Indigenous Groups, Human Rights, and International Law

The International Polar Year (IPY) is a global effort to promote awareness, research, and cooperation on issues involving the polar regions of Antarctica and the Arctic. The 2007-2008 IPY is the third collaboration of its kind, and is unique in that it is the first to include a human dimension theme. Studies are being conducted on the socio-economic impacts of climate change on the indigenous people of the Arctic and their integration into Arctic research and policy³³. The notion that IPY is now taking into account a human dimension suggests the profound impacts of climate change on humanity, and the subsequent need for humanitarian intervention. There are over fifty indigenous groups that live in the Arctic Circle, which makes up 30% (four million people) of the Arctic's population³⁴. The natives of the Arctic live and depend directly on the land and its resources, and are connected to the weather patterns and variability of the Arctic tundra. Thus, the conditions of the environment define the well-being of the people, both physically and culturally. The indigenous Arctic tribes have lived on the land for 40,000 years and have always adjusted to extreme climate variance³⁵, which they are experiencing now with the current phase of global warming.

International diplomatic bodies have taken greater note of the affect of global warming on the indigenous people of the Arctic Circle, both from scientific research and indigenous knowledge. Regardless of the debates over the causes and severity of global

³³ ICSU/WMO Joint Committee for IPY 2007-2008. "The Scope of Science for the International Polar Year 2007-2008." Geneva, Switzerland: World Meteorological Organization, 2007.

³⁴ "Indigenous Arctic People." *All Things Arctic*. 1998. 2 April 2008
<<http://www.allthingsarctic.com/exploration/peary.aspx>>

³⁵ Herrera, Adrian. Arctic Power. Telephone Interviews. 8 April/23 April 2008.

warming, the people of the Arctic are experiencing a rapid change in lifestyle, and several tribes have experienced difficulties in adapting to the transformation: “The weather has changed to worse and to us it is a bad thing. It affects mobility at work” (Arkady Khodzinsky, Lovozero, Russia).³⁶ Our global society needs to accept its humanitarian responsibility to the indigenous people, as future population displacements will affect regional economies, societies, and cultures. Displacements will come from environmental conditions and the need to relocate due to ice melt and change in sustenance resources. Politics will also displace people, as global warming encourages the environmental movement to pressure governments to lock up Arctic areas, and thus preventing tribes from using the land³⁷. The global approach to climate change should not be to separate humanity from environment. Appropriate methods of mitigation- attempts to slow the process of global climate change by lowering the level of greenhouse gases in the atmosphere- and adaptation- developing ways to protect people and places by reducing their vulnerability to climate impacts- would consider the responsible way to develop, not to stop development all together³⁸.

Environmental Conditions: Adaptation to Climate Change

The retreating and melting ice is one of the greatest changes in the environment that has affected the indigenous people of the Arctic. Natural ice barriers are diminishing, which protect villages from dangerous wind, waves, and storms. As a result, coastal regions experience a high level of erosion and force communities to

³⁶ Hassol, Susan Joy. Impacts of a Warming Arctic. Cambridge, United Kingdom: The Press Syndicate of The University of Cambridge, 2004, p 97.

³⁷ Hassol, Susan Joy. Impacts of a Warming Arctic. Cambridge, United Kingdom: The Press Syndicate of The University of Cambridge, 2004.

³⁸ “Limiting Future Climate Change: Mitigation.” Climate Change Information Resources. 29 March 2005. Center for International Earth Science Information Network. 15 April 2008 <http://ccir.ciesin.columbia.edu/nyc/ccir-ny_q4.html>

relocate to different areas. In Shishmaref, Alaska, an Inuit village by the Chukchi Sea relocated seven homes because of coastal erosion, and has already lost three homes to the sea. The airport runway and fuel tank farm are nearly met by the rising water and the drinking water supply is being contaminated by sea water, all effects that pose substantial socio-economic threats. In other communities, thawing permafrost destabilizes existing infrastructure, such as houses, roads, airports, and pipelines³⁹. The Alaska Department of Natural Resources has reduced the number of allowable travel days in the tundra by 50% over the last thirty years due to weak terrain, which affects the oil and gas industries and their capacities to transport goods and access resources⁴⁰.

Hunting Traditions

Traditional hunting methods of the indigenous people have also been affected by the warming climate. The migration patterns of important wildlife, such as polar bears, walrus, and seals, have changed and forced indigenous people to relocate villages and search for alternative methods of sustenance⁴¹. The migration of wildlife has occurred because of weak ice conditions for hunting, changes in vegetation, and inaccessibility to food sources. Because the indigenous people of the Arctic are usually subsistence-based, natives are obliged to follow the changing migration of the wildlife. Hunters on the western shore of Alaska need to travel an extra 200 miles from their villages to hunt walrus, and are now required to use boats for hunting because the ice is less reliable⁴².

³⁹ "Climate Change and Arctic Impacts." 15 Feb. 2005. The Center for International Environmental Law. 9 April 2008 <http://www.ciel.org/Climate/Climate_Arctic.html>

⁴⁰ Hassol, Susan Joy. Impacts of a Warming Arctic. Cambridge, United Kingdom: The Press Syndicate of The University of Cambridge, 2004, p 86.

⁴¹ The village of Shishmaref, Alaska may have to be evacuated because of dangerous conditions caused by permafrost melt, coastal erosion, and high storm surges (Hassol, p 80).

⁴² Henriksen, John B. "Report on Indigenous and Local Communities Highly Vulnerable to Climate Change *Inter Alia* of the Arctic, Small Island States and High Altitudes, With a Focus on Causes and Solutions." Convention on Biological Diversity. UNEP. 31 July 2007.

Changes in hunting traditions affect the economies of indigenous people, as they resort to more market-bought products and have to develop new methods for hunting. Many communities have weak economies with no tax base, which therefore makes it difficult for the indigenous to transfer dependency to purchasing resources.

Indigenous Knowledge

Indigenous knowledge is crucial in understanding the current affects of climate change on the Arctic ecosystem and the native population. Traditions and history are passed from generation to generation through songs and stories, and recount past fluctuations in climate change: “Right now the weather is unpredictable. In the older days, the elders used to predict the weather and they were always right, but right now, when they try to predict the weather, it’s always something different” (Z. Aqqiaruq, Igloolik, Canada)⁴³. Natives clearly notice the difference between the nature of past climate fluctuations and current trends, noting that such occurrences are not evident in the stories of the elders. Thus, some of the strongest evidence of climate change comes from indigenous knowledge, as they have lived within and observed the climate for thousands of years. The information is beneficial to scientists and administrators who study the region and assess the socio-economic impacts.

Mitigation and Adaptation

Considering that the indigenous population hold the most valuable knowledge, and are directly being affected by global warming, it is imperative that local communities be integrated into the mitigation and adaptation processes instigated by the international

⁴³ Hassol, Susan Joy. Impacts of a Warming Arctic. Cambridge, United Kingdom: The Press Syndicate of The University of Cambridge, 2004, p 96

community in addressing the Arctic situation. The Arctic Circle includes numerous states and indigenous groups that have varied cultural and economic interests. Adaptation processes at regional levels need to empower natives in regional specific development projects to encourage local participation and increased awareness. National governments, specifically of the United States, Canada and Russia, need to allot greater political power to the indigenous people of these nations, especially as extractive industries develop in indigenous territories. Both the ICC and Arctic Council (regional intergovernmental organizations) have been successful in integrating natives into political dialogue, but decisions from such organization need to be considered at national levels⁴⁴. This could be solved by allotting political seats or representation for the ICC and Arctic Council within federal governments, or creating forums of discussion between Arctic regional actors and national politicians. Multi-annual reports of current situations, needs, and future prospects should be made available to national politicians, so that awareness is increased in the areas where policy is mitigated.

Human Rights and International Law

Recently, human rights have been linked to situations in the Arctic where people's homes, food supplies, and cultures have been altered by the reduction in sea ice. There have been attempts to universalize environmental responsibility and accountability with proceedings such as the Stockholm Declaration⁴⁵ and Rio Declaration⁴⁶, but such

⁴⁴ Humphreys, Stephen. International Council on Human Rights Policy. Personal Interview. 10 April 2008.

⁴⁵ Stockholm Declaration: 1972 UNEP conference that stated "the applicability of standards which are valid for the most advanced countries but which may be inappropriate and of unwarranted social cost for the developing countries." (CISDL)

⁴⁶ Rio Declaration: 1992 UNEP conference agreed that "environmental standards, management objectives and priorities should reflect the environment and development context to which they apply" and regulations "may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries." (CISDL)

efforts do not *legally formalize* responsibility and accountability, and thus, do not provide consequences for states in violation. Prosecuting states on the basis of human rights violations by environmental degradation is also a weak method to reducing emissions and combating climate change because states vary in their levels of contribution to greenhouse gases and capacity to develop sustainably. For example, in December of 2005, the ICC (with the support of CIEL and EarthJustice) filed a petition with the Inter-American Commission on Human Rights claiming that the United States was in violation of the 1948 *American Declaration of the Rights and Duties of Man*. The petition claimed that the U.S. took no measures to reduce emissions and the subsequent effects of climate change, and that the lack of such actions violated six articles of the Declaration, including the right to life and the preservation of health and well-being⁴⁷. The petition was rejected by the Commission in November of 2006 on the basis that “the petition contained insufficient information for it to determine whether the alleged facts amounted to a violation of rights protected by the American Declaration” (Arctic melting and human rights packet). There was not enough evidence to hold the entire United States accountable to the effects of climate change.

As environmental law may raise awareness of the issues that are affecting the Arctic and help curtail the effect of climate change on the indigenous people, it is more important that immediate concerns of the changing environment are addressed. The world is far from a universal consensus regarding human rights and the environment. International legal contracts, such as the Kyoto Protocol, are voluntarily signed by

⁴⁷ “Climate Change and Arctic Impacts.” 15 Feb. 2005. The Center for International Environmental Law. 9 April 2008 <http://www.ciel.org/Climate/Climate_Arctic.html>

member states⁴⁸. It is not enough that just a few states acknowledge their humanitarian responsibility towards the rest of the world. Thus, indigenous groups need to cooperate with local and national governments so that they are able to receive support in the adaptation process. Change needs to happen at the national level first before it is ever accepted by the international society as a whole. In the Arctic, indigenous groups can empower themselves through forums that allow cooperation amongst various groups. The adaptation process of building new homes, changing hunting habits, and adjusting to new weather and food sources will all be experienced by people at local levels, not national levels. However, support and preventive measure needs to come from regional and national governments. By empowering indigenous tribes, states will become more aware of their responsibility toward facilitating climate change adaptation and more aware of their responsibility towards global warming.

⁴⁸ Oviedo, Gonzalo. International Union for the Conservation of Nature. Personal Interview. 14 April 2008.

New Resources and Expanding Passageways: Petroleum Reserves, Law of the Sea, and Arctic Circle Politics

It seems that the 21st century is experiencing a new space-race; a race to claim the shrinking ice of the Arctic Ocean, or perhaps what is projected to lie beneath the seafloor. Scientific evidence reveals that 25% of the world's oil reserves lie beneath the Arctic Ocean⁴⁹. The irony, however, is that the reserve is outside of national boundaries, and is under international territory⁵⁰. How is such a vast and important resource and territory divided amongst international actors? This is the question that the international community is asking, a question that is becoming increasingly important as the Arctic ice continues to retreat and open opportunities for exploitation. Until now, the Arctic has been frozen solid and inaccessible to man, aside from research and exploration projects. Now, however, it is the new frontier for the pursuits of oil companies and national governments, an area which holds large fortunes, but that is also defined to be the *common good* of mankind.

UNCLOS

Before the United Nations Convention on Law of the Sea (UNCLOS), the Arctic Ocean was a strategic region because of the Cold War, when states used the waters for military passageways, especially for submarine transportation⁵¹. Several discourses governed the jurisdiction of the area, including the Arctic Lake Theory and the Sector Theory. The Arctic Lake Theory suggested that the waters outside the national

⁴⁹ Dmitrievskii A.N. and Belonin M.D. "The Perspectives of Industrial Exploitation of Oil and Gas Resources at the Russian Shelf." *Nature (Priroda)*. No 9, Moscow, 2004, pp. 3-10.

⁵⁰ Sarukhanian, Dr. Eduard. World Meteorological Organization. Personal Interview. 15 April 2008.

⁵¹ Borgerson, Scott G. "Arctic Meltdown: The Economic and Security Implications of Global Warming." *Foreign Affairs*. March/April 2008. Vol. 87, No. 2.

boundaries belong to the polar states, and that they would share collective sovereignty over the area. The Sector Theory partitioned the waters directly from the pole to the eastern and western most points of each continental state. Each of these methods attempted to delineate national boundaries through distant waters, because the region was important in context of the current events. After the cold war, new provisions to UNCLOS set boundaries that left the Arctic Ocean out of national jurisdiction, which had never been an issue for the Arctic states until now, with newly emerging prospects of petroleum reserves⁵².

UNCLOS III is the most recent treaty regarding national claims of sea territory, which was signed into effect in 1994. One of the most important provisions is the definition of each state's *exclusive economic zone* (EEZ)⁵³:

UNCLOS Article56

Rights, jurisdiction and duties of the coastal State in the exclusive economic zone

1. In the exclusive economic zone, the coastal State has:

(a) sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds;

Article57

Breadth of the exclusive economic zone

The exclusive economic zone shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.

⁵² Standlea, David M. *Oil, Globalization, and the War for the Arctic Refuge*. Albany, New York: State University of New York, 2006, pp 288

⁵³ United Nations Convention on the Law of the Sea. 10 Dec 1982.

In addition to EEZ's, states have authority over the continental shelf (the natural prolongation of the land territory to the continental margin's outer edge)⁵⁴, if it so happens to extend beyond 200 nautical miles from the continent. Therefore, states are entitled to the exploitation of resources within their EEZ extending through the continental shelf. According to the provisions of UNCLOS III, the Arctic Ocean around the North Pole is outside of the EEZ zones of the five surrounding states, and is thus defined as international high seas. The reality of the current situation lays in the fact that the oil reserves are projected to be beneath the Arctic Basin within the limits of the high seas.

Pursuits of the Arctic Ocean

Problems begin to emerge when an area is both rich in natural resources and available to the entirety of the international community. In 2001, Russia appealed to the United Nations in 2001 proposing a claim to 460,000 square miles of Arctic waters. The appeal was rejected, and recently in August of 2007, the Russians made history by being the first to plant their flag on the Arctic Basin, the area not under any national jurisdiction. The Canadians responded by developing naval patrol vessels, deep-water ports, and cold-weather training sites. Denmark and Norway (in control of Greenland and the Svalbard Islands), also display intent to control their own portions of the Arctic Ocean. Oil and gas companies in the United States have already drafted procedures on the development of extractive industries in the region. In effect, the Arctic is being partitioned through a multinational race to claim the territory⁵⁵.

⁵⁴ United Nations Convention on the Law of the Sea. 10 Dec 1982, Article 76

⁵⁵ Borgerson, Scott G. "Arctic Meltdown: The Economic and Security Implications of Global Warming." Foreign Affairs. March/April 2008. Vol. 87, No. 2

The current pursuit to unclaimed Arctic waters has the potential to create unprecedented conflict; environmentally, politically, and economically. Russia, Canada, and the United States pose the greatest threat to the stability of the region if they continue to act unilaterally to pursue resources. The scramble to claim territory can lead into political conflict and have the potential to involve military force. Oil companies that have interests in developing the resources, such as *Arctic Oil and Gas Corporation* and *British Petroleum*, have no legal mechanisms to determine the extraction rights of the region. Thus, the development of hostile situations need to be avoided by realizing that every state in pursuit of the Arctic has similar motives and intentions, and that these similarities can be funneled into a joint effort to develop the region. A collective corporation representing various oil companies and national governments would insure that each party would gain from the resources, without the presence of numerous actors battling over the same area. Such a corporate agreement would serve as the legal framework for an area currently without any jurisdiction.

Future Prospects

Why would the establishment of a multi-national oil organization actually be successful in a world that is already experiencing climate change and disproportional access to resources? The exploitation of the Arctic Ocean represents a new frontier for 21st century development, and era that is experiencing new trends such as globalization, environmental movements, greater awareness of human rights, and improvements in technology for science and research. The Arctic presents an opportunity to engage social and environmental sciences while taking advantage of essential resources. The industries of the past do not incorporate the advanced technology we have today that is able to

develop areas sustainably. The new awareness of human rights and climate change will lead to responsible methods of extraction. There are far too many human rights and environmental advocates and organizations that will prevent such development if it does not incorporate both the human and environmental dimensions⁵⁶. Development of the Arctic presents an opportunity to reform industrial practices in a way that takes preventive measures toward environmental degradation, and remains accountable to the indigenous people around the area. The world cannot stop producing essential resources while there are millions who go without food or electricity everyday, but it is capable of using these resources to insure both present and future sustainability.

Opposing Forces of the Environmental Movement

To counter the forces of the Arctic exploitation, however, the environmental movement has started and will continue to pressure national governments to not authorize any developments in the region⁵⁷. The Antarctic Treaty System accomplished this in 1961, declaring Antarctica as a *scientific preserve* and off-limits to military and economic pursuits⁵⁸. Why did this work for the entirety of Antarctic, when environmentalists are struggling to protect areas just within Alaska? There are no indigenous people in Antarctica, nor does it hold 25% of the world's oil resources⁵⁹. The Arctic holds different social dynamics and different prospects for the future. For example, while environmentalists have set aside millions of acres of land in Alaska, the native

⁵⁶ Oviedo, Gonzalo. International Union for the Conservation of Nature. Personal Interview. 14 April 2008.

⁵⁷ Herrera, Adrian. Arctic Power. Telephone Interviews. 8 April/23 April 2008.

⁵⁸ Muffett, Carroll. Greenpeace USA. Personal Interview. 15 April 2008.

⁵⁹ Dmitrievskii A.N. and Belonin M.D. "The Perspectives of Industrial Exploitation of Oil and Gas Resources at the Russian Shelf." Nature (Priroda). No 9, Moscow, 2004, pp. 3-10.

populations still remain dependent on revenue from oil and gas exploitation⁶⁰ (over 90% of Alaska's state budget comes from petroleum revenues). The environmentalists' battle in the Arctic is in effect, taking native lands and placing them under government control, land that the indigenous people depend on for water, food, and shelter resources.

Environmental concerns are compensated for the rights of the people that have lived there for 40,000 years. National governments have some passed legislation declaring territorial rights of the indigenous people, such as the 1971 Alaskan Native Claims Settlement Act and Greenland's Home Rule Act of 1979. Through these acts, the natives have been able to work with extractive industry companies to benefit from revenues. Thus, indigenous rights and interests stand as a barrier to the complete environmental protection of the Arctic.

The prospect that large oil reserves exist beneath the Arctic Ocean and within the continental shelves Arctic states is also enough to conclude that oil exploitation in this area is inevitable. The world lives and runs on oil and natural gas, and is unrealistic to assume that such a vast reserve will remain untapped. This is not to say that a world in which every global citizen could live comfortably without further pursuits of petroleum is hypothetically ideal, it certainly is. However, such a prospect is not realistic; the world is far from equal distributions of resources and reliance on renewable resources⁶¹. Since the Arctic is extremely vulnerable to the oil pursuits of the companies and governments, it is in the best interest of both indigenous groups, oil companies, and the Arctic ecosystem that different organizations collaborate on the most environmentally sustainable method to develop the Arctic resources.

⁶⁰ Herrera, Adrian. Arctic Power. Telephone Interviews. 8 April/23 April 2008.

⁶¹ Herrera, Adrian. Arctic Power. Telephone Interviews. 8 April/23 April 2008.

Opening Passageways

The Arctic ice, however, has retreated enough in the current state to change the accessibility of the Northwest Passage-across North America-and the Northern Sea Route-across Eurasia. Summer of 2007 was the first time when the Northwest Passage was accessible to vessels: “Record summer melting of sea-ice has made the passage fully navigable”⁶². As strategic waterways open, it is not doubt that Arctic states assert authority over the territory in which they are contained. Canada claims that the Northwest Passage is in Canadian waters:

“Canada says it has full rights over those parts of the Northwest Passage that pass through its territory and that it can bar transit there. But this has been disputed by the US and the European Union. They argue that the new route should be an international strait that any vessel can use.”⁶³

While it is true that parts of newly emerging waterways are within defined sea boundaries of Arctic states, according to UNCLOS Article 17, “Subject to this Convention, ships of all States, whether coastal or land-locked, enjoy the right of innocent passage through the territorial sea.”⁶⁴ It is therefore illegitimate that states claim passageway rights in the Arctic Ocean outside of internal waters; it is an issue of complying with the law as it exists in this situation. Whereas UNCLOS is insufficient in providing a legal framework with emerging prospects of the Arctic Ocean and oil exploration, it is applicable to the changing dynamics of sea routes as they fit within territorial limits.

⁶² “Warming ‘opens Northwest Passage,’” BBC News. 14 September 2007. 12 April 2008
<<http://news.bbc.co.uk/2/hi/americas/6995999.stm>>

⁶³ “Warming ‘opens Northwest Passage,’” BBC News. 14 September 2007. 12 April 2008
<<http://news.bbc.co.uk/2/hi/americas/6995999.stm>>

⁶⁴ United Nations Convention on the Law of the Sea. 10 Dec 1982.

Accessibility through the Northwest Passage and Northern Sea Route will affect the economics of trade and shipping worldwide, as vessels will be able to transport goods faster and cheaper through northern routes. Many ships that normally utilize the Panama Canal to transfer between the Pacific and Atlantic Ocean over the Western Hemisphere will switch to using the Northwest Passage. This has potential to affect the toll revenue from the Panama Canal, and the people that depend on this economy. Similarly, the Northern Sea Route will redirect vessels transferring across Eurasia from the Suez Canal, thus decreasing toll revenue⁶⁵. Waterways in the Arctic will not only be more convenient for ships from northern states, but also cheaper because there are no canal tolls to pay, and the trips will be shorter and therefore less expensive. Such easy accessibility and convenience, however, poses a threat the environment of the Arctic. Increasing the capacity to transport materials and resources also increases chemical pollutants in the area (e.g. oil spills and ship emissions), affecting the wildlife, vegetation, and people of the region. To regulate cargo traffic and insure that utilizing the waterways will not threaten the viability of the region, Arctic states should propose an agreement that would require vessels passing through Arctic water to meet certain environmental standards, set forth by researchers and scientists who can assess the impacts of cargo transportation through the Arctic. The agreement will also require vessels to pay a fee to the state whose territory its passes through. The revenue shall be used to fund research in the Arctic and to help the adaptation process of the indigenous people. Placing a fee and regulations on the utilization of Arctic Ocean is essential amidst the broad implications

⁶⁵ Browne, Anthony. "Melting Ice Starts Rush for Arctic Resources." TimesOnline. 28 January 2006. The Times. 8 April 2008 <www.timesonline.co.uk/tol/news/world/article721377.ece>

set forth by UNCLOS regarding sea transportation⁶⁶. The requirements will help control cargo traffic and assure that transportation will not threaten the environment and the people that depend on it.

Future Predictions

Then again, oil exploitation and commercial shipping through the Arctic Ocean is merely a future possibility. There is still substantial ice coverage over the region, including parts that are inaccessible even with ice-breakers, and the most of the ice-melt is seasonal. There are projections that the Arctic will have ice-free summers by the end of the century, but these projections do not take into account the preventive measures the world is taking, and will continue to take, to help slow global warming⁶⁷. There is not enough evidence to conclude that the earth will continue to warm at the present rate for the next century, or that global warming will not continue to increase. The last one hundred years of observed change is a substantially small portion of the earth's age (around 4.5 billions years), which has indeed experienced cycles of climate change in the pas. Thus, there is a possibility that developing the petroleum resources of the Arctic Ocean will never be feasible, or that the cost of equipment needed to break through the ice for commercial transportation will outweigh the benefits.

⁶⁶ United Nations Convention on the Law of the Sea. 10 Dec 1982.

⁶⁷ Hassol, Susan Joy. Impacts of a Warming Arctic. Cambridge, United Kingdom: The Press Syndicate of The University of Cambridge, 2004, pp 124-125.

Conclusion: The Evolution of the Arctic

“The fact that the Arctic, more than any other populated region of the world, requires the collaboration of so many disciplines and points of view to be understood at all, is a benefit rather than a burden” (Bruce Jackson). It is beyond doubt that the Arctic represents one of today’s multifaceted situation; a circumstance that calls for an interdisciplinary and international approach. The activities of the modern and industrial world have effected the pace of global warming, and the changes are seen in some of the most remote and undeveloped areas of the world. Such occurrences have drawn attention to the Arctic, as sea ice retreats and endanger native plants, wildlife and people. The polar ecosystem is adjusting to the conditions along with the indigenous population, who depend so heavily on the earth and its resources. Their culture is threatened by changes in hunting and forced relocation. Pleas for human rights violation have been made, but have received little success in helping the locals adapt to the new environment. The issue remains a question of global accountability; a struggle to define the line between national sovereignty and humanitarian responsibility. In a world where developing countries strive to industrialize and survive in a globalized society, environmental responsibility does not often make the agenda. The battle between environmental groups and industrial agencies in the Arctic represents such diverging views that the situation becomes the politics of prioritizing long term or short term prospects. The environmental movement holds that development and exploitation of the Arctic is unsustainable for the future, and will continue to add and exacerbate global warming. Corporations and development firms argue on the basis of the inseparability of man and earth; global needs, especially in third world countries, justify the development of resources.

The Arctic does not have to be the modern day battle field, however. Amidst the difficulties and threats posed by climate change, opportunities emerge that give international actors a chance to reconcile on an area so heavily disputed. International law is inadequate in defining authority over the entirety of the Arctic Ocean, but the need to protect both the environment and indigenous people and the need settle between industrial and environmental interests ultimately limit the influence of any one interest on the Arctic. The need to cooperate and develop methods to industrialize sustainably acts as the legal regime which is more or less absent in the polar region. It is the reality of the situation that the world needs to acknowledge. The reality that climate change is occurring and that people lives' are threatened, but that in turn, the viability of people's lives exacerbates climate change. It is evermore crucial that international cooperation is achieved for the Arctic, and that research continues to determine the most appropriate implications for the future. The world continues to affect the fragility of the Arctic environment and the geopolitics of the region but in the end, it is the Arctic that affects our world.

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