

Understanding the Tension Between Arctic Environmental Protection and the Canadian Government's Approach to Offshore Oil and Gas Development

by

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Abstract

The balance between resource development and environmental protection has always been a difficult one. Nowhere is this more true than in the Arctic, a vital ecosystem whose future is at the forefront of climate change. While Canada has committed itself to Ecosystem-Based Management (EBM) as the system through which the state will manage and protect its fragile northern land and seascapes, the extent to which this commitment is upheld by the current federal government is unknown.

This research project will establish that Canada has only developed and incorporated its EBM system, within its framework for offshore oil and gas development, to a minimal extent. Such a baseline will be established through the assessment of relevant Canadian legislation and regulations along the North Pacific Marine Science Organization's (PICES's) typology on EBM. Environmental, political and economic variables at play in the Arctic will also be considered to reveal the Conservative government's active efforts to prepare, as well as facilitate, the future development of resource projects in the North. Accordingly, this research project will shed further light on the inherent tension that lies at the heart of resource development and environmental protection.

Keywords: Arctic; environment; ecosystem-based management; offshore oil and gas; natural resources

*This work is dedicated to my parents, Wendy
and Jim Vermeulen.*

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List of Acronyms

AMAP	Arctic Monitoring and Assessment Programme
AWPPA	Arctic Waters Pollution Prevention Act
CEAA	Canada Environmental Assessment Act
CLCS	Commission on the Limits of the Continental Shelf
COGOA	Canada Oil and Gas Operations Act
DFO	Department of Fisheries and Oceans
ICES	International Council for the Exploration of the Sea
EA	Environmental Assessment
EBM	Ecosystem-Based Management
EEZ	Exclusive Economic Zone
EPP	Environmental Protection Plan
EU	European Union
IM	Integrated Management
IPCC	Intergovernmental Panel on Climate Change
LME	Large Marine Ecosystems
LOMA	Large Ocean Management Area
NEB	National Energy Board
nm	Nautical miles
OAP	Oceans Action Plans
PAME	Protection of the Arctic Marine Environment (Working Group)
PICES	North Pacific Marine Science Organization
UNCLOS	United Nations Convention on the Law of the Sea

Chapter 1.

Introduction

With the victory of Stephen Harper's Conservative Party of Canada in 2006, Canada ended its nearly 13 year run with the Liberal Party of Canada. While the transition of governments is typically associated with the change, evolution or even reversal of policy, how this has unfolded under the Harper government is an interesting story. The tale of the Harper government is one of shifting focus and regulations, notably in the case of the environment. Despite professing concern and commitment to the environment, the Conservative government's supporting actions have left many wanting more and asking questions as to the sincerity of their convictions. The 2011 withdrawal of Canada from the Kyoto Protocol served as the Harper government's most prominent move yet with respect to the environment. It also served to fuel the belief of critics already angry at the government's environmental inaction.

However, despite the state's retreat from the Kyoto Protocol, it continues to profess its investment and engagement on environmental issues. In Canada, nowhere has the issue of the environment been greater or more visible than in the Arctic. The image of Canadian polar bears, adrift on ice floats is inexplicably linked to the climate change debate. With Canada's territories serving as the front lines for climate change, Prime Minister Harper began the practice of annual trips to the region, shortly after coming to power. These trips provided the symbolism behind Canada's reengagement in the North, as well as a reminder to the Canadian public that theirs is an Arctic nation with a serious stake in its future.

As recently as May 15, 2014 the Prime Minister said in a statement that, "Our Government is committed to working closely with Canadians so that together we can provide effective stewardship of Canada's rich natural heritage for present and future

generations” (Radia 2014). With the appointment of the Member of Parliament for Nunavut to the post of Minister of the Environment, Prime Minister Stephen Harper validated the seriousness of environmental considerations to the people of the Arctic and the region as a whole, as the Honourable Leona Aglukkaq took over the post, alongside her role as Minister to the Arctic Council. Through the examination of the Harper government’s action with respect to the Arctic environment, a clear departure can be noted. A departure not just from actions and decision made by the Martin and Chretien governments, but also a departure from the internationally recognized and adopted system for environmental stewardship and management – Ecosystem-Based Management (EBM). Precisely how Canada has equivocated on EBM can be revealed through examination of the ‘effective stewardship’ the Prime Minister claims to be pursuing. This research project will examine Canada’s effectiveness specifically within the oil and gas sector.

Chapter one will begin this examination by establishing that Canadian nationalistic interest and considerations have always affected the state’s approach to the Arctic environment. As the effects of climate change unfold across the North, fundamentally altering a landscape that has remained still and unchanging, the vast natural resource wealth and potential of the region will become increasingly accessible. While Canada has pursued international measures that have helped it to secure the region, namely through the United Nations Convention on the Law of the Sea (UNCLOS), state borders are left to be settled, and resource wealth left to be inherited along with them. In light of such foundational changes to the North, the need for Canada to plan and act has never been greater. Through better understanding the interests and considerations Canada has historically taken with respect to its Arctic, it shall become apparent that Canada’s commitment to the Arctic environment has largely been driven by interest in regional control or the preparation of the region for future resource development. Ultimately, this focus has created a political and legal reality where the competing interests of the state cannot all be accomplished simultaneously. Leaving priorities and direction increasingly to the perspective and priorities of those political actors in charge at the time. In the current case, it is the environment that, while often at the forefront of the discussion in the Arctic, has been sacrificed by the Conservatives in the pursuit of other goals.

1.1. Climate Change

Since 1979, satellite mapping has shown an overall trend of decreasing sea ice in the late summer Arctic (Lasserre 2011, 793). In other words, the region's climate is undergoing a change, whereby seascapes of land-like ice are melting away, exposing channels and passageways that were previously inaccessible. This trend has culminated in six years of record ice melts – beginning in 2006. Put another way, record ice melts have been the Harper government's norm since coming to power. Climate-model projections indicate a continuation of this trend, with the potential for trans-Arctic navigation by mid-century (Smith and Stephenson 2013, E1191). While the impact of climate change is now recognized as being the most intense in the Polar Regions, this knowledge will do little to reverse the trend currently underway there (Griffiths, et al. 2008, 17).

The Harper government's recent muzzling of Canadian scientists has further compounded the negative effects of climate change in the North. In a survey, conducted by the Professional Institute of the Public Service of Canada, hundreds of federal scientists said, "they had been asked to exclude or alter technical information in government documents for non-scientific reasons," and thousands stated that, "they had been prevented from responding to media or the public" (Chung 2013). Through the active and intentional restriction of scientific data, in a region that is annually undergoing historical changes, Canadian public awareness and understanding has been correspondingly restricted. Such restrictions illustrate the ongoing efforts of the Conservative government to prevent conflicting environmental information from clouding Canadians' views of the North. With the Conservative's subsequent emphasis on economic potential, the Harper government has underscored its intent to shift focus away from issues like environmental fragility and protection, and towards economics considerations like development.

The summer shipping season is expected to be 10 days longer by 2020, and 20-30 days longer by 2080 (Prowse, et al. 2009, 276). The impact of this increasing shipping season is the opening of channels long sought to connect Europe and Asia, either through the northeast or northwest passages. In addition to the increased potential

for trans-ocean shipping, natural resource extraction in the Arctic also becomes a possibility as the region is opened by the changing climate. Potential mine or hydrocarbon projects will have shipping requirements in order to deliver their goods to markets, as well as supply them in the first place. Accordingly, such action is also likely to increase sea traffic in the region.

As the Arctic has historically been considered one of the most delicate ecosystems in the world, Canada has asserted and strengthened those measure that have helped to ensure its protection, be it through national or international mechanisms. As a result, over the years Canada has developed a complex and progressive system for understanding its North. The current iteration of that understanding is the Integrated Management (IM) program that was first established in the 2002 Canada's Oceans Strategy (Fisheries and Oceans Canada 2002). IM is a "continuous process through which decision are made for the sustainable use, development and protection of areas and resources. IM acknowledges the interrelationship that exist among different uses and the environments they potentially affect" (Fisheries and Oceans Canada 2002, 36). IM is program based upon three principles: sustainable development, the precautionary approach, and ecosystem-based management. Canada defines EBM as the "management of human activities so that ecosystems, their structure, function and composition are maintained at appropriate temporal and spatial scales" (Fisheries and Oceans Canada 2002, 36).

EBM represents the shift from activity specific, or sector specific management to a more holistic approach (Fisheries and Oceans Canada 2002, 13). As a result, EBM will serve as the system through which this project will analyze and determine Canada's commitment to the Arctic environment. This approach reflects the prominent placement of EBM by the Conservative government into The Statement on Canada's Arctic Foreign Policy (Department of Foreign Affairs, Trade and Development 2010). The Statement pronounces Canada's international efforts to focus on "promoting an ecosystem-based management approach with Arctic neighbours and others" (Department of Foreign Affairs, Trade and Development 2010, 16). As Canada continues to protect, preserve and assert its presence in the Arctic, EBM should be increasingly found as the topic of

discussion and strategy, as Canada, like other nations, grapples with the fallout and effects of climate change.

1.2. Wealth Potential

Just as changes to the region represent danger and challenges ahead, they also represent great opportunity and wealth for those prepared to seize them. Consequently, it is the wealth potential associated with the region that is driving the increasing interest and investment in the area. The sea route between Rotterdam, Netherland and Yokohama, Japan is reduced from 11,200 to 6,500 nautical miles (nm) by shipping through the North; a reduction of 40%. Additionally, the route between Seattle, Washington and Rotterdam, Netherlands could be reduced by 2000 nm as a result of transit through the Northwest Passage. This reduction is nearly 25% shorter than the alternate route through the Panama Canal (Mendez 2010, 530). Both routes offer the opportunity to save days in shipping time, and potentially reduce shipping costs by as much as 20%, taking into account fuel costs, canal fees and other variables that determine freight rates (Mendez 2010, 530). Furthermore, these routes offer even greater savings for the mega-ships whose hulls cannot fit through the Suez and Panama canals, and so are forced to sail around Cape Horn and the Cape of Good Hope (Mendez 2010, 530). While the savings associated with a northern shipping route are often criticized as simplistic, and overlook various pitfalls and costly delays, the potential remains clear. As the Arctic becomes increasingly navigable, these economic calculations seem only destined to become more favourable and to incentivize northern shipping.

While the precise extent of the wealth in the Arctic is unknown, the 2008 U.S. Geological Survey estimates that the Arctic contains approximately 90 billion barrels of oil, 47,261 cubic meters of natural gas, and 44 billion barrels of natural gas liquids (Lasserre 2011, 796). In other words, these figures represent 13% of undiscovered oil, 30% of undiscovered natural gas, and 20% of undiscovered natural gas liquids in the world. Approximately 84% of these estimated resources are expected to occur offshore (United States Geological Survey 2008). With mineral deposits also at stake, the unexploited wealth potential of the region is unlike anywhere else. As a result, the

climate change affected region will only grow in interest to those with the potential to make or increase profits there.

1.3. United Nations Convention on the Law of the Sea

The United Nations Convention on the Law of the Sea has been ratified or acceded to by 165 states (United Nations n.d.). Accordingly, it has set the standard for oceans' governance and maritime law. The creation of the convention was the formal codification of customary international law. UNCLOS covers almost every aspect of maritime law, and provides a mechanism for dispute resolution and settlement. As a result, it should be considered "as a primary resource for resolution of Arctic disagreements" (Mendez 2010, 528). No other agreement offers such applicability of work to such varied circumstances. Thanks to the widespread adoption of the agreement, its place at the center of oceans' governance has been all but guaranteed. As a result, Canada, Denmark, Norway, Russia and the US have all committed to use UNCLOS as "a mechanism for resolving any 'overlapping claims'" in the Arctic (Dodds 2010, 71).

Further to Canada's ratification of the agreement, the state was also heavily involved in the various rounds of negotiations that led to its creation. Canada's involvement in those negotiations is key because they demonstrate precedent for nationalistic action in the Arctic – action that was cloaked by the veil of environmental protectionism as the state sought to maintain regional control. For example, UNCLOS Article 234, or the 'Arctic Exemption' clause, permits coastal states to regulate, control, reduce or prevent marine pollution in ice-covered areas, within a state's Exclusive Economic Zone (EEZ). This extension of control expands a state's authority to a maximum of 200 nm, and was said to have "legitimized Canada's authority to enforce a very strict antipollution regime" (Prowse, et al. 2009, 277). To achieve such an extension of authority, Canada reasoned that the uniqueness of the Arctic warranted a special provision within the convention. Even as states recognized "the self-interest in Canada's measure," enough support was garnered to lead to the inclusion of the article (Charron 2005, 841). With its inclusion, Arctic states secured for themselves de facto control of the region. Article 234 provided Arctic nations the ability to limit vessel access to the

region, as they were now able to set their own pollution regulations out to 200 nm. The result of which was twofold: vessels not specifically built to navigate Arctic waters were now banned from traversing the region, and domestic laws now had international ramifications. The justification for this control was that the region's fragile ecosystem and dangerous conditions required specialized watercraft in order to safely enter the region. However, the true consideration that led to these environmental regulations cannot help but be questioned in light of the sovereignty challenges Canada faced throughout the negotiation process. For instance, from 1969 to 1970 the ice-strengthened US tanker Manhattan sailed through the Northwest Passage, despite not requesting permission from the Canadian government to do so. Additionally in 1985, the US Coast Guard icebreaker, the Polar Sea, did the same. As the US views the Northwest Passage as an international straight, it did not believe Canada's permission was required to traverse it. In response the Canadian Government leapt to action to prevent such an encroachment on, what it believes to be, its sovereign territory. As a result, it is clear Canadian action was primarily motivated by the issues of sovereignty and territorial control, and espousing environmental protection was an acceptable route to achieve this, despite what Canada claimed in the development of Article 234.

When it comes to the Arctic, complexity is the norm, and the factors driving discussion and deliberations are often much more complicated than they appear. Nowhere is that fact more evident than when it comes to the submission of Canada's extended continental shelf claim. Since Canada's ratification of UNCLOS in 2003, the nation has compiled data and research in anticipation of submitting its claim. Nations are given ten years from the date of their ratification to submit these claims for determination by the Commission on the Limits of the Continental Shelf (CLCS), under UNCLOS. The ten-year deadline for claims was aimed at settling oceanic territorial disputes through a mechanism that states would agree to in advance. Following the resolution of northern settlement claims, almost all of the Arctic's seabed will fall under the jurisdictional control of one Arctic nation or another. The CLCS is responsible for delimiting the seabed claims and subsequently making recommendations for settlement. These recommendations are "highly significant in so far as the coastal states can then establish limits to the continental shelf that are 'final and binding'" (Dodds 2010, 67).

Following a decade of preparation for Canada's seabed submission to CLCS, Prime Minister Harper instructed bureaucrats in December 2013 to re-examine the finding they had presented. The original finding did not extend Canada's seabed claim far enough North to include the North Pole. The Prime Minister insisted that the Pole and its associated mineral deposits be included within Canada's claim (Chase 2013). The abrupt change displayed here is revealing. Despite a decade's worth of research, conducted by bureaucratic and non-governmental organizations aimed at determining the scientific extent to Canada's seabed, political perspective and the last minute dismissal of these conclusions or findings won out. Accordingly, Canada's UNCLOS submission has been postponed. The vast wealth that could be unlocked through potential exploration and extraction took precedence over the body of research that would have limited Canada's claim. In weighing the potential outcome of Canada's claim, future economic development drove the state to reconsider its findings, despite their scientific basis. This action is an example of the efforts the Harper government has taken to put in place the necessary parameters to facilitate the future economic development of the region. In this case, those parameters were, as extensive as possible, internationally recognized sovereignty and the associated mineral rights that come with it.

With Canada pursuing a number of considerations in the North, be they environmental protection and stewardship through EBM or the sovereign control of waters and passageways through the Arctic Exemption clause, the considerations of the state are complex. However, taken together, they paint a picture of the state's nationalistic northern interests and considerations that have impacted its approach to the Arctic environment. Specifically, how the state has sought to maintain regional control and establish the necessary parameters to facilitate future economic development in the North.

1.4. Timing and Geopolitics

As climate change continues to open the vast resources of the North, and as melting sea ice makes northern routes increasingly accessible, non-Arctic nations have increased their interest and ability to act in the region. For instance, due to the savings

associated with shorter northern sailing routes, non-Arctic nations have invested in ice-strengthened ships. Japan, China and South Korea have all constructed ice-strengthened ships for sale, as well as for use in their export-oriented economies. One such foray into the ship building industry comes in the form of South Korean electronics giant, Samsung. Samsung Heavy Industry has now built mid-size oil tankers in conjunction with the development of a new propulsion system that allows these ships to operate in ice-free seas, as well as ice-covered waters (Huebert 2009, 14). As Mendez writes, “the very act of purchasing ... reveals interest in the region and demonstrates future intentions” (Mendez 2010, 531). As a result, the correlation between this newfound wealth in the North, and the increasing interest of non-Arctic nations, cannot be ignored as the geopolitics of the region play out.

Stemming from this rising interest in the region, application for membership in the Arctic Council has also increased. Established by declaration in 1996, membership in the Arctic Council originally consisted of the eight Arctic nations¹ as members and three indigenous organizations² as permanent participants. The Arctic Council is “a high level intergovernmental forum providing a means for promoting cooperation, coordination and interaction among the Arctic States, with the involvement of Arctic indigenous communities and other Arctic inhabitants on common Arctic issues” (Arctic Council 2011). Three additional indigenous organizations have also been granted permanent participant status³. Permanent participant status grants these members the ability to participate in all activities and meetings of the council, sitting alongside the various member states with the right to present proposals.

In addition to these two groups, the Arctic Council also accommodates observers. Observer states may only be granted this status by unanimous vote of members, the result of which is often a quid pro quo political trade-off between nations with competing priorities. Many observers note that Canada’s block of the European

¹ Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the US.

² Inuit Circumpolar Conference (ICC), the Saami Council (SC), and the Russian Association of Indigenous Peoples of the North (RAIPON).

³ Arctic Athabaskan Council (AAC), Aleut International Association (AIA), and the Gwich’in Council International (GCI).

Union (EU)'s 2011 application is in large part due to the EU's 2009 ban on the import of seal products. Steffen Weber, Secretary General of the Arctic Forum Foundation states that this ban is problematic as "it curtails the livelihoods of indigenous peoples," accordingly, it prompted indigenous groups to petition the Canadian Government to protest the EU ban and uphold their industry (Arctic Forum Foundation n.d.). This political trade off is just one example of the type of manoeuvring associated with Arctic Council membership, as interest in the Council continues to rise.

Currently, twelve non-Arctic states have been granted observer status, with the most recent inductions being China, Japan, India, Italy, South Korea and Singapore in 2013⁴. The increasing interest and application of non-Arctic states to become observers demonstrates rising pressure on Arctic nations' ability to retain control of the Arctic agenda, especially as the applications come from powerful and influential nations. It is under this new reality that Canada has assumed its turn as rotating Chair of the Arctic Council. From May 2013 to April 2015 Canada will serve as the guide and leader of this international forum. As a result, understanding the Arctic, as geopolitics exists today, is essential to understanding the future of the region. With Canada's Leona Aglukkaq serving as Chair, the state has also assumed leadership positions within the various working groups of the council, including the Arctic Monitoring and Assessment Programme (AMAP). This group is particularly relevant as the AMAP oil and gas assessment reports "will inform policy development and management decisions in relation to oil and gas activities in Arctic waters" (Siron, et al. 2008, 89). With nationalistic interest and considerations clearly having impacted Canada's approach to the Arctic environment, the time is right to look forward and examine the balance the state has tried to strike between environmental protection and resource extraction.

1.5. Project Direction

Through assessment of the legislation governing Canadian Arctic offshore oil and gas development, along the North Pacific Marine Science Organization's (PICES's)

⁴ The previous six were France, Germany, the Netherlands, Poland, Spain, and the United Kingdom.

typology on EBM, it will become evident that only minimal inclusion and progression towards a fully-implemented EBM system has been achieved in Canada's oil and gas development framework. PICES is the adopted nickname developed for the North Pacific Marine Science Organization as it is considered to be the Pacific version of the International Council for the Exploration of the Sea (ICES), or Pacific ICES.

Through a discussion of the minimal inclusion of EBM components, the environmental, political and economic variables will reveal that the Government of Canada has purposefully and actively sought to limit this incorporation out of consideration for future development potential. This limitation is also just one reflection of a broader shift in the Harper government's approach to environmental policy whereby inaction is the new norm, and where the Harper government has intentionally derailed a policy trajectory that had long been put in place. This position is in contrast to the Conservative government's stated position, and view of themselves and "Canada as a world leader in conservation" (Radia 2004).

While Canada has historically emphasized and reinforced those measures that would help to ensure the Arctic's protection, it has concurrently allowed the oil and gas industry to explore and search for new hydrocarbons projects. The potential conflict associated with these two competing, and at times opposed, interests creates an inherent tension between them. Harsem, Eide and Heen summarize this tension: "[a]lthough the Canadian government publicly states its concern for the environment, it has not sought measures that would stop, decrease or discourage oil and gas activity in the high north" (Harsem, Eide and Heen 2011, 8043). In fact, the Conservative government has taken action to reopen the Arctic for exploration. The result of which is the simultaneous failure of the state to incorporate its EBM system to the extent that it can adequately manage the region, at the same time that it has taken action and pursued developments that put the environment at increasing risk. This imbalance explains the competition of interest at play, and the conclusion that, "[o]ne could thus argue that the need for energy supply and state revenues are valued above environmental concerns" (Harsem, Eide and Heen 2011, 8042).

As evidenced by Prime Minister Harper's interference in Canada's UNCLOS submission process, Canada continues to prioritize economic development in the region, and has actively sought to put in place the necessary policy pieces to allow for future developments to occur. Such deliberate actions are of particular relevance as pressure continues to mount to explore and develop the resources buried in the North. Political actors are establishing today the parameters they will need to ensure successful operations into the future. In order to limit the scope of this research project, focus will remain on offshore oil and gas activities in the Canadian Arctic, and the corresponding development and environmental legal frameworks that affect them. As this project will demonstrate, there has been only minimal progress towards the incorporation of EBM's components within the framework for oil and gas development. Addressing this intersection of issues is what has inspired this project and will be the focal point of its inquiry. As a result, this research project will show that Canadian failings with respect to the Arctic, under the Conservative government, are just one example of a broader pattern of inaction on the environmental front. In this case, that inaction is driven by the prioritization of economic concerns.

1.6. Methodology

This research project will utilize primary sources, in the form of relevant Government of Canada documents, to establish its assessment of Canada's offshore oil and gas development framework. The relevant documents are those pieces of legislation, and their supporting regulations, which govern offshore hydrocarbon development, including the *Canada Petroleum Resources Act*, the *Canada Oil and Gas Operations Act* (COGOA) and its supporting *Canada Oil and Gas Drilling and Production Regulations*, as well as the *Canadian Environmental Assessment Act* (CEAA). As the *Canada Petroleum Resources Act* and the *Canada Oil and Gas Operations Act* do not consider the environment to the extent that they can be assessed along the PICES typology, they will only be discussed in relation to their contribution to the context and considerations that must take place as part of northern offshore development. Additionally, of the various regulations that fall under the COGOA, only the *Canada Oil and Gas Drilling and Production Regulations* will be considered, as it is this regulation

that sets the conditions operators must abide by, should they wish to drill and produce oil. Consequently, only the *Canada Oil and Gas Drilling and Production Regulations* and the *Canadian Environmental Assessment Act* will be rated along the PICES typology. Additionally, the Government of Canada documents that led to the development and implementation of EBM will also be utilized in this project as primary sources or research.

This project will also utilize secondary sources to establish the context, considerations and variables of the North, as well as to establish the basis of two cases. The first case is the creation of the *Arctic Waters Pollution Prevention Act (AWPPA)*, and the second case is the policy reversal with respect to the same-season relief well capability requirement for offshore oil and gas operators. These cases were selected based upon their particular applicability to the tension between environmental and developmental considerations discussed in this section. Each case is well documented and demonstrates the complex consideration of government decision-making as various priorities and concerns were weighted.

Finally, this project will adopt and adapt the previously mentioned PICES typology on EBM. The EBM typology was developed as part of a broader EBM assessment of North Pacific nation states, including Canada, by PICES. The typology has been adopted specifically for this research project, in order to address its concerns about the laws governing Arctic offshore oil and gas development. To accomplish this undertaking, the typology will be applied to the development framework for its inclusion of EBM components. For the purposes of this project, all the components of the typology will be applied to the legislative and regulatory framework, identified above. Incorporation of the typology's various components, and progression along it towards a fully implemented EBM system, will be the means through which this project will establish ratings for each of the components. The typology has been adapted specifically by the addition of a ratings column along the right side of the typology. The purpose of this column is to provide ease of reference as to how far each component has progressed towards creating a fully implemented EBM system. Ratings will be based upon the stages of EBM implementation. Chapter two will provide references as well as explain how the typology's adaption will be implemented.

1.7. Project Outline

Chapter one of this research project will identify Canadian nationalistic northern interests and considerations that impact Canada's approach to the Arctic environment. Chapter two will outline the various efforts and steps Canada has taken to implement EBM. As well, it will provide an instructional overview of how the EBM typology will be utilized to analyze Canada's framework for oil and gas development. Chapter three will examine the case of the AWPPA and the reversal of the same-season relief well requirement. Chapter four will serve as the crux of this research project's analysis by examining, in detail, the *Canada Oil and Gas Drilling and Production Regulations* as well as the *Canadian Environmental Assessment Act*. This Chapter will provide a reflection on the current state of both of these documents, as well as the current state of Canada's regulatory environment in general. Finally, Chapter five will provide concluding consideration and reflections on the government's inaction with respect to the environment.

Chapter 2.

Ecosystem-Based Management in the Canadian Arctic

Ecosystem-based management is the future of ecosystem protection and maintenance. Yet, despite progress and platitudes towards EBM, it is unlikely to ever be fully realized in the Canadian Arctic. It is a concept that has reached international consensus, yet has stalled in its implementation in Canada. Understanding this delay is pivotal to understanding why the likelihood of EBM being fully implemented in Canada's Arctic is slim. This Chapter will examine EBM in order to clarify what it is, what it means for Canada, and to what extent Canada has enacted legislation and policies to support it. Subsequently, this Chapter will examine the PICES's typology on EBM to provide a spectrum of understanding for this research project. The future of EBM in the Canadian Arctic is bleak without much greater political commitment – exactly the type that is unlikely to appear in light of growing resource interest and development.

2.1. Ecosystem-Based Management

2.1.1. What is EBM?

Ecosystem-Based Management is an attempt to circumvent administrative and political boundaries in order to achieve a more integrated and effective management of ecosystems and resources at regional or environmental levels (Slocombe 1998, 31). EBM is the process of understanding and managing the interaction of the socioeconomic and biophysical environment. The implications of this process and understanding are that administrative, institutional as well as scientific methods for managing the ecosystem must be considered together. This process is a departure from previous methods where small and often arbitrary boundaries were constructed for management

purposes (Slocombe 1998, 31). As a result, EBM goes beyond traditional management based on single sectors or single species-focused approaches. It recognizes the “deep connectivity amongst all elements of the ecosystem – including humans – and the underlying process of producing services people need and want” (Chan, et al. 2011, 575). In other words, EBM is place-based in the physical environment within which it is to be implemented. As a result, it requires a coordinated or integrated effort to sustainably manage the human activities that impact the ecosystem. This management of human activities includes offshore oil and gas development. If the sustainable development of oil and gas is a value the state wishes to uphold, it can be integrated within EBM. As a result, human values are not just used to define what EBM should achieve, but are also the reason why EBM is so important. (Slocombe 1998).

As its name implies, EBM focuses on management and the decision-making required therein. Consequently, in order to implement EBM, a systematic framework for participation and the identification of values is required, by all members, in order to set-up and make decisions that will result in the best outcome for all. By establishing EBM in this way, nations build in the provisions needed to manage, anticipate and address the concerns of those involved, as well as allow themselves the ability to make informed decisions about the use and future of the natural resources and area in question (Chan, et al. 2011, 575). In other words, EBM is not an exclusively science-based effort. As a result, EBM should be considered as an adaptive measure, where the preservation from all-change is by no means its goal. Temporal and spatial changes lie at the center of EBM, whereby understanding them is a prerequisite for implementation (Slocombe 1998, 37). As time passes, and the physical environment in question alters, EBM must be adaptive to these changes and factor them into its considerations. The result of this approach is that a systematic framework to make decisions can be established, and updated as needed or as the environment alters. Such a decision-making framework allows for the determination of complex decisions, conflicting objectives and great uncertainties (Chan, et al. 2011, 582).

Accordingly, EBM is designed to ensure the sustainable use of environments, so there can be a continuous provision of goods and services from them. EBM is particularly relevant to the future of marine ecosystems, where ecosystem goods, like

fisheries, aquaculture or other areas with clear economic value, are often protected, but where ecosystem services, such as cultural heritage or spiritual benefits, which poses intangible benefits, have typically been excluded from policy consideration (Hiltz, et al. 2009, 87). Consequently, EBM is of great relevance to ocean policies and management, as nations struggle to maintain ecosystem structures, such as biodiversity, ecosystem functions, such as productivity, and ecosystem processes, such as energy flow, to ensure healthy marine environments into the future. Due to EBM's range of applicability and scope of implementation, the international community has committed itself to implementing EBM as a guiding principle for ocean management, within the sustainable development context (Hiltz, et al. 2009, 87).

Although EBM is often understood as a principle or a concept, many challenges arise when it is operationalized. This is the main reason why, despite international consensus and support, it is only gradually being adopted and implemented in jurisdictions across the globe. Despite this challenge, a general definition of EBM has emerged in Canada through the consultation of multiple levels of government, stakeholder communities, businesses and non-governmental organizations. The general understanding of EBM is that it includes “participatory management, shared responsibility, compatibility with other plans and social arrangements, implementation of the precautionary principle and public accountability” (Chan, et al. 2011, 581). As a result, the Government of Canada has expressed its definition of EBM as the “management of human activities so that ecosystems, their structure, function and composition are maintained at appropriate temporal and spatial scales” (Government of Canada 2002, 36). If this definition seems vague that is because it is. EBM is an incredibly difficult concept to operationalize, with Canada only in the initial stages of realizing operationalization within its waters. Additionally, Canada's implementation of EBM is just one part of a global paradigm shift in nations' approaches to ocean usage and management (North Pacific Marine Science Organization 2010, 3). Further to this point, Canada has pronounced this shift as part of its move from activity specific, or sector specific management, to a more holistic approach. (Government of Canada 2002, 13). For the purposes of this project, despite its limitations, the Canadian definition shall be utilized, in order to establish common understanding and language.

2.1.2. Origins of EBM in Canada

The global movement toward EBM officially began at the 2002 World Summit on Sustainable Development, when governments obligated themselves to a timeframe for the implementation of EBM in marine waters. This movement has become realized, to a certain extent in marine ecosystems, through a drive for partnerships with the Global Environment Facility to act as a funding mechanism (Hiltz, et al. 2009, 87). The result of the World Summit on Sustainable Development obligation, and Global Environment Facility partnerships, is a clear path forward for conceiving and considering marine environments. As a result, it should come as no surprise that Arctic nations have implemented EBM within their northern maritime waters. Among these nations, Canada, the United States and Norway are considered to be the most advanced in regards to “developing and implementing a national approach to EBM for ocean uses, spaces and resources” (Hiltz, et al. 2009, 87).

In Canada, the framework for EBM has been in development for years, and is currently being applied to a significant portion of the Arctic, specifically in the Beaufort Sea. However, it is because of this long history with EBM that Canada’s implementation has developed in a fragmented manner, as various regional or sectoral approaches were applied to Canadian waters. The result was a system that desperately needed integration. For instance, approximately 50 federal statutes directly affect activities in oceans, and over 80 provincial laws affect coastal and marine planning (Hiltz, et al. 2009, 92). *The Oceans Act*, implemented by the Chretien government in 1997, began the integration of these various laws. The Act provided a nationally coherent policy framework that could be utilized to better preserve and protect Canada’s oceans (*Oceans Act*, S.C. 1996, c.31). The Act introduced the premise that oceans must be managed through the integrated efforts of all stakeholders involved. The Act also changed the legislative mandate to require the consideration of human activities on Canada’s ecosystems in its marine resource managements plans (North Pacific Marine Science Organization 2010, 8). With *The Oceans Act* specifically stating “conservation, based on an ecosystem approach, is of fundamental importance to maintain[ing the] biological diversity and productivity in the marine environment,” EBM was officially born in Canada (Government of Canada 2005, 1).

As a result, EBM became a guiding convention for Canada's oceans management. Since its implementation in 1997, there have been a number of steps through which Canada's approach to EBM has emerged. For instance, in 2002 the Chretien government adopted the Canada's Oceans Strategy, introducing the Integrated Management program that brought relevant ocean stakeholders together to decide how best to manage designated ocean areas (North Pacific Marine Science Organization 2010, 8). Canada's IM planning has been said to be at the heart of a "new, modern oceans governance structured to engage all parties in the management of ocean activities so that they do not conflict with one another and so that all factors are considered for the conservation and sustainable use of marine resources and shared use of ocean spaces" (North Pacific Marine Science Organization 2010, 10). In other words, Canada's IM program provides the governance structure to connect all stakeholders in the management of its oceans (Hiltz, et al. 2009, 99).

2.1.3. Implementing EBM in Canada

With the Liberal government changing leaders in 2003, Paul Martin's administration continued the previous direction and implementation of EBM in Canada. In 2004 the Department of Fisheries and Oceans (DFO) Canada undertook national workshops in order to determine marine ecosystems that would be used as the basis for integrated ocean management. These workshops provided the information necessary to implement IM pilot projects. The result was the identification of six ecoregions in the Arctic Ocean. Following the identification of these ecoregions, the Beaufort Sea was selected as the ecoregion within which to enact an IM pilot program in the Arctic. In order to accommodate human activities within the ecoregions, the concept of Large Ocean Management Areas (LOMAs)⁵ was developed. LOMAs are nestled within ecoregions and allow for the particular ecological objectives of that ecoregion to be met (North Pacific Marine Science Organization 2010, 8). IM and LOMAs should be viewed

⁵ At the circumpolar level, the concept of Large Marine Ecosystems (LMEs) has been adopted by the Arctic Council's Protection of the Arctic Marine Environment (PAME) Working Group, as the appropriate framework for advancing the ecosystem approach in the Arctic as a whole (Hiltz, et al. 2009, 87). However, for the purposes of this project, LMEs will not be utilized or considered as Canada has adopted LOMAs as its chosen approach and terminology.

as the science-based management tools they are, and as the “building blocks” on which EBM has been developed in Canada (North Pacific Marine Science Organization 2010, 92). As a result of the development of LOMAs in Canada, the Beaufort Sea Large Management Area was brought into existence.

As part of the LOMAs’ development, Canada committed to a two-year Oceans Action Plan (OAP) to achieve a number of deliverables, under four pillars: international leadership, sovereignty and security; integrated management for sustainable development; health of the oceans; and ocean science and technology (Government of Canada 2005, 5). The significance of these pillars is that the ecosystem approach is the core principle guiding pillars two and three of the plan, as well, that a number of key deliverables within the plan are used to advance EBM (Hiltz, et al. 2009, 92). Canada’s successive advancements in EBM, beginning with the *Oceans Act* in 1997, followed by the Canada’s Oceans Strategy in 2002 and then the Oceans Action Plan in 2005, have resulted in Canada being described as having taken “the most formal approach toward describing and delineating its marine waters” (North Pacific Marine Science Organization 2010, 92). Accordingly, it is clear that EBM is the path forward for Canadian environmental stewardship.

Despite these advancements, and systematic efforts to introduce and implement EBM, the operationalization of the concept has barely commenced. This delay can be, at least partially, explained by the considerable challenges that exist in implementing EBM. Specifically, EBM only becomes operational when a considerable number of its components⁶ are identified as conservation priorities. For instance, an EBM program for fish stocks needs to specify the species of fish, the area in which they live as well as the properties of their environment that allow them to exist there in the first place. Following the identification of these priorities, they are subsequently translated into ecosystem objectives, within an IM plan, for a particular area or LOMA. Understandably, this is a knowledge-intensive process that is a necessary step if the objectives are to be limited

⁶ Including areas, species and properties (Hiltz, et al. 2009, 93).

and specific goals. Containing these objectives falls to a number of guiding principles that inform their operationalization⁷ (Hiltz, et al. 2009, 93).

As Canada advanced in this regard, Stephen Harper's Conservative Party of Canada came to power in 2006, shortly after the OAP was put in place, and while EBM implementation began to take shape. With the Conservatives now at the helm, the May 2010 Report of the Standing Committee on Fisheries and Oceans issued Recommendation 14, calling for the adoption of an integrated US-Canada approach to EBM in the Beaufort Sea. As the current DFO structure of LOMAs does not include those waterways that cross international boundaries, this recommendation implicitly states further action must be taken to incorporate EBM (Senate of Canada n.d. 70). Additionally, at the February 2013 international meeting of Arctic nation Environment Ministers, the Ministers acknowledged the need for pilot projects whereby two or more states could "demonstrate how EBM could be advanced in the Arctic" (Environment Canada 2013). Thus it clear that publicly the Conservative government has continued to advocate for a cooperative, EBM approach to managing the Arctic. The Conservatives have supported a continuation of the previous Liberal governments' approaches to environmental stewardship. Unfortunately, it is also clear that while they may publicly desire EBM's implementation in the Arctic, the system has not fully been introduced. As published in the journal Arctic, "EBM is just moving from concept to implementation" (Siron, et al. 2008, 100). Consequently, the benefits from this approach are largely unrealized and difficult to pinpoint (Hiltz, et al. 2009, 100). In spite of these difficulties, the Harper government has moved forward with EBM at the center of its sustainable development goal for the Arctic, pronouncing it within The Statement on Canada's Arctic Foreign Policy in 2010. The statement purports that Canada's international efforts will focus on "promoting an ecosystem-based management approach with Arctic neighbours and others" (Government of Canada 2010, 16).

⁷ According to Hiltz et al, an operational definition is informed by the following principles: 1) EBM is holistic and cross-disciplinary; 2) it is based on the best knowledge available; 3) it is a phased implementation process; 4) it is developed nationally and implemented sub-regionally, at LOMA scale; 5) it is area-based; 6) it is objective based; and 7) it is applied within the broader context of IM, incorporating the precautionary approach and adaptive management principles (Hiltz, et al. 2009, 93).

However, as demonstrated, EBM in Canada has been years in the making, and yet is seemingly years away from full operationalization and any realized benefits. Despite EBM's challenges, the Conservative government has committed itself to further developing and pursuing the system with its neighbours. As well, the government has seen fit to proclaim EBM at the center of its Arctic foreign policy statement. It is this commitment that will be examined, as offshore Arctic oil and gas development is later discussed. EBM is a complex system, of paramount importance to the future of the Arctic environment. Discovering how such a precautionary principle-based, sustainable development system is balanced with the exploitation of natural resources in one of the most fragile ecosystems in the world, is a question that cannot go unanswered.

2.2. North Pacific Marine Science Organization Typology

2.2.1. Utility of a Typology

Despite a clear outline of EBM advancement in Canada, due to the complexity of operationalizing EBM the precise extent to which it has been implemented remains unclear. As a result, this paper must adopt an approach that allows the progression and implementation of EBM to be assessed upon the spectrum of objectives and ranges that are implicit in it as a concept. Thus the utilization of a typology is essential, if measures of EBM progress are to be determined. A typology provides for a range of understanding and a spectrum of implementation. As PICES states, to contextualize its own typology, "it is useful to agree to a common typology of ecosystem approaches to management for purposes of discussion because it helps ... more rigorously evaluate the progress toward EBM" (North Pacific Marine Science Organization 2010, 6). The PICES typology breaks down EBM's components into five areas for operational objectives. Additionally, it demonstrates these operational objective components along a range of implementation – beginning with traditional single factor management and ending in the integrated management approach that is necessary for EBM.

PICES is an intergovernmental scientific organization whose goal is to promote and coordinate marine research in the North Pacific and adjacent seas, especially northward of 30 degrees North (North Pacific Marine Science Organization n.d.). As a

result, this scientific body is particularly well positioned to supply information that is international in scope, as its own purpose parallels that of the concept in question – EBM⁸. Accordingly, this project will adopt and adapt the EBM typology, developed by PICES, for its own analysis. The adaption is part of the ratings system that is project has developed, and was originally referenced in the Methodology section for the purposes of this project’s analysis.

2.2.2. Utilizing the PICES Typology

It is difficult to determine the extent to which Canada has incorporated environmental concerns and components within the various statutes and regulations that comprise its legal framework for oil and gas development. However, through systematically analyzing and ruling out where applicable the various documents of that framework, a baseline of incorporation can be established. Additionally, through discussion of the conditions that led to this baseline, a nuanced understanding of the environmental, economic and political variables can be reached. To aid in reaching this nuance, this research project has developed and created an adapted PICES typology that will be utilized to provide a visual representation of the EBM components, as this research project rates them. The chart will be populated with ratings of either 0, I, II or III for each component, to rate the various components of each relevant statute or regulation. This system of ratings is discussed below. As per the methodology section, the applicable and relevant aspects of the framework include the *Canada Oil and Gas Drilling and Production Regulations* and the *Canadian Environmental Assessment Act*. Subsequent explanations, outlining how the ratings were reached, will also be provided. The explanations will outline what aspects of, or language in, the statutes and regulations contributed to the ratings this research project establishes.

⁸ The purpose of PICES is to “advance scientific knowledge about the ocean environment, global weather and climate change, living resources and their ecosystems, and the impacts of human activities” (North Pacific Marine Science Organization n.d.). The intersection of all these areas is similar to the holistic approach EBM takes to considering the environment.

Table 1. Rating of Legislation/Regulation on Inclusion and Progression of EBM Components

EBM Component	I. Traditional single factor management	II. Sectoral Management in an Ecosystem Context	III. Integrated Management in an Ecosystem Context	Rating
Species	Considers only the factor or species being used	Considers prey, dependent predators and food supply, and impacts on ecosystem	Considers impacts of other activities on the status of the species being used and across the ecosystem	
Physical habitats	Only considered if a surrogate for population parameters	Considers productive capacity and impacts of activity on the habitat	Accommodates spatial needs and habitat impacts of other activities	
Environmental conditions	Not considered	Considers productivity regimes and forcing	Considers direct and indirect effects	
Biodiversity	Not considered	Considers impacts on species not being used directly	Considers status of communities and resilience of the community/system	
Other Components	Not considered	Considers other components as they affect the particular sector	Considers all components and all sectors and the interactions among them relative to agreed ecosystem management goals	

Source: Table 2.1.3 (North Pacific Marine Science Organization 2010, 4)

An ecosystem is by definition a “spatial unit and [the] organisms and natural processes (and cycles) that [are] being studied or managed” (North Pacific Marine Science Organization 2010, 127). As a result, it is a highly complex concept to study. Out of consideration for this complexity, and the fact that each component of the ecosystem can be addressed, incorporated and rated separately within an EBM system, it is necessary to identify and define particular components in order to limit the scope of analysis. For the purposes of this research project, analysis will be limited to the five components of the PICES typology on EBM. The five components are species, physical habitats, environmental conditions, biodiversity and other components. Species will be defined as the organisms within an ecosystem, and will be considered to the extent that their natural resilience and historic role in the food chain is maintained. Physical habitats will be defined as the physical features of the land (landscapes) and water (bottomscapes) as well as their influence on one another. The bottomscape is the

physical features under the water, including corals, sponges, marine plants and other organisms that, through their biological activity, create structural bottom features. This definition treats 'habitat' broadly, and not simply as 'where a specific animal lives' (Canadian Science Advisory Secretariat 2001, 17-20).

Environmental conditions will be defined as encompassing the primary productivity of the ecosystem, the trophic structure of the ecosystem and the population generation time of the ecosystem. Biodiversity will be defined by the diversity of communities, species and populations that exist within the natural variability of the ecosystem. Finally, other components will be defined as encompassing the chemical properties of the ecosystem, such as the water column properties, water quality and biota quality (bioaccumulation of contaminants). These definitions were drawn from, and established by, the Canadian Science Advisory Secretariat's National Workshop on Objectives and Indicators for EBM, completed in 2001 (Canadian Science Advisory Secretariat 2001, 17-20).

I will rate each of these components in terms of their progression along the EBM spectrum. As per the PICES typology, the spectrum progresses from traditional, single-factor management, then develops into sectoral management in an ecosystem context, and culminates in integrated management in an ecosystem context. As Canada has established EBM and integrated management as its goal for the Arctic, this final stage is the point at which Canada will have adequately considered and implemented environmental protection for the region within its offshore oil and gas development framework.

Figure 1. Stages of EBM



My rating of the five components will be a simple numerical assignment to indicate how far the component has progressed towards an integrated management

system. A rating of 0 will indicate that no reference to the component is contained within that particular regulation or legislation. In other words, that component is not considered. A rating of I will indicate no progression from traditional single factor management. A rating of II will indicate meaningful but limited progression towards integrated management. And a rating of III will indicate full integration of the integrated management framework. The ratings and assessment of the legislation will take place in Chapter four.

2.2.3. State of EBM Implementation in Canada

Critical to describing and documenting EBM is understanding that it does not fit into a single pattern, and that efforts must be seen, collectively, as building towards full implementation (North Pacific Marine Science Organization 2010, 7). As a result, the outline of Canada's efforts towards building EBM in its Arctic waters is key. However, as PICES points out, the Canadian progress towards EBM implementation has stalled. While the scientific process of developing appropriate conservation objectives has progressed, the development of complementary socio-economic objectives has yet to commence (North Pacific Marine Science Organization 2010, 11). Through the national, DFO-led workshops, Canada has developed initial ecosystem objectives for productivity, biodiversity and the chemical and physical properties of ecosystems, as well as established operationalized components for each of these ecological objectives (North Pacific Marine Science Organization 2010, 15). However, many challenges lie ahead for fully operationalizing EBM in Canada. For instance, the development of ecological objectives for sustainability has yet to be established. These include the social, economic and cultural aspects of sustainability in Canada's Arctic. Additionally, the development of technical reviews, for Canadian monitoring approaches, is also incomplete. Finally, there remains a need for continued research on the appropriate reference points and indicators used to measure ecosystems in the first place (North Pacific Marine Science Organization 2010, 16).

All of these challenges must be addressed, with advanced scientific knowledge to support each of them, if Canada is to further develop and operationalize its EBM system. As a result, it is clear that despite progress and platitudes toward EBM in the

Canadian north, there is much left to do. Determining the extent to which Canada has implemented and progressed its EBM system, within the framework for oil and gas development, must be determined if any sort of implication is to be reached between the government's rhetoric and its legislative and regulatory actions. Currently, no baseline understanding of this incorporation exists. Chapter four will serve to establish such a baseline. However, before moving onto the assessment and rating of Canadian legislation and regulation, Chapter three will explore the nuance behind the competing interests in the North, to establish how the environment is sacrificed or compromised for political or economic considerations.

Chapter 3.

Northern Resources and the Politics of Development

The complex consideration of multiple and competing factors is a day-to-day function for government decision-making. However, in the Arctic, these considerations are especially challenging. While the region has existed in a virtual policy vacuum, where decades have passed without great care or consideration being given to its various priorities, this has all begun to change. These changes began in the 1970s as political considerations out of threats to Canadian sovereignty, but today fall more along the lines of economic concerns. Canadians may be the 'true North, strong and free,' but the attention they pay to the North has been inconsistent and fleeting. Through the examination of competing interests in the region it is evident that the environment is often given secondary consideration to political and economic concerns. The result of which is a fragile environment that has not been given the priority status it deserves, as its ecosystems have been sacrificed or compromised along the way.

Examining the framework related to offshore oil and gas, it is clear that while the costs of development remain high, future action is unlikely without the encouragement of and approval from government decision-makers seeking to boost state revenues (Eide, Heen and Harsem 2011, 8044). While the economics of such projects may not yet be viable, the way is certainly being prepared for their advancement. In 2012, Ottawa placed 905,000 hectares of northern offshore territory up for bid for resource development by the private sector. This action opened the region to energy companies hungry to secure exploration rights. The scale of the offer is said to indicate "eagerness in the oil patch to drill for new finds in Canada's northern waters less than two years after such plans were put on hold following the BP spill in the Gulf of Mexico and a major Arctic drilling safety review" was conducted (Vanderklippe 2012). At the time of the bid, Jason MacDonald, then spokesperson for the Minister of Aboriginal Affairs and Northern

Development Canada, said “the bid call reflects the potential that we see for resource development. The North is home to world-class natural resources that represent a tremendous economic growth and tremendous jobs potential for northerners – and frankly, for all Canadians” (Vanderklippe 2012). As Eide, Heen and Harsem write, “by studying the combined effects of environmental ... variables, and political and economic variables you can arrive at a more nuanced picture of the oil and gas development in the Arctic” – and that is precisely what this research project aims to do (Eide, Heen and Harsem 2011, 8037).

3.1. Context in the North

Worldwide Arctic oil and gas development has produced approximately 40 billion barrels of oil and 1,100 trillion cubic feet of gas to date. Currently, production equates to 10% of the world’s supply of oil, and 20% of its supply of gas (Blaauw 2010, 176). While this output is largely the result of production off the coast of Norway and Russia, it represents a sizeable amount of investment and expertise that has already been generated for operating in northern conditions. With the Canadian Western Arctic containing the third-largest reserve of conventional oil and gas in Canada, these expertise and investments will surely make their way to the Canadian North. However, increasing development also brings with it a number of long and short-term environmental concerns. For instance, development requires extensive seismic activity, drilling in offshore and near-shore waters, the construction of artificial islands and pipeline systems, the creation of granular deposits, an increase in all-season and winter roads, as well as marine shipping and aviation (Department of Fisheries and Oceans Canada 2008, 6). All of which have the potential to create pollution or cause environmental damage.

In light of such risk, and out of recognition of the fragile and remote landscapes of the North, states will increasingly grapple with the balance between ecological concerns and future energy realities. This threat is significant as the Arctic has a relatively high sensitivity to oil impacts, compared to other environments, and the least capacity for natural recovery (Protection of the Arctic Environment Working Group 2009, 7). As the vast deposits of the Arctic become accessible, through climate change, these

resources will play a major role in the energy challenges and requirements nations face. With world consumption of natural gas expected to rise by 50% over the next 25 years, and oil consumption expected to increase by 20%, it is only a matter of time before these Arctic resources are extracted and exploited for world demands, if state coffers don't necessitate their removal first (Eide, Heen and Harsem 2011, 8041). For instance, economic activity resulting from outer continental shelf development in the Beaufort Sea and Chukchi Sea could generate an annual average of 54,700 new direct and indirect US jobs with an estimated cumulative payroll of \$145 billion⁹ over the next 50 years. It is estimated that 30,100 jobs of these 54,700 new annual jobs would be generated from the Beaufort Sea outer continental shelf alone (Northern Economics 2010). As the Beaufort Sea occupies the waters north of the Alaska and Yukon border, it is reasonable to expect impressive economic benefits, related to offshore development in the sea, for Canada as well.

While it is difficult to balance the tangible economic benefits of development, against the risks and dangers to the environment that are, until a major failing or accident does occur, simply 'potentials' or 'hypotheticals,' such a balance must be struck (Arctic Monitoring and Assessment Programme 2007, vii). As Oceans North Canada researcher Chris Debicki wrote, "it's impossible to put an economic figure on ecosystem destruction," so until such time as we are able to ensure these costs are not incurred, we must act and plan as if we cannot afford them – for we surely cannot (McCarthy 2013).

3.2. The Politics of Development

Understanding why the environment is considered secondary to political or economic concerns is the necessary first step to establishing a system that properly protects the environment to the extent that its future is ensured. Although it is not within the scope of this research project to examine all the policy changes the Government of Canada has taken with respect to the Arctic, two cases demonstrate clear precedent for the way the Arctic environment has been treated. The first case is the creation of the

⁹ In 2010 dollars.

Arctic Waters Pollution Prevention Act (AWPPA), following a challenge to Canadian Arctic sovereignty (*Arctic Waters Pollution Prevention Act*, R.S.C., 1985 c. A-12). The second is a policy reversal with respect to the Same-Season Relief Well Requirement the government had long held in place for Arctic operations. Taken together, these cases exhibit the secondary consideration the Arctic environment is often given, in light of competing priorities.

The creation of the AWPPA is evidence of the environment's secondary consideration, in this case to Canada's primary concern at the time – sovereignty. The AWPPA is an “Act to prevent pollution of areas of the arctic waters adjacent to the mainland and islands of the Canadian arctic” (*Arctic Waters Pollution and Prevention Act*, R.S.C., 1985, c. A-12). The AWPPA sought to protect Arctic waters in a liquid or frozen state. While the Act is not part of the governance framework overseeing oil and gas development in the Arctic, the confluence of events leading to its creation demonstrates the use of environmental policy as a cloak for alternate objectives. Due to the 1969 and 1970 transit of the US tanker *Manhattan* through the Northwest Passage, the Canada-US dispute over the passage's classification was born. The 1969 voyage was the first successful transit of the passage by a commercial ship. As a result of the voyage, aroused public opinion over the Arctic drove the Canadian government to take action in the region. The result of which was the enactment of AWPPA (Briggs 1990, 439).

As a way to shore up the nation's claim and control, the government unilaterally drafted and implemented the AWPPA to extend Canadian jurisdiction. The Act extended Canadian control over Arctic marine waters out to 100 nm. This action was in direct contrast to the 12 nm international consensus previously set on the extent of states' jurisdiction (Huebert 1995, 349). Canada rationalized that this extension would protect its fragile northern waters and delicate ecosystems by increasing the state's control and oversight of the region. As a preventative measure to the potential international challenges this law was expected to receive, the Canadian cabinet at the time made a reservation that it would not accept the compulsory jurisdiction of the International Court of Justice on this issue (Huebert 1995, 352). As a result, this domestic measure now had international ramifications to the extent that Canada was willing to enforce it. Fortunately

for the state, between 1973 and 1982 the Canadian government successfully negotiated the adoption of UNCLOS Article 234, the Arctic Exemption clause, which extended Arctic territorial control to 200 nm. Thus nullifying the threat to international challenges the AWPPA initially created when it was implemented in 1970.

Part of the AWPPA's new requirements was onerous vessel specifications. These specifications gave the Government of Canada de facto control over much of the North, as it could now dictate the type of vessels permitted into the Canadian Arctic in the first place. This change was particularly relevant to the Northwest Passage, due to the contested nature of its water's status. However, thanks to the 100 nm extension of Canadian authority, these waters subsequently fell within Canadian environmental control, regardless of how they were to be classified or recognized. As demonstrated by the implementation of the AWPPA, the environment was clearly used as the means through which to address sovereignty, or political, concerns. Thus it is clear that regard for the environment, and ensuring its protection, was not main factor leading to the AWPPA's creation. The AWPPA also serves to demonstrate precedent, whereby the Government of Canada used concern for the environment as the guise under which it pursued its Arctic agenda. In this case, that agenda was sovereign control and a means through which to maintain it.

While it is the government's purview to craft legislation, understanding the complex factors leading to its creation helps to tease out the nuance between environmental variables, and economic and political ones. It also serves to demonstrate the compromise of environmental concerns in favour of political considerations. For instance, due to the Act's focus on vessel-related pollution its fails to, in any way, consider the five components of EBM. While the stated purpose of the act is broad and far reaching, its language is not. Therefore, the Act's purpose would have accommodated a wider inclusion of environmental considerations, had those been of priority when the legislation was initially drafted. However, since political consideration drove the creation of the AWPPA, environmental variables were not given the attention they deserved. Consequently, the environment was compromised in the pursuit of political objectives.

Another example of the environment's secondary consideration to competing Arctic priorities is the recent policy reversal with respect to the requirement for same-season relief wells. In this case, concern for the environment came second to concern for economic viability. This case is significant because same-season relief wells were mandatory for both exploratory wells, as well as commercial production operations. Currently, only exploratory wells have been drilled in the Canadian Arctic. Commercial operations, the type the government attempted to spur with its 2012 call for bids, have yet to be realized due to unfavourable economics. However, following the recent changes to the same-season relief well policy, that may no longer be the case.

In the early 1990's, the federal cabinet and the National Energy Board (NEB) established the same season relief well capability requirement with the intent to avoid a well blowout continuing, unstopped all winter, until such time as the operator would be able to return and drill a relief well the following season (Amos 2011, 40). Such a requirement was necessary due to the limited, short season of open water when operators are able to drill each year. If a relief well is required later in the season, or during the winter, it will not be possible to put one in place. As a result, oil could potentially spill, unstopped for nine months or longer, until such time as the summer weather permits drilling (Bankes and Porta 2011, 10). The same season relief well policy is said to be "Canada's strongest protection against a catastrophic oil blowout continuing all winter" (Bankes and Porta 2011, ii).

In 2009 Imperial Oil, British Petroleum and TransOcean sought to have the NEB lift the same season requirement for operators. Their rationale was that the necessary infrastructure and equipment to drill two wells was not available, and so the policy was effectively, and economically, ruling out any deep-water development in the Canadian Arctic (Amos 2011, 40). Additionally, these companies argued that advancement in equipment and procedures, in the two decades since the policy was put in place, had rendered the rationale for the requirement unproductive. They also argued that the chances of a blowout were extremely low, and that even if one did occur, same-well techniques and clean-up would be adequately effective. Imperial Oil calculated that the chances of a well blowout were in the range of 1 in 100,000 to 1 in 285,00 per well, and that even if one occurred, a same season relief well would be the last resort after more

expedient methods were followed (Amos 2011, 41). Unfortunately, these techniques proved to be entirely ineffective during the three month-long struggle to stop the 2010 British Petroleum blowout in the Gulf of Mexico. Ultimately, it was a relief well that was drilled to stop the disaster and finally put an end to one of the largest oil spills in history. As a result, the industry's arguments against the same season requirement proved ill founded and did not work.

Considering that industry applied for the requirement's removal in 2009, that the British Petroleum disaster proved their rationale inept in 2010, and that the NEB conducted a full policy review in 2011, it would seem logical to believe the government, through the NEB, would uphold the same season requirement as the primary means to protect and preserve the Arctic environment. Unfortunately, the NEB created a caveat to the requirement whereby operators, who are able to prove equivalency to the intent of the policy, may apply for exemption from it. However, equivalency by definition cannot be achieved, as there are no guarantees of prevention, and in fact, such a claim is inconsistent with historical experience, despite the 'best' prevention plans (Bankes and Porta 2011, 16).

As this case has demonstrated, consideration for the environment is easily compromised by economic factors or pursuits. The Government of Canada sought to establish the necessary policy pieces to pursue economic development in the region. In this case, like that of the AWPPA, the environment came second to other considerations, despite what the Government of Canada may have said its intent was, or what facts may have shown were best for the region. Thus, the politics of development reveal the inherent tension between competing priorities in the Arctic. Political variables like sovereignty concerns, and economic variables like the feasibility of commercial production operations, have an impact on environmental outcomes. Despite putting in place EBM, to prevent any lasting damages or impact to Arctic ecosystems, environmental variables have not always won out, when deliberated alongside politics or economics.

While the complex consideration of variables is understandable, what this means for the Arctic environment is not always clear. To further establish the insufficient

inclusion of environmental considerations, this research project will now move to its examination of the framework for oil and gas development. In examining the framework, the minimal inclusion of EBM components will become evident. The result of which is a purposeful and active limitation of environmental incorporation out of regard and hope for future development potential.

Chapter 4.

Analysis of the Canadian Offshore Oil and Gas Framework

Canada's interest in future Arctic offshore oil and gas has influenced its environmental policy for the region. Despite purporting to protect the Arctic environment, when it comes to future economic development the Government of Canada is unwilling to develop its environmental framework to the extent that it could place limits on the expansion of economic activity. As a result, the Arctic environment is left vulnerable to potential pollution related to offshore oil and gas projects. As this Chapter will demonstrate, through an examination of the extent EBM has been incorporated within the legal framework for development, the progression towards EBM, as an environmental protection mechanism and priority, is minimal. Through establishing the minimal and problematic incorporation of EBM components within the framework for offshore oil and gas development, this research project will establish the Harper government's purposeful restriction and active consideration for future development potential.

4.1. The Framework for Canadian Oil and Gas Operations

Oil and gas operators must abide by a very specific legal framework if they wish to develop projects in Canada. The major statutes and regulations that comprise this legal framework include the *Canada Petroleum Resources Act*, the *Canada Oil and Gas Operations Act* (COGOA), the *Canada Oil and Gas Drilling and Production Regulations* and the *Canadian Environmental Assessment Act* (*Canada Petroleum Resources Act*, R.S.C., 1985, c. 36 (2nd Supp.); *Canada Oil and Gas Operations Act*, R.S.C., 1985, c. O-7; *Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315; *Canadian Environmental Assessment Act*, 2012, S.C. 2012, c.19, s. 52).

Operators wishing to develop projects must begin with the *Canada Petroleum Resources Act*, which, through the Minister of Aboriginal Affairs and Northern Development Canada, may grant exploration licenses. Exploration licenses grant the right to explore for, drill and test for petroleum (National Energy Board 2011, *Filing Requirements for Offshore Drilling in the Canadian Arctic*, 2). Applicants wishing to develop production sites, based upon their findings through the exploration licenses, must apply to the NEB to do so. Under the direction of COGOA, the NEB is responsible for the oversight and management of Arctic offshore oil and gas activities (Ebinger, Banks and Schackmann 2014, 10). The purpose of the NEB is to promote safety and security, environmental protection, and energy efficient infrastructure for the public interest of Canadians. As a result, when deciding to approve an application, the NEB seeks to “balance the economics interests of the project with the overall public good and the project’s negative impacts” (Ross 2013). Due to the regulatory changes that will be outlined below, the NEB’s approach to offshore drilling is now based on a general ‘goal-oriented’ approach, as opposed to a prescriptive one. Goal-oriented regulations are referred to as performance-based regulations, and have specific quantifiable goals set by the regulator. However, they do not specify how the operator must meet these goals. Traditional prescriptive regulations are based on a series of specific regulatory requirements, which typically set minimal expectations on behalf of the regulator (Protection of the Arctic Environment Working Group 2009, 25). Consequently, in recent years, operators have been increasingly freed-up to implement measures as best they see fit, so long as they meet the general goals outlined by the NEB. Such a change was illustrated by the same-season relief well policy reversal, outlined in Chapter three.

Although the NEB directs these development activities and is responsible for the enforcement of Canada’s regulatory environment, its oversight approach is based upon the number of supporting regulations that fall under COGOA. Taken together, these regulations provide the prescriptive standards that make up Canada’s hybrid approach to oil and gas development. For the purposes of this research project, only the *Canada Oil and Gas Drilling and Production Regulations* will be considered, as it is this regulation that sets the conditions operators must abide by, should they wish to drill and produce oil. As part of the environmental protection responsibilities of the NEB, it must ensure Environmental Assessments (EAs) are conducted in conjunction with the

application for authorization operators submit to the NEB for approval. An EA must be completed prior to the granting of a COGOA authorization. For offshore drilling projects, EAs are automatically required. The *Canadian Environmental Assessment Act* (CEAA) governs the environmental assessments triggered through COGOA.

As part of the application process, operators must submit an Environmental Protection Plan (EPP). The requirement for EPPs is established in the *Canada Oil and Gas Drilling and Production Regulations*. EPPs “set out the procedures, practices, resources and monitoring necessary to manage hazards and protect the environment from the proposed work or activity” (*Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315, s. 9). In other words, EPPs outline how an operator will address the concerns raised by the EA. The NEB has produced EPP Guidelines as a means to direct the work and application of potential operators (National Energy Board, *Environmental Protection Plan Guidelines* 2011). However, as the guidelines do not expand on the environmental considerations operators must take into account, they do not warrant further analysis.

The following section will comprise the typological analysis of the regulatory mechanisms overseeing Arctic offshore oil and gas development. Specially, the analysis will begin with the *Canada Oil and Gas Drilling and Production Regulations* followed by CEAA. The analysis will begin with the regulation as it forms the basis of the goal-oriented approach the Harper government has taken to resource project development. Following which, CEAA will be analyzed as it provides the case for the government’s approach and considerations with respect to the environment in general. These two analyses, respectively, demonstrate the intent of Canada’s development regime, as well as its consideration for the environment within that. Due to the revision of the regulations in 2009, and the overhaul of CEAA in 2012, these updated documents can only be attributed to the government of Stephen Harper, and so are reflections of his vision for the future of Arctic extraction projects. Through the rating of the EBM components that are represented within each document, this research project shall establish that the baseline for the Canadian incorporation of EBM components within its offshore oil and gas development framework is minimal.

4.2. Analysis and Reflection

4.2.1. Canada Oil and Gas Drilling and Production Regulations

The *Canada Oil and Gas Drilling and Production Regulations* fall under COGOA. The regulations specify that “the process for setting goals for the improvement of safety, environmental protection and waste prevention” shall be part of the management system parties must develop as part of their application to the NEB for authorization to develop resources (*Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315). While COGOA is supported by a number of regulations, the Drilling and Production regulations “define the safety and environmental protection outcomes to be achieved” through government regulation of the industry (*Review of Offshore Drilling in the Canadian Arctic* 2011). Table 2 outlines the extent to which the *Canada Oil and Gas Drilling and Productions Regulations* consider the five components of the PICES typology on EBM. An explanation, outlining what aspects of the regulation formed the basis of each rating, is found below.

Table 2. Rating of the Canada Oil and Gas Drilling and Production Regulations on Inclusion and Progression of EBM Components

EBM Component	I. Traditional single factor management	II. Sectoral Management in an Ecosystem Context	III. Integrated Management in an Ecosystem Context	Rating
Species	Considers only the factor or species being used	Considers prey, dependent predators and food supply, and impacts on ecosystem	Considers impacts of other activities on the status of the species being used and across the ecosystem	0
Physical habitats	Only considered if a surrogate for population parameters	Considers productive capacity and impacts of activity on the habitat	Accommodates spatial needs and habitat impacts of other activities	I
Environmental conditions	Not considered	Considers productivity regimes and forcing	Considers direct and indirect effects	II
Biodiversity	Not considered	Considers impacts on species not being used directly	Considers status of communities and resilience of the community/system	I
Other Components	Not considered	Considers other components as they affect the particular sector	Considers all components and all sectors and the interactions among them relative to agreed ecosystem management goals	II

Note: Table 2 is based upon Table 2.1.3 from the Report of Working Group 19 on Ecosystem-based Management Science and its Application to the North Pacific (North Pacific Marine Science Organization 2010, 4).

Analysis

Of the five EBM components identified as part of the PICES typology, only the Species component is not found in the regulation. Although Species are considered as part of a project’s environmental assessment, no specific reference is made to them through this regulation. Section 9, subsection (b) calls for “a summary of the studies undertaken to identify environmental hazards and to evaluate environmental risks relating to the proposed work or activity” (Canada Oil and Gas Drilling and Production Regulations, SOR/2009-315, subs. 9, b). Due to this subsection’s broad wording, it can be read expansively, potentially including the consideration of species. However, such expansive wording misses the point; the regulation is weak in terms of its consideration of species. Broad language does not address the issue of building Canada’s framework towards an integrated management system, one where the impact of activities is considered on the status of the species in the ecosystem. The current regulation does

not guarantee such consideration. Additionally, with no direction given to the management plan or the EPP requirements contained within the regulation, to specifically address species, the component is given a rating of 0¹⁰. An example of potential species for inclusion would be any of the fish species, which make the Arctic Ocean their home, as well as any of the migrating whales that find their way to the Arctic annually. Both species are impacted by the development of offshore hydrocarbon projects. Other Arctic animal species would also be applicable to the Species component.

Considering the Physical Habitats component, the regulation is rated I for traditional single factor management. The rating of I is due to the regulation's definition of the 'natural environment,' which includes "the physical and biological environment" (Canada Oil and Gas Drilling and Production Regulations, SOR/2009-315, subs. 1, 1). Additionally, the regulation's definition of the 'physical environment conditions' contributes to this rating: "the meteorological, oceanographic and related physical conditions, including ice conditions, that might affect a work or activity that is subject to an authorization" (Canada Oil and Gas Drilling and Production Regulations, SOR/2009-315, subs. 1, 1). Taken together, these definitions enlarge the regulation's application to encompass the physical habitat, albeit only to the extent that it is considered in a traditional, single factor manner. For instance, while the physical and biological environment includes the physical space in question, it does not include the productive capacity of the environment – or the ability for it to support and sustain life. As the inclusion of productive capacity is an essential part of the typology's definition of a sectoral management system for physical habitats, the regulations falls short of the II rating, and so only warrants a rating of I.

The Environmental Conditions component is rated II due to the inclusion of subsection 86. (1) and (2)¹¹. These subsections require operators to report annually on the "general environmental conditions" of their projects (*Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315, subs. 86, 1-2). Despite only requiring general

¹⁰ See Appendix A for the full text on EPP requirements.

¹¹ See Appendix A.

feedback on this component, it is nonetheless considered, and so warrants a rating of II, since a rating of I for traditional, single factor management would only result if environmental conditions were 'not considered.' The Biodiversity component is rated I as it is not considered anywhere in the regulation. This component is given a rating, where the Species component is not, because traditional single-factor management does not consider biodiversity, where it does consider species. As a result, the biodiversity component is on track with traditional single factor management, but displays no progression towards full EBM in any way.

Other Components is rated II. Other Components encompasses the chemical properties of the ecosystem, including the water column properties, water quality and biota quality (bioaccumulation of contaminants). The rating of II for Other Components is the result of subsection 5. (4)¹², which specifies, "the management system shall correspond to the size, nature and complexity of the operations and activities, hazards and risks associated with the operations" (*Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315, subs. 5, 4). In other words, the management system must be adapted and specific to each context. As the Arctic presents its own set of unique challenges and conditions, this subsection has the effect of requiring operators to consider, to a greater extent, the Other Components at play in the Arctic. This point is further demonstrated in section 9, where the requirement for environmental protection plans is outlined¹³. The goal of the environmental protection plan is to set out how potential environmental hazards will be managed. Two subsections of note are subsection (g), which requires reporting on "the procedures for the selection, evaluation and use of chemical substances including process chemical and drilling fluid ingredients" as well as subsection (i), which requires a "description of all discharge streams and limits for any discharge into the natural environment including waste material" (*Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315, subs. 9, g-i). Taken together, section 5 and subsection 9. (g) and (i) extend the regulations to consider a number of chemical components of the environment, resulting in this component's rating of II.

¹² See Appendix A.

¹³ See Appendix A section 9.

Reflection

The Drilling and Production Regulations miss the opportunity to address a serious deficiency in the baseline understanding and data available for ecosystem function and Arctic species and environments. Unfortunately, data for the region is less complete than for most other marine environments where offshore development is taking place (Bankes and Porta 2011, 3). As a result, the ability to craft mitigation measures in the Canadian Arctic is in turn limited by this lack of knowledge and understanding. As this regulation is based on a general goal-oriented approach, it is uniquely suited to direct the private sector towards meeting environmental goals that do not have quantifiable standards. In fact, it can be argued that this very situation is precisely where such a goal-oriented approach is of the most benefit. As the regulation is the first place Canada's oil and gas development framework considers the environment to the extent that it specifies goals or objectives for it, it provided a real opportunity to require operators to address this knowledge gap through meeting general environmental goals that were in line, or in support of, the various EBM components. Regrettably, greater consideration for the environment is not given and the gap is left open as environmental protection is only incorporated as a general goal, and is not made, in any way, specific to the lack of understanding that exists for the Arctic.

While the regulation is responsible for the introduction of environmental protection plans¹⁴, the plans only require a reflection of the mitigation measures that have already have been identified and committed to in a project's environmental assessment. As a result, the regulation only requires summaries and descriptions of how mitigation measures will be operationalized within their management plan. While this is a necessary process, it does not address the knowledge gap that exists for Arctic operations. The EPPs are expansive documents that already require studies to be undertaken on the mitigation of environmental hazards. As a result, the plans miss the opportunity to direct industry to study areas where a knowledge gap exists. The regulations have tremendous potential to develop and increase knowledge of the

¹⁴ See Appendix A section 9.

Canadian Arctic environment. However, they must first provide more specific direction if that is to occur.

Additionally, the regulation misses the opportunity to require specific EBM components within the mitigation measures to be put in place. For instance, section 9 could include a subsection requiring a demonstration of projects' efforts to implement integrated management or EBM principles within the environmental protection plan. For instance, the sub-subsection could require the integrated management of species, where industry must consider the impact of other activities, in the ecosystem, on the species. As the regulation is 'goal-oriented,' a subsection directing industry towards the 'goal' of ecosystem management would be in line with the regulation's performance-based approach.

Considering that a change or impact to one part of the environment has a reverberating impact on the others, understanding the environment's integrated relationship with itself would greatly improve the protection plans and general knowledge of the Arctic environment. Until such time as changes like these are enacted, the protection plans will, at best, remain management tools, while at worst they will simply be hoops through which developers must jump on their way to drilling. Regardless, the regulation misses the opportunity to incorporate EBM within the drilling and production regime for oil and gas operations. On the surface, it is a knowledge or informational problem. However, as demonstrate by the assessment along the PICES typology, the greater problem is the incorporation of EBM components. As EBM is a knowledge intensive system, fully implementing language to support it would go a long way to improving and addressing the knowledge gap that exists for operating in the Arctic,

4.2.2. Canadian Environmental Assessment Act

Before the NEB will approve an application for offshore oil or gas activity, it must ensure that a satisfactory environmental assessment is completed. While the NEB is responsible for enforcing the environmental assessment requirement, the statute outlining assessments is CEAA. The purpose of CEAA is to "protect the components of the environment that are within the legislative authority of parliament from significant

adverse environmental effects caused by a designated project” (*Canadian Environmental Assessment Act*, 2012, S.C. 2012, c.19, s. 52, subs. 4, 1, a). As a result, CEAA plays a critical role in evaluating the impact of Arctic oil and gas developments. Additionally, it is CEAA’s purpose to ensure that designated projects are carried out in a careful and precautionary manner, to promote sustainable development and to encourage the study of cumulative environmental effects of the physical activities undertaken in a region¹⁵. Table 3 outlines the extent to which CEAA considers the five components of the PICES typology on EBM. An explanation, outlining what aspects of the regulation formed the basis of each rating, is found below.

Table 3. Rating of the Canadian Environmental Assessment Act on Inclusion and Progression of EBM Components

EBM Component	I. Traditional single factor management	II. Sectoral Management in an Ecosystem Context	III. Integrated Management in an Ecosystem Context	Rating
Species	Considers only the factor or species being used	Considers prey, dependent predators and food supply, and impacts on ecosystem	Considers impacts of other activities on the status of the species being used and across the ecosystem	II
Physical habitats	Only considered if a surrogate for population parameters	Considers productive capacity and impacts of activity on the habitat	Accommodates spatial needs and habitat impacts of other activities	II
Environmental conditions	Not considered	Considers productivity regimes and forcing	Considers direct and indirect effects	II
Biodiversity	Not considered	Considers impacts on species not being used directly	Considers status of communities and resilience of the community/system	III
Other Components	Not considered	Considers other components as they affect the particular sector	Considers all components and all sectors and the interactions among them relative to agreed ecosystem management goals	I

Note: Table 3 is based upon Table 2.1.3 from the Report of Working Group 19 on Ecosystem-based Management Science and its Application to the North Pacific (North Pacific Marine Science Organization 2010, 4).

¹⁵ Respectively, see CEAA subsection 4. (b), (h) and (i) in Appendix B.

Analysis

In consideration of the Species component, CEEA states that the environmental effects of a designated project include any direct changes caused to fish and fish habitat, aquatic species and migratory birds, as their respective federal statutes define them¹⁶. As a result, CEEA is rated II for the species component. The Act considers prey, dependent predators, food supply as well as impacts on the ecosystem, thanks to the incorporation of these three additional statutes and their expansive definitions and implications. For instance, the *Fisheries Act* defines fish to include: “parts of fish; shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans, marine animals; and the eggs, sperm, spawn, larvae and juvenile stage of fish, shellfish, crustaceans and marine animals” (*Fisheries Act*, R.S.C., 1985, c. F-14, subs. 2, 1).

The Physical Habitat component is rated II, in part, because of the Act’s interpretation of the environment, which includes all layers of the atmosphere, as well as the land, water and air¹⁷. Additionally, the Act mandates, as part of the regional studies it requires applicants to conduct, that a study of the effects of existing or future physical activities be carried out for the region in question, as well as the neighbouring regions where applicable. This is the first instance where Canada’s legislation has recognized the overlap of impacts in one region on another. This mandate is found in subsection 74. (1) (a) and (b)¹⁸. Consequently, a rating of II, or sectoral management in an ecosystem context, is warranted.

The Environmental Conditions component is also rated II. Thanks to the Act’s broad interpretation of the ‘environment,’ it includes not just all living organisms, organic and inorganic matter, but also their interacting natural systems and the components of how they interact with the land, water, air and atmosphere¹⁹. Additionally, as the Act assesses how a designated project will adversely effect the environment, it takes into consideration the various environmental conditions of that particular environment in

¹⁶ The Fisheries Act, Species at Risk Act and Migratory Birds Convention Act are those statutes, respectively.

¹⁷ See Appendix B subsection 2. (1).

¹⁸ See Appendix B.

¹⁹ See Appendix B subsection 2. (1).

order to make its assessment. As a result, the statute's EAs include consideration for the development's affects on the productivity regimes of the ecosystem, a necessary component of sectoral management, resulting in a rating of II.

Thanks to the inclusive definition of the environment, CEAA's consideration of oil and gas development on the environment exemplifies progression along the EBM typology, towards integrated management in an ecosystem context. Appropriately, due to such broad definitions, the Biodiversity component is also rated highly, with a rating of III. This rating is the result of the broad definitions already explored, as well as the Act's consideration for the fish and fish habitats, aquatic species and migratory birds, as their respective statues define them. Thanks to the consideration for these interacting systems, of the various animals and components of the environment, CEAA is able to consider the status of communities and the resilience of their community systems. Appropriately, the very purpose of environmental assessments is to test the same, to determine whether or not they will be adversely affected by an oil or gas development project. Thus, CEAA cannot function properly if the Biodiversity component is not inclusive of EBM principles, and so deserving of its III rating.

Finally, in examining Other Components, a rating of I is reached. While the Act sets out its purpose "to encourage the study of cumulative effects of physical activities in a region and the consideration of those study results in environmental assessments," it does not specifically address the chemical properties of the environment (*Canadian Environmental Assessment Act*, 2012, S.C. 2012, c.19, s. 52, subs. 4, 1, i). For instance, the water column properties, water quality or bioaccumulation of contaminants is not given any consideration. While such effects or impacts may be considered as part of the 'cumulative effects' that the Act draws into question, such chemical properties are not specified. As a result, a rating of I is warranted.

Reflection

While the increased presence of EBM principles within the CEAA framework for environment assessments is to be lauded, the precautionary approach the Act sets out must always be remembered. In 2012 the Conservative government undertook a significant overhaul of CEAA. Through reducing its scope, they have given themselves

the leeway to interpret and direct development to a greater degree, in pursuit of the “world-class natural resources that represent [such] tremendous economic growth and tremendous jobs potential for ... Canadians” (Vanderklippe 2012). As the “relatively small data set’ and ‘limited understanding’ of the impacts of oil spills in Arctic waters” continues, increasing Canada’s cumulative knowledge of the North, as it pertains to offshore oil and gas developments projects, will be crucial going forward (Amos 2011, 44).

Further, understanding the susceptibility of Arctic ecosystems to oil, as well as the short and long term impacts of oil spills, will be key to better understanding what constitutes significant, adverse environmental effects, and so would warrant a development project being declined in the Arctic. In light of the politicization of the environment assessment process, this knowledge gap is exceedingly alarming, as the gap means that the factors influencing political decisions will not be based on extensive environmental knowledge. Instead, the factors will be, increasingly, influenced by political and economic concerns.

The Conservative’s overhaul of CEAA in 2012 was part of a broader pattern, aimed at streamlining the natural resource development approval process. As part of this update, only ‘designated projects’ now require environmental assessments. Designated projects are those specified by regulations or by order of the Environment Minister. Previously, environmental assessments were required more broadly, wherever a federal authority exercised its powers to facilitate the development of projects. This change represents the politicizing of the environmental assessment process, as the Minister now has the authority to designate projects in the first place (Hopkins-Utter 2012). While energy infrastructure projects automatically require environment assessments, the Environment Minister has also been granted the authority to determine if an assessment needs to be referred to an independent review panel. Following the completion of an environmental assessment, if it is determined that a project is likely to cause significant adverse environmental effects, if the environmental effects are uncertain or if public concern warrants it, the Minister can recommend that the environmental assessment be reviewed and decided upon by an independent review panel. Review panels comprise a group of independent, appointed experts, whose mandate is to hold public hearings and

make recommendation, based upon them, to government. However, under the updated rules, that role has been dramatically diminished. For instance, assessments of pipelines are no longer eligible for review by the panels. Instead, they will now be assessed by government agencies, in-house (Hopkins-Utter 2012). The independent review panel mechanism provided a conduit through which the impacts of a project could be neutrally assessed; now they are only required after a political actor requests them. The result is the potential for industry lobbyist, looking to avoid the scrutiny of an independent review, to prevent one from happening (Hopkins-Utter 2012). If significant adverse environmental impacts are found, under the new rules, Cabinet will decide whether or not the impacts can be sufficiently mitigated. Previously, such decisions were made by the department or agency conducting the assessment, as they were to be the responsible authority for them. However, now such decisions rest squarely with political actors.

The overhaul of CEAA also altered the scope of assessments in three fundamental ways. The first change is to the purpose of CEAA. Previously, CEAA sought to protect the components of the environment, generally. However, under the updated rules, the scope of CEAA's protection was reduced to the components "that are within the authority of parliament" (*Canadian Environmental Assessment Act*, 2012, S.C. 2012, c.19, s. 52, subs. 4, 1, a). The areas of federal jurisdiction include fish, aquatic species at-risk, migratory birds, projects on federal lands and affects on Aboriginal people. While it can be argued that in the Arctic this limitation is not an issue, as the Government of Canada has retained constitutional control over most of the territories, if not all of them, jurisdiction is not the issue. The real concern is how comprehensive EAs will be. As such, while jurisdictional issues may leave the Government of Canada with a wide array of oversight in the North, the language reflected in CEAA does not direct comprehensive study. Instead it is framed with limitation in mind. Such limitation has fundamentally altered the scope and applicability of CEAA, as well as its environment assessments. The result is a reduction of the extent to which EAs are now able to consider the full range of environmental factors and components. For instance, EAs are no longer able to consider species outside those identified above. However, if a caribou herd becomes endangered by offshore hydrocarbon pollution making its way to shore,

then a negative impact has occurred. Unfortunately, such cases will no longer be within the purview of CEAA.

The second change of note is that the Minister of the Environment now has the authority to determine the scope of assessments. The result of this change is the further politicizing of a process that formerly rested with bureaucratic actors. The third alteration is that assessments will only consider “directly linked or necessarily incidental” effects in terms of a project’s impacts on the environment (*Canadian Environmental Assessment Act*, 2012, S.C. 2012, c.19, s. 52). This includes fish, fish habitats, other aquatic species and migratory birds. The impact of this change is that indirect effects are no longer considered as central to the environmental assessment. For instance, effects on endangered terrestrial species and their habitats will be ignored, as the scope of assessment must now be linked directly to fish, fish habitats, aquatic species or migratory birds (Gue 2012). These changes, taken together, have greatly altered the ability of assessments to consider the Arctic environment in its entirety. As previously discussed, the ecosystem is a complex spatial unit. If its interacting components are not considered together, as they impact one another, part of the picture will be missed. As the Conservative government has sought to streamline the environmental assessment process, the nuances and complexity of the environment have been sacrificed for expedience. While the analysis of CEAA, above, has shown that the Act has progressed towards implementing an EBM system, such progress must be understood through the context of the politicization and simplification that has been underway.

4.3. The Negative State of Canada’s Regulatory Environment

The minimal and compromised extent to which Canada has incorporated EBM components within its framework for offshore oil and gas development is not the only environmental concern that arises when looking at the framework. Several other problems, not apparent from the typological analysis, exist which demonstrate the increasingly negative state of Canada’s regulatory environment for oil and gas. For instance, the framework does not sufficiently internalize the risks, and associated costs, of operating in the Arctic. The two greatest setbacks to this internalization are the

increasing shift to performance-based regulations, and the discrepancy between the liability cap and actual costs of environmental clean up. The Canadian approach to oil and gas development has long been considered a hybrid one between performance-based regulations and traditional prescriptive regulations (Dagg, et al. 2011, 2). However, increasingly, the Canadian approach has shifted to one that is performance-based.

For example, the previous *Canada Oil and Gas Drilling and Production Regulations* specified minimum well casing design factors that operators had to ensure they met. As a result, they were considered traditional prescriptive regulations. The current regulations, revised in 2009, require operators to design well casings so as to ensure a well can be “drilled safely and withstand the anticipated conditions and forces that be placed upon it” (National Energy Board, *Review* 2011, 18). The result of this change, to a performance-based system, shifts the responsibility to industry to determine what means best address these conditions or forces in question. While there is some logic in shifting away from the one-size fits-all approach that was the result of the traditional prescriptive measures Canada had in place, the challenge associated with this new approach is relying on the oil and gas industry’s sense of responsibility. Their reliability is called into question in light of a “neglect of, or even an absence of, processes and procedures to identify, mitigate, or eliminate potential [safety] risks” (National Energy Board, *Review* 2011, 30). As the NEB further discusses: “[b]eneath the deficiencies lies an even deeper and disturbing pattern of organizational cultures that did not put safety first” (National Energy Board, *Review* 2011, 30). While it is not the intent of this research project to analyze safety standards, they serve as an illustration of just how alarmingly inadequate industry can perform. If such safety goals did not motivate industry to put in place adequate standards for their employees, they cannot be given the benefit of the doubt when it come to the environment. The environment has much broader consequences for the failure of environmental protection standards, consequences that can decimate ecosystems and destroy the region’s indigenous peoples’ way of life.

To ensure the environment is given the consideration it requires, operators must internalize the full costs associated with environmental degradation. Internalizing the

costs would require industry to factor in complete remediation costs into their profitability calculations. This includes the costs of risk reduction, spill response, remediation and decommissioning activities, as well as the costs to study and monitor the effects of such operations on the Arctic in the first place (Arctic Monitoring and Assessment Programme 2007, vii-viii). While the Government of Canada has in place a \$1-billion no-fault liability cap for damages caused by a well blowout or oil spill, this cap does not go far enough to internalize costs within the industry. The no-fault liability caps means that operators do not need to be proven at fault to be subject to up to \$1-billion in punitive action (McCarthy 2013). Unfortunately, after \$1-billion the operator must be found at fault to be further liable. While that battle may be waged in the courtroom, it does little to ensure operators internalize the potential costs. Consequently, the true costs of a blowout or spill are not considered as part of the oil and gas industry's plans for development. Given that the costs of the British Petroleum spill in the Gulf of Mexico have already run into the tens-of-billions of dollars, it seems vastly naïve and sufficiently inadequate to think that \$1-billion will cover the costs incurred due to an oil spill in Canada's remote Arctic.

“When responsible parties are not required to internalize cost, there are no incentives for them to take the sorts of levels of care necessary to prevent future spills or other harmful effects” (Amos 2011, 45). As a result, it is of paramount importance that Canada further incorporates and progresses its EBM system within the framework for offshore oil and gas development. As discussed above, the EBM components can help guide the framework towards a future where the sustainable development of resources can be balanced alongside the environmental maintenance of the region. However, if they are not given the opportunity to succeed in the first place, it is unlikely the environmental protection regime will achieve much.

4.4. Summary of the PICES Typological Analysis

Despite the complexity of Canada's oil and gas framework for development, it is clear that economic factors are increasingly being favoured over environmental ones. Despite most of the legislation clearly stating its concern for the environment, as evidenced by tables two and three, the extent to which the government incorporates

EBM components into its legal framework is minimal. While there is movement towards the inclusion of EBM, it has come with the Conservative government's politicization and simplification of the environmental assessment process. While some components have been incorporated quite extensively, for instance the Biodiversity component, others are found lacking or not considered at all, for instance the Species component.

Although the scope of this research project has been limited to Canada, the state does not exist in an Arctic vacuum. Indeed, it regularly meets and discusses the future of the region with its Arctic neighbours, as well as the permanent participants and observers of the Arctic Council. As a result, the language adopted by the council can be seen as a reflection of the general direction agreed upon by the international Arctic community. Through these discussions, the Arctic Council and its working groups arrived at the following position, with respect to offshore hydrocarbons and the environment: "offshore oil and gas activities should be conducted in coordination with other human activities in the region, such as tourism, fishing, shipping and scientific research.... Arctic governments should consider the use of integrated management practices (Protection of the Arctic Environment Working Group 2009, 11). Despite the soft language, the intent is clear; integrated management is to be the stewardship regime states consider in managing their Arctic environments.

While Canada has considered integrated management practices, to varying degrees, as well as purported to adopt them, the state of such legal incorporation has been found lacking. The limited inclusion of the EBM components, despite extensive work to develop them, makes it clear that the consideration of other factors is outweighing those for the environment. Canada's interest in future Arctic oil and gas developments is driving its policy for the North. The state seems determined not to limit its wealth potential in the region. Through teasing out the nuance between environmental, political and economic factors, it is evident that political and economic concerns have influenced Canada's commitments and actions towards ecological preservation and protection in the Arctic.

Chapter 5.

Conclusion

In September 2013, in response to the latest report released by the Intergovernmental Panel on Climate Change (IPCC), the Conservative Environment Minister, Leona Aglukkaq, issued a statement saying the Conservative government is already “playing a leadership role in addressing climate change” (De Souza 2013). Minister Aglukkaq said in the release that, “[u]nlike the previous Liberal government, under whose watch greenhouse gas emissions rose by almost 30 per cent, or the NDP, who want a \$21-billion carbon tax, our government is actually reducing greenhouse gases and standing up for Canadian jobs” (De Souza 2013). However, what the Minister failed to address was the fact that Canada is on track to achieve only half of the 2020 emissions targets her government committed to in 2009. That target is a reduction of greenhouse gas emissions by 17% below 2005 levels. Additionally, she also failed to expand on the fact that 75% of the reductions made have been attributed to provincial actions, according to a 2012 report by the National Round Table on the Environment and the Economy (Cheadle 2013). Ironically, it was the Minister’s own department that clarified the fact that Canada would miss its 2020 emissions target, as well, that it was her own government that has since closed down the National Round Table

When it comes to the environment, the Harper government is often more comfortable playing politics than it is addressing environmental challenges head on. In this case, the Minister’s comments are particularly revealing as they demonstrate the government’s tendency to obscure environmental considerations with economic ones. The Harper government’s history with the environment, as evidenced through this research project’s examination, displays a clear departure from environmental progress. Ecosystem-Based Management has not advanced towards a fully implemented system. Due to the insufficient incorporation and progression of EBM components within the

Canadian oil and gas development framework, EBM has been prevented from being fully realized and from protecting and managing the environment to the extent that it can. As a result, Canada's commitment to EBM is reduced to a nominal and convenient goal that belies the country's interest in northern offshore oil and gas development. Consequently, under the Harper government, Canada's legal framework for development has slowly, but intentionally, been altered to better allow for future development projects to occur. These changes represent just one part of a broader shift, by the Conservative government, to realign the state under its particular perspective. Unfortunately, this means the prioritization of economic concerns and the sacrifice of environmental protection. Under the Harper government, inaction has become the new norm.

The adoption and adaption of the typological tool, at the center of this research project's analysis, is a useful addition to the literature and our understanding of the extent to which the environment is considered within the framework for oil and gas. While the tool is a simplification of environmental components and considerations, it nonetheless provides an insightful means of understanding the issues and of establishing a much-needed baseline from which progress can be assessed and measured. A single issue is unlikely to outweigh all other concerns of the state, even one as large and important as the environment. However, through developing this type of understanding and testing we are better able to understand how the government compromises on the matter and how the environment can be sacrificed in the pursuit of 'good Canadian jobs.'

As the Conservative Party of Canada has consecutively formed government since the 2006 federal election, it is impossible to know if another party would have followed the same path of politicization and simplification while developing EBM in the Canadian Arctic. Nonetheless, the new direction that has been set for Canada's oil and gas regulatory regime is all theirs'. While the Conservative government continues to profess its concern for the environment, its leadership on the issue and its progress on climate change, their actions have been found lacking. In fact, they have been found to sharply depart from the goals they have committed to. As Will Amos, Director of the Ecojustice Environmental Law Clinic at the University of Ottawa wrote, "without better baseline knowledge it is impossible to be truly certain of the impact of offshore drilling in

the Canadian Arctic, and therefore impossible to truly assess the risks and rewards of such activity” (Amos 2011, 45). While much research is required to address this knowledge gap, a measure of environmental consideration can be established. Such a measure was the very intent of this research project, and so should be considered the opening salvo in Canadians’ quest to better understand the future of their northern environments.

Through a discussion of the nationalistic northern interests and considerations that have historically impacted Canada’s approach to the Arctic environment, this project has demonstrated the intent of the state to maintain regional control and to establish the necessary parameters that would facilitate future economic development. In considering the implementation of EBM in Canada, this project has established that, despite platitudes and promises, Canada’s EBM regime has not been realized to the extent that it is able to manage the Arctic environment. As well, through a consideration of the competing interests in the Arctic, it has been noted how the environment is often given secondary consideration to political or economic concerns, and so has been sacrificed or compromised along the way. Finally, through a typological analysis of the oil and gas development framework, the insufficient inclusion and progression of EBM components has been established. Taken together, these arguments and positions outline the current state of the Canadian Arctic environment, at least in terms of its position with respect to the oil and gas sector. With Canada’s term as Chair of the Arctic Council not yet expired, the opportunity to lead the future of Arctic oil and gas development is here. Although the Arctic is divided by political boundaries, the Arctic Ocean is a single geographic space, containing similar ecosystems and marine life, as well as common cultural heritage (Banks and Porta 2011, 18). Political leadership is the missing element from this largely homogenous region. Unfortunately, such action would require the Conservative government to take progressive environmental action with respect to its North – the very type this project has demonstrated to be most difficult for them to do.

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Appendix A.

Canada Oil and Gas Drilling and Production Regulations Subsections

Section 5: Management System

5. (1) The applicant for an authorization shall develop an effective management system that integrates operations and technical systems with the management of financial and human resources to ensure compliance with the Act and these Regulations....

(4) The management system shall correspond to the size, nature and complexity of the operations and activities, hazards and risks associated with the operations (*Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315, s. 5).

Section 9: Application for Authorization – Requirements for EPPs

9. The environmental protection plan shall set out the procedures, practices, resources and monitoring necessary to manage hazards to and protect the environment from the proposed work or activity and shall include

(a) a summary of and references to the management system that demonstrate how it will be applied to the proposed work or activity and how the duties set out in these Regulations with regard to environmental protection will be fulfilled;

(b) a summary of the studies undertaken to identify environmental hazards and to evaluate environmental risks relating to the proposed work or activity;

(c) a description of the hazards that were identified and the results of the risk evaluation;

(d) a summary of the measures to avoid, prevent, reduce and manage environmental risks;

(e) a list of all structures, facilities, equipment and systems critical to environmental protection and a summary of the system in place for their inspection, testing and maintenance;

(f) a description of the organizational structure for the proposed work or activity and the command structure on the installation, which clearly explains

(i) their relationship to each other, and

(ii) the contact information and position of the person accountable for the environmental protection plan and the person responsible for implementing it;

(g) the procedures for the selection, evaluation and use of chemical substances including process chemicals and drilling fluid ingredients;

(h) a description of equipment and procedures for the treatment, handling and disposal of waste material;

(i) a description of all discharge streams and limits for any discharge into the natural environment including any waste material;

(j) a description of the system for monitoring compliance with the discharge limits identified in paragraph (i), including the sampling and analytical program to determine if those discharges are within the specified limits; and

(k) a description of the arrangements for monitoring compliance with the plan and for measuring performance in relation to its objectives (*Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315, s. 9).

Section 86: Environmental Reports

86. (1) For each production project, the operator shall ensure that, not later than March 31 of each year, an annual environmental report relating to the preceding year is submitted to the Board and includes

(a) for an offshore installation, a summary of the general environmental conditions during the year and a description of ice management activities; and

(b) a summary of environmental protection matters during the year, including a summary of any incidents that may have an environmental impact, discharges that occurred and waste material that was produced, a discussion of efforts undertaken to reduce pollution and waste material and a description of environmental contingency plan exercises.

(2) For each drilling installation for an exploration or delineation well, the operator shall ensure that an environmental report relating to each well is submitted to the Board within 90 days after the rig release date and includes

(a) a description of the general environmental conditions during the drilling program and a description of ice management activities and downtime caused by weather or ice; and

(b) a summary of environmental protection matters during the drilling program, including a summary of spills, discharges occurred and waste material produced, a discussion of efforts undertaken to reduce them, and a description of environmental contingency plan exercises (*Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315, s. 86).

Appendix B.

Canadian Environmental Assessment Act Subsections

Section 2: Interpretation

2. (1) “environment” means the components of the Earth, and includes

(a) land, water and air, including all layers of the atmosphere;

(b) all organic and inorganic matter and living organisms; and

(c) the interacting natural systems that include components referred to in paragraphs (a) and (b) (*Canadian Environmental Assessment Act*, 2012, S.C. 2012, c.19, s. 52, subs 2).

Section 4: Purposes

4. (1) The purposes of this Act are

(a) to protect the components of the environment that are within the legislative authority of Parliament from significant adverse environmental effects caused by a designated project;

(b) to ensure that designated projects that require the exercise of a power or performance of a duty or function by a federal authority under any Act of Parliament other than this Act to be carried out, are considered in a careful and precautionary manner to avoid significant adverse environmental effects;

(c) to promote cooperation and coordinated action between federal and provincial governments with respect to environmental assessments;

(d) to promote communication and cooperation with aboriginal peoples with respect to environmental assessments;

(e) to ensure that opportunities are provided for meaningful public participation during an environmental assessment;

(f) to ensure that an environmental assessment is completed in a timely manner;

(g) to ensure that projects, as defined in section 66, that are to be carried out on federal lands, or those that are outside Canada and that are to be carried out or financially supported by a federal authority, are considered in a careful and precautionary manner to avoid significant adverse environmental effects;

(h) to encourage federal authorities to take actions that promote sustainable development in order to achieve or maintain a healthy environment and a healthy economy; and

(i) to encourage the study of the cumulative effects of physical activities in a region and the consideration of those study results in environmental assessments (*Canadian Environmental Assessment Act*, 2012, S.C. 2012, c.19, s. 52, subs 4).

Section 74: Regional Studies

74. (1) If the Minister is of the opinion that it is appropriate to conduct a study of the effects of existing or future physical activities carried out in a region that is composed in part of federal lands or in a region that is entirely outside federal lands,

(a) the Minister may enter into an agreement or arrangement with any jurisdiction referred to in paragraphs (a) to (f) of the definition “jurisdiction” in subsection 2(1) respecting the joint establishment of a committee to conduct the study and the manner in which the study is to be conducted; and

(b) the Minister and the Minister of Foreign Affairs may enter into an agreement or arrangement with any jurisdiction referred to in paragraph (g) or (h) of that definition respecting the joint establishment of a committee to conduct the study and the manner in which the study is to be conducted (*Canadian Environmental Assessment Act, 2012*, S.C. 2012, c.19, s. 52, subs 74).