

Coastal Protection Act: A Future Scenario Analysis of Coastal Policy in Nova Scotia

by

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Abstract

Nova Scotia has the longest provincial coastline in Canada, yet is the only Atlantic province without a coastal policy. With the increasing threat of climate change, the Government of Nova Scotia was elected in 2017 on a promise to develop a Coastal Protection Act (CPA). In collaboration with the Ecology Action Centre (EAC), this study considers the potential for a CPA to address key coastal issues (development regulation, ecosystem protection, hazard management) and improve coastal sustainability in comparison to policy alternatives. A policy analysis of existing provincial legislation and stakeholder interviews inform a future scenario analysis of four coastal policy outcomes for Nova Scotia: the *No Policy Change*, *Provincial Policy Amendments*, *Municipal Coastal By-Law Model* and *CPA* scenarios. Results indicate that a CPA is the most desirable and feasible scenario offering comprehensive and consistent protection of coastal areas across the province and meeting growing stakeholder demand for new provincial legislation. Public education, community and Mi'kmaw consultation, stakeholder collaboration and complementary policy development are recommended as additional actions for the EAC to take in addressing coastal issues no matter the policy outcome.

Key words: coastal policy, future scenario analysis, climate change, adaptation, provincial government, sustainability.

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1.0 Introduction

1.1 Background

The coasts are humanity's lifeline. At the most basic level, coastal environments offer a source of nourishment and income to some of the world's poorest coastal communities (UNEP, n.d.). More broadly, billion-dollar industries including fisheries, aquaculture, oil and mineral extraction and tourism rely on coastal areas (UNEP, n.d.). Coasts are ecologically significant in their support of terrestrial and aquatic species and in the ecosystem services they provide, including wave and storm surge attenuation and reduction of erosion (The Nature Conservancy, n.d.a). Most importantly, coasts hold intrinsic value as a source of identity, spirituality and wellbeing to those who experience them (The Nature Conservancy, n.d.b). Such a valuable natural element deserves protection.

Globally, coastlines span approximately 1.6 million km across 123 countries (UNEP, n.d.). The value of these ecosystems and the need for effective coastal management was recognized internationally in *Agenda 21* composed at the 1992 United Nations Conference on Environment and Development (UN, 1992). This document highlighted the responsibility of coastal nations to implement management programs and promote sustainable coastal development (Clark, 1992a). Integrated Coastal Zone Management (ICZM) was born to provide a guiding framework for national coastal management projects that incorporated good governance, stakeholder perspectives and sustainability (European Commission, 2012). As of 2002, however, it was estimated only 42 nations had implemented policies to regulate coastal development and other activities (Vallega, 2002).

Widespread international effort to regulate and protect the coasts is becoming increasingly urgent with the threat of climate change (Gilbert & Vellinga, 1990). Sea level rise, storms of increasing strength and frequency, flooding, coastal erosion and coral reef bleaching

are all effects of global warming currently degrading the world's coasts (UNEP, n.d.). These threats, if left unaddressed, will have devastating social, economic and environmental consequences that proactive management could prevent (Jackson, n.d.). Without adaptive measures, for example, coastal flooding alone is estimated to cause between 0.3-9.3% in annual loss in global gross domestic product (GDP) (Hinkel *et al.*, 2013).

As the nation with the longest coastline, Canada is no stranger to climate change threats in coastal areas (Lemmen & Warren, 2016). Despite the urgency to protect its coastlines, Canada has a history of lagging behind its international counterparts on the issue of coastal and marine management (Shendruk, 2014). In the 1980s, for example, an attempt to implement a national ICZM failed and, more recently, in 2014, only 0.9% of marine areas in the country were designated as protected (Clark, 1992b). The federal government is now taking increasing initiative to address the issue of coastal protection, notably by targeting 10% of marine areas protected by 2020 in the Federal Sustainable Development Strategy for 2016-2019 (Government of Canada, 2016). In terms of policy, federal legislation such as the *Oceans Act*, *Fisheries Act* and *Water Act* are key in directing coastal management across the country (Hynes & Graham, 2005).

At over 13,000km, Nova Scotia is home to the longest coastline in Canada and has many reasons to protect it (Government of Nova Scotia, 2009a). The Nova Scotian population, 70% of which live in coastal communities, draw their identity from their coastal environment while many of the province's top industries including tourism, fisheries and aquaculture are heavily dependent on the coasts (Government of Nova Scotia, 2009a). Sea level rise, which is predicted to increase between 70 to 140cm in the region in the next century, is currently a serious threat to the Nova Scotian coast (Government of Nova Scotia, 2009b). Yet, despite the importance of the

coast to the province and its vulnerability, Nova Scotia is the only province in Atlantic Canada without a provincial coastal policy to regulate development and activities in these areas and ensure their protection (EAC, n.d.).

The Government of Nova Scotia did attempt to create a coastal policy in 2010 (Government of Nova Scotia, 2012). The Provincial Ocean Network composed of representatives from various provincial government departments developed the Coastal Management Framework and the Nova Scotia State of Coast Report to begin addressing the gap in coastal legislation (Government of Nova Scotia, 2009a). Following public consultation, a draft coastal policy was written, but quickly dropped from the government's agenda due to jurisdictional complications, poor public opinion on the issues of fisheries and aquaculture, and lack of political will to pursue its implementation (EAC, n.d.). The current government has, however, promised to put forward a Coastal Protection Act (CPA) over their four-year term, though the issues that halted the last draft are still of concern (EAC, n.d.).

While a range of legislation already regulates the use of Nova Scotia's coastline, the problem lies in the absence of a clear, enforceable law that applies equally to all coastal communities across the province. Currently, coastal management depends mainly on individual municipalities and their choice in land-use planning policies (EAC, n.d.). A provincial CPA could provide a uniform set of regulations to all coastal communities and ensure the same level of protection is provided to the entire provincial coastline (EAC, n.d.). With the increased vulnerability of the coasts to the worsening effects of climate change, protection of coastal areas is urgently needed in Nova Scotia.

1.2 Research Objective

A CPA may offer a potential solution to the threat of climate change in coastal areas, but its impacts and overall suitability remain unknown. This study examines the question: “How might the implementation and application of a provincial Coastal Protection Act influence the future sustainability of coastal areas in Nova Scotia?” In other words, this study aims to analyze the state of existing coastal policy in Nova Scotia and the impacts of enacting a provincial CPA as opposed to other policy alternatives. Research involves a policy analysis of existing provincial legislation pertaining to the coast to establish a baseline of coastal protection and a series of stakeholder interviews to collect diverse perspectives on the future of provincial coastal policy. Both inform a future scenario analysis which includes the development and analysis of plausible alternative futures for coastal sustainability in Nova Scotia with or without the implementation of a CPA.

1.3 Significance of Study

This study is intended to address the knowledge gap concerning the potential outcomes of a CPA on coastal sustainability in Nova Scotia in comparison to other potential policy directions. This research is designed to support the efforts of the Ecology Action Centre (EAC) in improving coastal protection in the province. By considering the impacts and desirability of the CPA in relation to policy alternatives, this study is intended to help educate their approach to provincial coastal legislation and their demands of government on this issue. By extension, the final thesis is meant to inform, not only the EAC, but also provincial decision-makers and other relevant stakeholders of the potential implications of their chosen coastal policy scenario.

This research also draws on relevant knowledge and expertise of the EAC. As an established stakeholder in the provincial coastal policy landscape, the EAC can provide insight

on the history of coastal policy in Nova Scotia, the key issues of coastal development regulation, ecosystem protection and hazard management that require urgent action, the five-year timeline for consideration of these issues, the other stakeholders in this landscape and the relationships that define their interactions and positions on a CPA. This information is valuable in the development of comprehensive scenarios that consider past coastal policy decisions and their effect on current visions and priorities for future legislation. While the EAC is a major source of information, this research does not share in its objectives as a non-governmental organization pressuring government to pursue a CPA. This thesis remains objective in its analysis of policy scenarios for the coast and conclusion on the desirability and feasibility of a CPA for Nova Scotia.

This research is significant in its connection to sustainability. Coastal sustainability, or the protection of resilient coastal communities, livelihoods and ecosystems for future generations, is considered the goal of coastal policy in this study. The future scenarios are used as a tool to illustrate the future of the provincial coastline based on present governmental and stakeholder actions. These scenarios map the potential directions of coastal management and can help inform government decision-making in choosing to pursue or deviate from the current CPA path.

1.4 Definitions

Key terms in this research include:

Coastal Zone/Area: interface between terrestrial and marine environments where conditions support distinctive ecosystems. For land-use purposes in Canada, coastal zones extend 10km inland of tidal waters and 200nm out to sea (Stewart, Rutherford, Levy & Jackson, 2003).

Coastal Protection Act: legally-enforceable legislation passed in provincial Parliament detailing limits and regulations of coastal activities (EAC, n.d.). An Act differs from a strategy which offers a non-binding guideline for legislation and a by-law which refers to a secondary law applied and enforced at the municipal level (Government of Canada, 2006).

Climate change: variations in climate conditions, whether natural or human-induced, that can be statistically proven and occur over a long period of time (IPCC, 2007).

Coastal hazards: threat posed to human life and development in coastal areas by sea level rise, severe weather events, coastal erosion and storm surges (Great Lakes Coastal Resilience, 2013).

1.5 Structure of Study

This study begins with a literature review of key topics including climate change impacts in Nova Scotia, the ownership of the coastal zone, the history of provincial coastal policy and future scenario analysis. The methods section follows detailing the steps taken to complete the policy analysis of coastal legislation at the provincial level, stakeholder interviews and future scenario development and analysis of coastal policy in Nova Scotia. Finally, the results and discussion sections present key findings from the policy analysis and interviews to inform the development of four coastal policy scenarios and comparatively analyze their desirability and feasibility in protecting coastal sustainability in Nova Scotia.

2.0 Literature Review

The research question guiding this study requires a review of existing knowledge on coastal threats and management in Nova Scotia, and on the selected methodology. Climate change and its social, economic and environmental impacts on coastal sustainability in Nova Scotia represent key considerations in the study of future coastal policy. Government and

Aboriginal jurisdiction of coastal areas is also worth reflection in the understanding of key stakeholders responsible and liable for coastal protection in the province. The history of coastal policy in Nova Scotia is an equally valuable concern particularly in relation to its influence on the current positions of stakeholders on the CPA. Finally, future scenario analysis is worth consideration as a methodological tool to answer the research question and analyze the implications of the implementation and application of a CPA on coastal sustainability as opposed to policy alternatives.

2.1 Climate Change and Nova Scotia's Coast

Climate change refers to variations in long-term weather patterns (David Suzuki Foundation, 2017). Throughout the Earth's history, the climate has naturally changed from ice ages to periods of warming due to alterations in sunlight because of variation in the Earth's orbit (National American Space Association (NASA), n.d.). Current climate change is caused in large part, not by natural variations in sunlight, but by human activity (NASA, n.d.). Through the burning of fossil fuels, humans have released greenhouse gases, including carbon dioxide and methane, into the atmosphere and reinforced the greenhouse effect, a natural phenomenon by which the Earth retains the Sun's heat and fosters life (NASA, 2017a). The accumulation of greenhouse gases has led to warming temperatures on Earth as well as the melting of ice sheets and expansion of the oceans which is leading to global sea level rise (NASA, 2017b).

2.1.1 Climate Change in Nova Scotia

In addition to warmer temperatures, Nova Scotia will be most affected by climate change effects relating to the ocean including rising sea levels, flooding, coastal erosion and more frequent and intense storms and storm surges (Vasseur & Catto, 2008). Sea level rise is expected to increase by 70-140cm across the province over the next century based on assumptions of

uncertainty factors including future global emissions, sea level rise trends, melting of ice sheets and subsidence (Government of Nova Scotia, 2009a). Sea level rise in Nova Scotia is predicted to be worse than the global average because of regional factors like subsidence or the natural collapse and rebound effect of the land after glaciation (Government of Nova Scotia, 2009a). Nova Scotia is currently sinking approximately 20cm/century (Government of Nova Scotia, 2009a). In addition to sea level rise and subsidence, storm events and surges will further increase ocean height and potentially lead to extreme water levels (ECoAS, 2016). These combined increases in ocean height will result in coastal erosion, or the loss of sediment from the coastline due to waves which have a greater reach, and coastal flooding, or temporary submergence of land under ocean during storm surges (ECoAS, 2016).

2.1.2 Biophysical Impacts of Climate Change

These predicted effects of climate change in Nova Scotia will have impacts on environmental, social and economic sustainability in coastal areas. At an environmental level, the Nova Scotia coast is diverse, ranging from landscapes of cliffs to beaches to estuaries (Nova Scotia Department of Environment and Labor, 2002). These coastal ecosystems vary in sensitivity to the impacts of climate change (Vasseur & Catto, 2008). Sensitivity refers to the probability of a landscape experiencing physical changes which is dependent on factors such as geological and topographical considerations, amount of sea level rise, coastal erosion and tidal regime (Vasseur & Catto, 2008). For example, beaches are sensitive ecosystems and vulnerable to coastal erosion with rise in sea levels and greater waves during storm events (Government of Nova Scotia, 2009a). Estuaries and freshwater marshes are sensitive in that greater tidal regimes risk saltwater intruding and changing these ecosystems (Government of Nova Scotia, 2009a). Such changes to habitat will impact species in coastal ecosystems while other effects of climate

change, including change in water temperature, quality and salinity could also threaten species survival (Government of Nova Scotia, 2009a).

2.1.3 Social Impacts of Climate Change

Social sustainability on the coasts is also threatened by sea level rise and related coastal hazards. Human health is vulnerable to the spread of new waterborne diseases that develop in warmer oceans and spread through flooding (Government of Nova Scotia, 2009a). Loss of infrastructure during storms stands to isolate coastal communities (Government of Nova Scotia, 2009a). Also, the changing coastal landscapes may threaten the spiritual and recreational relationship that Nova Scotians hold with the coast, and in fact, threaten their entire coastal identity (G. Klein, personal communication, October 7, 2017). One of the most dangerous social impacts of sea level rise and worsening coastal storms is the aggravation of inequalities. In a study of dissemination areas vulnerable to sea level rise in Nova Scotia, an estimated 18% of the areas located in precarious elevated flood zones have social vulnerability indexes above the provincial average (Bryce *et al.*, 2015). These findings indicate that a significant proportion of Nova Scotians threatened by sea level rise are also more vulnerable than the average citizen to sustain negative impacts from stress due to limited access to social, cultural and economic resources (Bryce *et al.*, 2015). Imposing the burden of dealing with sea level rise on vulnerable populations would increase existing social inequalities in Nova Scotia.

2.1.4 Economic Impacts of Climate Change

Coastal impacts of climate change will also take a toll on the economic sustainability of Nova Scotia. Coastal industries are threatened by changes to coastal ecosystems. Aquaculture, for example, will be disrupted by more frequent storms, erosion of coastal barriers and variation in water conditions required for livestock survival (Government of Nova Scotia, 2009a). The

fishing industry will also likely be impacted by changes in storm patterns and sea conditions which will affect the health of fish as well as the transportation and safety of fishermen (Vasseur & Catto, 2008). Economic impacts of climate change also include the costs of rebuilding efforts following storm events (Vasseur & Catto, 2008). Infrastructure and property damage can be expected with increasingly severe and frequent storms and storm surges (Government of Nova Scotia, 2009a). Costs of rebuilding can be expected to top the \$200 million bill for repairing the damages across Atlantic Canada after hurricane Juan in 2003 (Vasseur & Catto, 2008).

2.1.5 Key Coastal Issues

From these pillars of sustainability threatened by climate change, three coastal issues emerge as most urgent: the protection of coastal ecosystems, regulation of coastal development and management of coastal hazards (S. Page, personal communication, January 12, 2018). By ensuring the preservation of valuable beach, estuary and saltmarsh habitats for species and industry, the issue of coastal ecosystem protection is crucial to environmental and economic sustainability of coastal areas. Regulation of coastal development can prevent infrastructure damage and reduce community vulnerability to climate change thus connecting to social sustainability. Finally, the issue of coastal hazard management involves planning for mitigation and adaptation to sea level rise, coastal erosion, severe weather events and storm surges which is essential to ensuring the health of the environment, communities and economies of coastal areas. These three priority coastal issues are central in this study of future coastal policy in Nova Scotia.

2.1.6 Criticisms of Climate Change Impacts

While the occurrence climate change and its effects on the coast are scientifically proven, the positive impacts of climate change, including longer growing seasons for food producers,

warmer weather conditions and more beach access for tourists, are not often considered in legislation (Government of Nova Scotia, n.d.). Another common criticism of predicted climate impacts includes the regional variability of these predictions which should be built on specific rates of land subsidence and sea level rise in targeted locations rather than generalized for the entire province (Government of Nova Scotia, 2009a). Predictions and the legislation that stems from them may also be inaccurate as they are based on assumptions of future global emissions trends, rates of glacier melt and sea level rise which are all factors associated with a high degree of uncertainty (Government of Nova Scotia, 2009a).

Criticisms of predicted climate change effects related to the coast are counterweighted by the urgency of addressing climate change to ensure the stability of natural ecosystems and the species they support, proud and resilient coastal communities and a secure economic future for next generations of Nova Scotians. A CPA may present a policy response to the need for climate action and offer improved management to key issues of coastal ecosystems, development and hazards.

2.2 Who is Responsible for the Coast?

With three levels of government in Canada and recognition of Aboriginal rights to the land, the Nova Scotia coastline is a shared responsibility (East Coast Environmental Law (ECEL), 2010). Coastal jurisdictions have been defined through a variety of overlapping legislation since 1867 and, still today, gaps and uncertainty remain in the roles of the federal, provincial, municipal governments and Indigenous communities (ECEL, 2010).

2.2.1 Federal Jurisdiction

The federal government is responsible for coastal areas from the low water mark, or the lowest point reached at low tide, to 200 nautical miles out to sea (*Oceans Act*, 1996, s. 13). As

defined in the *Oceans Act*, these geographical limits represent the boundaries of the Exclusive Economic Zone (EEZ). The federal government also oversees coastal activities including fisheries, navigation and shipping as defined in the Constitution (*Constitution Act*, 1867, s.91). Other relevant federal legislation regarding the Nova Scotia coast includes the *Fisheries Act* (1985) which requires federal approval for any coastal development that may affect fish habitat (ECEL, 2010) and the *Canadian Environmental Protection Act* (1999) which requires federal environmental assessment for coastal development on Crown land (ECEL, 2010). Coastal management is a file shared between the Department of Fisheries and Oceans, Environment Canada, Transport Canada and Parks Canada (ECEL, 2010).

2.2.2 Provincial Jurisdiction

The provincial government is responsible for coastal lands above the low water mark as defined in the *Oceans Act* (1996, s. 35). According to the Constitution, provincial governments also have jurisdiction over issues related to coastal management such as property rights, municipalities and development of non-renewable resources (*Constitution Act*, 1867, s. 92). Multiple departments in the provincial government, including the Department of Environment and the Department of Fisheries and Aquaculture, share provincial duties relating to the coast in Nova Scotia (Armitage *et al.*, 2017). Several provincial Acts play a role in regulating coastal activities within provincial jurisdiction, including the *Beaches Act* (1989) which aims to protect beaches and sand dunes from unsustainable use and gives the Department of Natural Resources authority over beaches on private land (Nova Scotia Environmental Network, 2007). The *Fisheries and Coastal Resources Act* (1996) allows the provincial government to set standards on fishing and aquaculture and the *Environment Act* (1994) provides the Department of

Environment authority over all provincial water resources (Nova Scotia Environmental Network, 2007).

2.2.3 Municipal Jurisdiction

Municipal governments have the most direct influence on management of the Nova Scotian coast, though their power is an extension of provincial jurisdiction. The *Municipal Government Act* (1998) accords municipalities “primary authority over planning within their respective jurisdiction” (Section IV, ss.190 (b)) through the creation and implementation of by-laws and planning strategies. With these tools, municipalities have the power to regulate development, designate protected land and collaborate with other municipalities without approval from the provincial government (*Municipal Government Act*, 1998). While the use of these tools is often left to the discretion of municipalities, the provincial government required Integrated Community Sustainability Plans (ICSPs) from all 54 municipalities by 2010 to satisfy requirements for the Federal Gas Tax (Province of Nova Scotia, 2015). Some municipalities, including Yarmouth, incorporated coastal development restrictions into their ICSP, but few municipalities have followed their lead (Town of Yarmouth, 2016).

2.2.4 Aboriginal Rights

Aboriginal groups also have a claim to the Nova Scotia coast. The *Constitution Act* (1867) recognizes indigenous treaty rights to coastal lands and resources and the possibility for title or ownership of coastal areas if historical use and occupation of the territory is deemed adequate in court (ECEL, 2010). While the Supreme Court of Canada is establishing the extent of treaty rights, the Crown has a duty to consult and accommodate Aboriginal groups when pursuing a project on land they may have claim to. In the case of coastal territory, any development would require consultation with affected indigenous communities (ECEL, 2010).

2.2.5 Criticisms of Jurisdictional Divisions

Despite the large quantity of legislation at all levels of government regulating the coast in Nova Scotia and defining jurisdictions, Hynes and Graham (2005) argue this has led to a problem they refer to as “chaos of the coast”. Overlapping jurisdictions due to vague language in the Constitution and conflicting mandates of the numerous government departments responsible for coastal management have created an unnecessarily complicated system of regulation that makes improvement very challenging (Hynes & Graham, 2005).

2.3 Coastal Protection Act

2.3.1 Coastal Policies in Atlantic Canada

A CPA is currently in development by the Government of Nova Scotia. While the first policy of its kind in the province, similar legislation is in place in other countries and even other Atlantic provinces. The *Coastal Areas Protection Policy* created by the Government of New Brunswick (2011) establishes fundamental sustainable principles of coastal management and planning for various zones of sensitivity. The Government of Newfoundland (2011) released the *Coastal and Ocean Management Strategy and Policy Framework* which emphasizes the sustainable direction for coastal management in the province. The Government of Prince Edward Island (2015) created the *Strategy for Reducing the Impacts of Global Warming* prioritizing coastal erosion sensitivity mapping and disaster response to storm surges in provincial adaptation and resiliency efforts.

While these policies may resemble the Nova Scotian CPA in their emphasis on sustainable coastal management, as an Act, the CPA would be legally enforceable unlike the strategies developed in Newfoundland and PEI (G. Klein, personal communication, November 4, 2017). Nova Scotia tried in past to develop a coastal strategy, but after multiple failed attempts,

the provincial government has arrived at the conclusion that a more binding policy is required to adequately regulate coastal activities and protect coastal ecosystems and human communities (Armitage *et al.*, 2017).

2.3.2 Coastal Policy History in Nova Scotia

The provincial government's first attempt at coastal legislation was the Coastal2000 framework (Hynes & Graham, 2005). Released in the 1990s due to high demand from community organizations, this framework recommended the involvement of communities in coastal governance (Armitage *et al.*, 2017). However, not included were tools and strategies to implement this framework (Armitage *et al.*, 2017). As a result, Coastal2000 was never implemented by the provincial government and communities were left frustrated at the lack of direction in provincial coastal management (Armitage *et al.*, 2017).

With little governmental progress made on this issue by 2004, the Coastal Coalition of Nova Scotia (CCNS) was created (Armitage *et al.*, 2017). This network of community conservation, naturalist and environmental organizations came together to collectively pressure government for better coastal management (Armitage *et al.*, 2017). Their fight for stronger coastal governance emerged not only from their concern for the environment, but desire to have all voices and interests heard to develop a compromise (Armitage *et al.*, 2017).

CCNS was effective at gaining government attention as the issue of coastal management reappeared on the newly-elected New Democratic Party (NDP) government's agenda in 2008 (Armitage *et al.*, 2017). With a promise to develop the Nova Scotia Coastal Strategy by 2010, the government was quick to release the State of the Coast report, launch public consultations and create a draft coastal strategy (Armitage *et al.*, 2017). The proposed strategy was divided into six priority issues: coastal development, public coastal access, sea level rise and storm events,

working waterfronts, coastal water quality and sensitive coastal ecosystems (Armitage *et al.*, 2017). Public consultation revealed Nova Scotians were displeased by the division of coastal issues and the absence of topics such as aquaculture and tidal power (Armitage *et al.*, 2017). This coastal strategy was eventually dropped by government in 2011 as the strategy was not a priority and a dispute concerning salmon farming shed light on the lack of regulation of aquaculture in the coastal strategy (Armitage *et al.*, 2017).

Since the failure of the Nova Scotia Coastal Strategy, the issue of coastal protection returned only to the political sphere in the provincial elections in May 2017. The victorious Liberal Party promised to implement a CPA to manage coastal development and limit erosion (Tutton, 2017). Consultation of relevant stakeholders was also included in this promise (Tutton, 2017). This issue was assigned specifically to the Minister of the Environment (S. Page, personal communication, October 9, 2017).

2.3.3 Stakeholder Positions on a CPA

This tumultuous history of coastal policy development in Nova Scotia has informed positions of stakeholders who diverge in their vision for provincial coastal management and thus for content of the CPA. The current Liberal government of Nova Scotia has set the passing of legislation ensuring the protection of coastal areas as a priority for the Minister of the Environment as stated in the mandate letter (McNeil, 2017). However, the direction the Minister will take on this policy is unclear. The Liberal government could design their coastal legislation, similarly to the previous NDP government, with an economic perspective in the foreground. Economic growth is a priority for the current government (Nova Scotia Liberal Party, 2017), and during its previous term, evidence of the importance of the economy over environment was highlighted, particularly in relation to the issue of clearcutting. During the campaign for the 2017

election, along with its promise for the CPA, the government pledged to run public consultations on forestry practices, which is seen by many as an attempt to delay or avoid recommendations from previous studies and consultations for a 50% reduction in clearcutting in the province (Gorman, 2017). This example suggests the importance of economic considerations in the current government's decision-making which may reflect in their proposal for a CPA.

What We Heard: Nova Scotia's Coastal Consultation (Government of Nova Scotia, 2010) report suggests that the public disagrees with this vision for coastal legislation. Public consultations run in relation to the proposed NDP coastal strategy indicate that many residents prefer a holistic approach to coastal management that does not categorize priority issues, but acknowledges the interconnectedness of all coastal activities and addresses controversial topics such as aquaculture. Consultations indicate deep public concern for the environment, including the protection of coastal ecosystems from development, and a desire that this should be reflected in coastal legislation. Participants in this process also demand further consultation (2010). While perhaps an incomplete picture of public opinion, the *What We Heard: 2010 Nova Scotia's Coastal Consultation* document presents relevant and comprehensive results from a recent consultation process that collected input from residents of more than ten municipalities through open houses, workshops, online questionnaires and telephone surveys. Few other sources provide the same level of reliable insight into public opinion on coastal management in Nova Scotia.

The non-profit sector has been involved with the development of coastal policy in Nova Scotia since the start (Armitage *et al.*, 2017). While organizations may represent a variety of positions, environmental non-profits, such as the EAC are most interested in getting legislation passed quickly to address the most pressing coastal issues, that of coastal ecosystem protection, development regulation and hazard management. This entails dropping controversial issues to

the public, including aquaculture and all the other priority issues outlined in the draft coastal strategy. This may also mean creating an expert panel to develop legislation rather than holding time-consuming public consultations (S. Page, personal communication, October 9, 2017).

There is fundamental disagreement on the direction of coastal legislation in Nova Scotia. While government will likely pursue more economic priorities, the public and non-profit sector may be inclined to demand more emphasis on environmental priorities. The inclusion of aquaculture and the role of stakeholders in developing the CPA are also topics of debate (S. Page, personal communication, October 9, 2017). With little consistency between visions for the CPA and uncertainty of the government's priorities, the CPA could be taken in a variety of directions.

2.4 Future Scenario Analysis

Scenarios are an important method of future analysis. By generating alternative outcomes, future analysis aims to educate and inform present-day decisions. Duinker and Greig (2007) suggest that future analysis is not a form of prediction, but instead relies on a variety of techniques, including scenarios, to develop a selection of plausible options for the future. Scenarios are useful in completing future analysis on a long time-scale and in the context of uncertainty. Scenario analysis is used in several different settings, including risk-assessment in business, creative scenario-building in community development or evaluation of policy.

Scenarios can be developed through a variety of approaches and tools. In *Scenarios for the Future of the Canadian Payments System* (Viewpoint Learning, 2011), scenario analysis was completed loosely using the approach of Royal Dutch Shell, which includes conducting interviews, framing the issue, scenario building, scenario confirmation and testing of strategic options using scenarios. This approach uses the tool of interview and consultation of an expert

panel to develop scenarios for the future of the Canadian payment system (Viewpoint Learning, 2011). Benmbarek *et al.* (2009) employed another approach to developing scenarios using a quadrant tool. Quadrants allow scenarios to emerge from the relationship of axes or themes under study for the selection by the researchers (Benmbarek *et al.*, 2009).

Another variable in scenario development is the number of people informing their creation. While Globerman and Sands (2017) created scenarios for the political future of Canada without NAFTA individually, the *Canada in 2020* (Benmbarek *et al.*, 2009) scenario analysis relied on groups of graduate students to discuss, create and analyze future visions for identity politics and national security in Canada.

Scenario analyses can create a plethora of future alternatives. A strategic planning methodology from Wulf *et al.* (2010) suggests the establishment of a three to five-year timeline to limit scenario development. Depending on the approach taken in the study, the number of scenarios may also be narrowed down through application of criteria. From the scenarios developed using the quadrant, Benmbarek *et al.* (2009) selected the four most promising, or plausible, accounts for further analysis. Other research selects scenarios based on the 3Ps (possible, probable and preferred) (Duinker & Greig, 2007).

Scenario development may involve several possible tools to aid in visualization of the directions and impacts of alternative futures. The quadrant in the scenario analysis completed by Benmbarek *et al.* (2009) represents scenario ranking based on two criterial axes. Systems-thinking is another approach, which the Organization for Economic Cooperation and Development (OECD) encourages specifically for the development of scenarios related to policy (2017). Systems-thinking differs from other linear tools and allows for the consideration of

complex issues and diverging stakeholders to develop comprehensive policy that regulates a variable and uncertain system (OECD, 2017).

While a variety of tools, inclusion factors and selection criteria are employed in scenario analysis, some approaches are stronger than others. The methodology used in *Scenarios for the Future of the Canadian Payments System* (Viewpoint Learning, 2011) is considered to be a reliable approach to deductive scenario analysis, while inductive analysis often involves time-consuming group discussions without structure (Duinker & Greig, 2007). The selection of two to five scenarios is considered ideal (Schwartz, 1996 as cited in Duinker & Greig, 2007).

Scenario analysis has drawbacks as identified by critics. Most commonly, scenario analysis is criticized for lacking a theoretical basis (Moriarty, 2010). Popper (1987 as cited in Duinker & Greig, 2007) argues that future scenarios, intended to influence decision-making, are selected based on acceptability for those affected by its impacts. Popper also criticizes scenario analysis for its assumption that present trends will continue to form future alternatives, which is unknowable. Despite all these considerations, scenario analysis is a useful tool to create possible stories of the future that, without the rigor of scientific or theoretical study, provide a means of planning for an uncertain future (Duinker & Greig, 2007).

3.0 Methods

3.1 Rationale for Future Scenario Analysis

The objective of this research is to illustrate the future of coastal sustainability in Nova Scotia with or without the implementation of a CPA to inform ongoing coastal policy decisions. A scenario analysis is a useful method of achieving this research objective. Scenario analyses break down the complexity and uncertainty of multi-faceted issues like coastal sustainability to clearly present potential future policy paths and identify impacts of present-day decisions in

achieving those endpoints (Duinker & Greig, 2007). Qualitative research techniques are the principle means used in this study to explore the interaction of themes emergent from the policy analysis, stakeholder interviews and create scenarios (Moniz, 2005).

3.2 Study Design

A policy analysis and series of stakeholder interviews serve to inform the future scenario analysis. The policy analysis examines existing coastal legislation to establish a baseline for protection currently accorded to the Nova Scotia coastline. The diverse perspectives of experts on provincial coastal issues and management are collected to complement the policy analysis. The data from both the policy analysis and stakeholder interviews guide development and analysis of scenarios for future coastal policy.

3.3 Policy Analysis

The objectives of the policy analysis are two-fold: to establish a baseline of current legislative coastal protection in Nova Scotia and to select existing pieces of provincial legislation upon which to build the scenarios. This policy analysis considers only provincial legislation, specifically provincial statutes relating to coastal areas listed in Appendix 3 of the *Nova Scotia Coast Technical Report* (Government of Nova Scotia, 2009b). These 22 provincial statutes which are considered in the policy analysis include the *Agricultural Marshland Conservation Act* (2000), *Angling Act* (1989), *Beaches Act* (1989), *Beaches and Foreshores Act* (1989), *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* (1987), *Conservation Easement Act* (2001), *Crown Lands Act* (1989), *Endangered Species Act* (1998), *Environment Act* (1994), *Environmental Goals and Sustainable Prosperity Act* (2007), *Fisheries and Coastal Resources Act* (1996), *Health Protection Act* (2004), *Mineral Resources Act* (1990), *Off-Highway Vehicles Act* (1989), *Private Ways Act* (1989), *Provincial Parks Act* (1989), *Public*

Highways Act (1989), Special Places Protection Act (1989), Trails Act (1989), Treasure Trove Act (1989), Wilderness Areas Protection Act (1998) and Wildlife Act (1989). The *Municipal Government Act (1998)* is also considered in this analysis due to its role in regulating the issue of coastal development (ECEL, 2010). Federal and municipal legislation are not considered as this study is focused on provincial coastal policy.

The analysis of the status quo of provincial coastal legislation involves the evaluation of the 23 policies according to the specific criteria (Danziger, n.d.). These criteria include connection of policies to the three pillars of sustainability (social, economic, environmental) and the three priority coastal issues. Each statute is read through thoroughly to identify links or gaps to sustainability including community cohesion, economic stability and environmental integrity. Specific provisions relating to the regulation of coastal development, protection of coastal ecosystems and management of coastal hazards are also noted. Connections to sustainability and key coastal issues are recorded in a comparative table (Appendix A).

The current state of coastal protection is established through a global description of the contents of the comparative table. Policies are grouped based on the focus of regulation (environmental, social, economic) and their combined connection to sustainability and coastal issues is considered. A critical overview of the table is then completed to gain a deeper understanding of the strengths and inconsistencies within the existing coastal policy landscape of Nova Scotia. Any gaps among the statutes in addressing coastal issues are highlighted for examination in the development of the future scenarios.

Following the description of the existing baseline for legislative coastal protection in Nova Scotia, three policies from the 23 previously analyzed are selected for the future scenario analysis. Each selected statute is judged crucial in either regulating coastal development,

protecting coastal ecosystems or managing coastal hazards. Chosen policies also have the strongest connection to the pillars of sustainability. These policies form the basis upon which the future scenarios are built, and, by ensuring they are the most sustainably-minded, scenarios can describe further improvements to coastal sustainability in the province.

3.4 Stakeholder Interviews

Stakeholders considered in this study are limited to seven individuals knowledgeable about Nova Scotia coastal issues and management and representing different sectors including provincial and municipal government, non-profit organizations and business. The variety of professional backgrounds is intended to provide a diversity of perspectives on provincial coastal policy. An attempt is also made to incorporate traditional knowledge and a variety of cultural backgrounds into the study population by favoring individuals who can speak to the perspective of their organization, but also to that of Indigenous and minority groups in Nova Scotia. The number of stakeholders considered is limited to seven due to time constraints for this thesis.

Suitable candidates with knowledge and experience of the key sectoral and minority perspectives are identified through advice of Dr. Georgia Klein, the research supervisor, Samantha Page, key policy liaison from the EAC, and contacted by the primary researcher via email in February 2018 (Appendix B - recruitment materials and consent form). If the candidate is interested, a face-to-face or telephone interview is scheduled with the primary researcher at a convenient time and location for the interviewee. By identifying candidates within the research team's networks, this method of recruitment is intended to minimize the time and effort spent in search of suitable interviewees willing to participate in this study.

Interviews are semi-structured and follow a set of guiding open-ended questions to allow expression of each interviewee's unique perspective on coastal policy in Nova Scotia (Palys &

Atchison, 2014; Appendix C - interview questionnaire). The expertise and opinions of interviewees on coastal issues and policy is of interest in this study, as well as their insight of the future directions for provincial coastal policy. At the start of interviews, the purpose of the research is reviewed and written consent, if the interview is in-person, or verbal consent, if the interview occurs over the telephone, is obtained. Interviews last 30-45 minutes and take place in February and March 2018. With approval of the interviewee through the consent forms, the interview is audio recorded and notes are taken.

Following the interviews, target transcription of the audio recordings is completed. Relevant portions of every interview are paraphrased in written form to complement notes for further analysis. Notes and transcriptions are analyzed to identify recurring themes, commonalities, and differences in participants' views and ideas of coastal policy (Marshall & Rossman, 1995). This data is clustered according to emerging themes which aids in acknowledging and minimizing, though not eliminating, bias from the interviews. Interview data related to the stakeholder perspectives on the future of provincial coastal policy is grouped to support the development of scenarios in the following future scenario analysis.

To protect interviewee data, audio recordings are collected and encrypted using the Protect + Audio recorder application, stored on a secure hard drive and deleted in April 2018. Interviewees are also assigned aliases before the interview for all notes and transcriptions. Interviewee data is confidential and unidentifiable in the data analysis and all documentation of this study. This process and the entire stakeholder interview methodology has been approved by the Research Ethics Board of Dalhousie University (File #2017-4400).

3.5 Future Scenario Analysis

Following the completion of the policy analysis and stakeholder interviews, the future scenario analysis is undertaken to present the potential futures for coastal policy in Nova Scotia. The future scenario analysis is divided into two parts: scenario development and scenario analysis.

3.5.1 Scenario Development

The methodology for the scenario development is inspired by the work of Phelps *et al.* (1998). Scenario analysis begins with a definition of scope followed by the construction of the database. Both these steps have been completed previously in the study: the scope has been limited to the provincial coastal policy in Nova Scotia over the next five years related while the database has been constructed to include the 23 analyzed statutes, but specifically the selected three, and the seven stakeholder interviews.

The next steps combine scenario identification and development (Phelps *et al.*, 1998). This study identifies alternative futures through the clustering of key findings in the policy analysis and stakeholder interviews. In collaboration with Dr. Georgia Klein and Samantha Page, emergent themes regarding future provincial coastal policy are organized into four scenarios. Scenarios are defined by themes that relate to future environmental, social and economic coastal sustainability, the three key coastal issues, stakeholder positions, etc. Scenario are further developed through the creation of narratives. These plausible and internally consistent storylines connect themes while elaborating the unfolding of events and anticipated outcomes of each policy scenario over five years and highlighting any remaining uncertainties (European Commission Joint Research Centre, 2005).

3.5.2 Scenario Analysis

The four scenarios are compared qualitatively to establish points of similarity and difference. In this step known as scenario transfer (Kosow & Gabner, 2008), a list of criteria is established to analyze the implications of each scenario (Appendix D). Scenarios are accorded a high, medium or low ranking for each of the seven criteria which contribute to a final determination of the overall desirability and feasibility.

Informing the desirability ranking of the scenario, the first criterion considers improvements to coastal sustainability at the environmental, social and economic levels while the second criterion relates to scenario impacts on priority coastal issues, including protecting coastal ecosystems, regulating coastal development and managing coastal hazards. The third criterion considers the support of stakeholders. A rank is accorded to each scenario based on the general feeling of interviewed stakeholders, including provincial and municipal government, non-profit and business, towards the coastal policy outcome. The fourth criterion considers the adaptation timeline of the scenario. Coastal policy outcomes with the capacity for long-term planning in addressing key coastal issues are ranked highly while scenarios aiming for short-term adaptation are accorded a low rating.

Evaluating the feasibility ranking of scenarios, the fifth criterion refers to the incrementality of each scenario. Incrementality is measured through backcasting, a process which establishes the necessary steps to arrive at the outcomes described in the scenario (Kosow & Gabner, 2008). A higher ranking is accorded to scenarios that require small realistic steps to achieve their intended outcomes. The last two criteria are political practicability which weighs the acceptability of the scenario to current provincial and municipal governments based on

political will, and participation, or the accommodation of community contribution, ownership and inclusion in scenario implementation.

Based on the seven rankings for each scenario, overall desirability and feasibility are analyzed. Desirability is rated according to the impact of and public interest in a scenario. In other words, a desirable scenario contributes positively to the state of coastal issues and sustainability in the long-term while receiving approval from relevant stakeholders. Feasibility reflects how realistic a scenario is at the government and community levels. A feasible scenario is supported by political will and public demand while implementation can be achieved in realistic increments. Inspired by the matrix approach (Wulf *et al.* 2010), scenarios are placed in a quadrant with labelled desirability and feasibility axes. The quadrant serves as a visualization tool to easily communicate the scenario analysis with stakeholders.

Throughout the criterial analysis of scenarios, feedback loops are identified. A concept of systems-thinking, a feedback loop refers to the change in a stock, or measurable system component, which affects inward and outward flows of physical or informational materials (Meadows, 2008). In other words, feedback loops are causal mechanisms that may oppose or amplify the direction of change imposed on the stock by the system. Within the coastal policy system, feedback loops are helpful tools in understanding the balancing and reinforcing nature of stocks such as stakeholder actions, coastal issues and policy choices. Feedback loops are identified in the scenario analysis to facilitate stakeholder comprehension of the complexity of the coastal policy landscape.

4.0 Results

Results from this study include findings from the policy analysis, stakeholder interviews and future scenario analysis. The policy analysis identified gaps in current legislative coastal

protection and selected the *Environment Act*, *Municipal Government Act*, and *Health Protection Act* for further consideration in scenarios. The stakeholder interviews revealed common concern for coastal development regulation, demand for provincial leadership and preference for a comprehensive provincial coastal policy. Four scenarios emerged from these findings: the *No Policy Change*, *Provincial Policy Amendments*, *Municipal Coastal By-Law Model* and *CPA* scenarios. The first scenario assumes business-as-usual in coastal policy, the second expects modifications to existing provincial legislation, the third presumes municipal leadership in addressing coastal issues through a flexible by-law model and the fourth considers provincial leadership in implementing a CPA. Analyzed based on desirability and feasibility, the *CPA* scenario is deemed ideal.

4.1 Policy Analysis

The analysis of the 23 provincial statutes related to the coast is intended to provide a baseline of the current state of legislative coastal protection in Nova Scotia, and attempts to identify relevant policies upon which to build future scenarios.

4.1.1 Policy Summary

To summarize the contents of the provincial statutes analyzed (Appendix A), Acts are grouped into broad categories based on their area of regulation (environmental, social, economic) and subsequently connected to coastal sustainability and key coastal issues.

Fourteen of the policies under review share an environmental focus in their objective. The *Agriculture Marshland Conservation Act* (2000), *Angling Act* (1989), *Beaches Act* (1989), *Beaches and Foreshores Act* (1989), *Conservation Easement Act* (2001), *Crown Lands Act* (1989), *Environment Goals and Sustainable Prosperity Act* (2007), *Environment Act* (1994), *Off-Highway Vehicles Act* (1989), *Provincial Parks Act* (1989), *Special Places Protection Act*

(1989), *Wilderness Areas Protection Act* (1998) and *Wildlife Act* (1989) are designed to protect and manage the environmental integrity of Nova Scotia. These Acts regulate the human use of significant ecosystems and species under the jurisdiction of private landowners and the provincial or federal government. Beyond this clear connection to environmental sustainability through conservation, many of these Acts also align with the principles of social sustainability by promoting the enjoyment and education of the public on protected and managed areas. Only four environmentally-inclined policies explicitly acknowledge the coast: the *Environment Act* which regulates water resources, including coastal waters, the *Beaches Act*, which protects designated coastal beaches, the *Off-Highway Vehicles Act*, which restricts all-terrain vehicle use along the coast and the *Wilderness Areas Protection Act*, which protects coastal areas like the Canso Coastal Barrens Wilderness Area. Beyond these policies, other environmental legislation is open enough in scope that coastal areas can be assumed to be included under their regulations, though not specifically stated. For example, the *Provincial Parks Act*, which regulates the creation and maintenance of provincial parks, never acknowledges the coast despite the existence of numerous parks in coastal areas (Province of Nova Scotia, 2012). While the connection to the coast is often not explicit, these environmental policies relate to the coastal issue of ecosystem protection and coastal development regulation as many allow the establishment of protected areas where development and recreation are limited or prohibited.

Four policies analyzed share a purpose in regulating economic industries relating to the coast. The *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* (1987), *Fisheries and Coastal Resources Act* (1996), *Mineral Resources Act* (1989) and *Oak Island Treasure Act* (2010) were all created to maximize profits of oil, fishing, mining and treasure hunting ventures and support economic growth in Nova Scotia while regulating impacts

on the wildlife and ecosystems. The *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* and the *Fisheries and Coastal Resources Act* both recognize the coast, specifically in the context of the “coast guard” or “coastal zone resources”. All four policies relate mainly to economic sustainability in their attempt to legislate industries and ensure a balance between profit and environmental protection. These policies also relate to social sustainability by ensuring the creation of jobs in Nova Scotian communities. In terms of key coastal issues, these policies could be implicated in the conservation of coastal ecosystems, by establishing some environmental regulation, though this is not the explicit intention of these statutes.

The remaining five policies analyzed, the *Health Protection Act* (2004), *Municipal Government Act* (1998), *Private Ways Act* (1989), *Public Highways Act* (1989) and *Trails Act* (1989), have a common intention in addressing societal concerns such as public health crises, division of powers between levels of governments, private property accessibility and development of recreational infrastructure. In their aim to create a more accessible and cohesive Nova Scotia, these Acts all relate most strongly to social sustainability. While none of these policies specifically mention coastal areas, the *Private Ways Act* refers to tidal waters. The four other policies reference watercourses or water bodies, though these terms do not clearly include coastal waters. In terms of coastal issues, the *Municipal Government Act* provides powers to the municipal governments to plan and regulate development in coastal areas. Highways regulated under the *Public Highways Act* may be threatened by coastal hazards such as sea level rise, or storm surges. Finally, coastal ecosystem conservation connects to the *Trails Act*, which accords some level of protection to areas where trails are established.

4.1.2 Key Findings on Baseline Coastal Protection

From the overview of the 23 policies, clear gaps in provincial coastal legislation emerge. Coastal ecosystems are granted some level of protection from human threats in existing statutes, though climate change threats, including coastal hazards, are unaddressed. Provincial legislation also completely lacks regulation of coastal development beyond providing planning powers to municipalities. Consequently, the current state of legislative coastal protection in Nova Scotia is incomplete.

The issue of coastal ecosystem protection is moderately addressed in the legislation reviewed. Though few policies acknowledge coastal areas, many of the environmentally-focused Acts apply to the coast and have resulted in the creation of wilderness areas, provincial parks and nature reserves in coastal areas throughout Nova Scotia. These laws, and other economy-oriented Acts, specifically regulate human activity (development, resource extraction, recreation) in these designated areas. However, the clear remaining issue is climate change and associated coastal hazards. The only piece of provincial legislation reviewed that even mentions climate change is the *Environmental Goals and Sustainable Prosperity Act* which largely focuses on greenhouse gas reduction rather than ecosystem protection and adaptation. With this evident hole in the legislation, Nova Scotia is currently unequipped to adequately prevent significant loss of valuable coastal habitat from the intensifying effects of climate-related sea level rise, storm surges and erosion.

On the issue of coastal development, provincial regulation is also lacking. A few of the policies pertaining to the environment, including the *Beaches Act*, *Beaches and Foreshores Act*, *Conservation Easement Act* and *Private Ways Act*, establish private or governmental ownership of natural spaces, including coastal areas. Many environmental statutes analyzed also specifically

prohibit development in protected areas. However, the *Municipal Government Act* is arguably the most important piece of policy on the issue of development as it provides municipalities with comprehensive and independent power over planning and development within their jurisdiction. Development in coastal areas is under municipal authority as the provincial government has little policy in place to aid in regulating coastal development.

The coastal policy landscape in Nova Scotia is peppered with gaping holes in the protection of coastal areas. Coastal ecosystems are not explicitly mentioned in most environmental statutes analyzed and are unprotected from worsening coastal hazards as a result of climate change. While some provincial legislation regulates coastal land ownership and prohibits development, coastal development is largely under municipal authority.

4.1.3 Policy Selection

To facilitate the development of future scenarios, three provincial policies were selected for further consideration: the *Environment Act*, *Municipal Government Act* and *Health Protection Act*.

Environment Act. As the most extensive provincial environmental policy and one that specifically recognizes the coast, the *Environment Act* provides a basis for environmental regulation upon which to build the scenarios. While detailing standards for habitat protection, industry restrictions and water quality, remaining gaps in this statute offer opportunity for improvement of coastal ecosystem conservation in the future scenarios. Possible revisions include language clarification in water-related regulations and the recognition of non-human threats to ecosystems.

Municipal Government Act. A critical piece to addressing the coastal development issue, this policy provides municipalities with power over development within their jurisdiction

through the creation of planning strategies, and zoning and land use by-laws. This Act provides the necessary basis upon which to examine the role of provincial policy in regulating coastal development in conjunction with municipalities and their planning authority.

Health Protection Act. Offering an emergency response framework for addressing public health crises, this Act provides a helpful basis for the consideration of provincial emergency procedures for climate-related coastal hazards and disasters in building the future scenarios.

4.2 Stakeholder Interviews

The seven interviews provided valuable insight on coastal legislative issues and management in Nova Scotia from the perspectives of provincial and municipal governments, coastal industries, environmental non-profits and aboriginal law. Emerging commonalities in interview data are grouped into key themes: coastal issues, coastal management barriers and opportunities, and future scenarios for coastal policy.

4.2.1 Key Issues

The information collected from stakeholders offers perspective on priority coastal issues in Nova Scotia. Coastal development was the most common concern, mentioned by five interviewees who expressed the need for more consistent planning in coastal municipalities, regulation on liability and insurance for coastal homes, and protection of saltmarsh and wetland ecosystems on the coast. Coastal hazards such as sea level rise, storm surges and extreme weather events were also recurring issues emerging from interview data. Other priority coastal issues proposed by stakeholders include coastal beach access, fisheries and aquaculture, water quality, Indigenous peoples consultation, infrastructure security and coastal erosion. The data shows coastal ecosystem protection as an issue defined within the threats of coastal development and coastal hazards by stakeholders.

4.2.2 Current Provincial Coastal Management

Based on most interviewee perspectives, provincial coastal management is currently insufficient to address the three priority coastal issues related to ecosystem protection, development regulation and hazard management. A variety of barriers prevent improvement to management, such as:

Stakeholder Collaboration. As the most commonly identified obstacle, four interviewees highlighted the challenge of satisfying competing interests between property owners, businesses, government and the Mi'kmaq. Collaboration is further impeded by unclear jurisdictions between the three orders of government, defined by one interviewee, as the federal, provincial (including municipal) and Aboriginal governments. Another interviewee emphasized the confusion of overlapping departments both within and between levels of government that further hinders collaboration.

Gap in Provincial Role. The lack of a provincial presence in coastal policy was identified as a barrier to coastal management as municipalities are placed under pressure. Coastal management among municipalities is inconsistent. Three interviewees specified that smaller municipalities without planning staff often feel coastal management is a burden that they are unequipped to address due to lack of financial and informational resources. One interviewee also suggested that local municipal decision-makers are put in the difficult position of balancing stakeholder interests and pleasing all constituents.

Enforcement. Three interviewees explicitly mentioned the lack of enforcement on environmental laws in Nova Scotia and in Canada. While numerous policies exist to protect the environment at all levels of government, without prosecution of lawbreakers, environmental legislation is ineffective at preventing and mitigating degradation. One interviewee

acknowledged the strength of provincial policy on watercourse alteration and wetland protection, but was frustrated at the frequency of illegal incidents that went unpunished. Improving enforcement requires human and financial resources that the provincial government appears unwilling to allocate.

Other barriers explored in interviews include the absence of research on coastal threats in some municipalities and the minimal public understanding of existing data. One interviewee identified the “old boys club” mentality within certain municipal councils as an obstacle to the modernization of traditional coastal management approaches.

Despite these many setbacks to improved coastal management in Nova Scotia, opportunities to improve provincial policy include:

Demand for Policy. Three interviewees emphasized the desire among stakeholders for a comprehensive provincial coastal policy. Community members, especially coastal property owners experiencing climate change effects, want more support from their governments in addressing coastal hazards. The municipalities demand increased provincial guidance in meeting the needs of their constituents on this challenging issue. The non-profit community has also been fighting for more comprehensive legislation for years. The cumulative effect of demands from all fronts could pressure decision-makers into improving coastal management according to interviewees.

Leadership of Municipalities. While some municipalities are struggling to deal with the complexity of coastal threats, others are leading the charge. Two interviewees highlighted the work of the Halifax Regional Municipality (HRM) in establishing coastal development setback limits, completing Light Detection and Ranging (LIDAR) scans of coastal areas for vulnerability assessments and creating intergovernmental emergency response protocols. Leadership in

municipalities such as the HRM may serve as a guideline for other Nova Scotian municipalities and the entire province in improving coastal management practices and policies.

Coastal Policy History. Past attempts to improve coastal management in Nova Scotia, specifically the failed NDP Coastal Strategy, have left valuable scientific research and draft legislation upon which to build a new coastal policy. One interviewee involved in the elaboration of the NDP Coastal Strategy emphasized the data collection, public consultation and policy development that occurred through this process that may still be applicable to ongoing improvements to provincial coastal management. Another interviewee currently involved with efforts to develop a CPA discussed the provincial government's desire to draw on priority coastal issues established during the drafting of the NDP Coastal Strategy.

Indigenous Knowledge. Three interviewees drew attention to the opportunity for the application of Mi'kmaw knowledge and practices to provincial coastal management. Interviewees acknowledged Mi'kmaw ownership of Nova Scotian coastal areas and resources, but also their traditional values of environmental protection that may provide guidance on meaningful future coastal policy development in Nova Scotia. Two interviewees suggested that the Mi'kmaw should not only be consulted on issues of the coast, but, as active stakeholders, be enabled to take leadership roles in addressing these threats. One interviewee provided an example of the Mi'kmaw developing a moose cull guide in Cape Breton National Park as an example of indigenous self-governance and leadership in regulating resource use.

Considering the obstacles and opportunities to improving provincial coastal management, there was clear consensus among all seven stakeholders interviewed that the provincial government must accept a greater leadership role and develop a comprehensive coastal policy.

Most interviewees also highlighted the need to better support municipalities in addressing coastal issues and involve communities and Mi'kmaw people in consultation and leadership roles.

4.2.3 Future Scenarios for Provincial Coastal Policy

Beyond current coastal issues and management, stakeholders also provided valuable insight into the future direction of coastal policy in Nova Scotia. Interview data was clustered based on emerging themes and perspectives to inform the four future scenarios: *No Policy Change*, *Provincial Policy Amendments*, *Municipal Coastal By-Law Model*, and *CPA*.

No Policy Change. Interviewees generally agreed that coastal policy change is needed and largely inevitable in Nova Scotia. Without a provincial response to coastal issues, three interviewees expressed concern that the onus would remain on the municipalities to address these threats which many feel unequipped to face. However, a few interviewees also mentioned that the lack of provincial involvement may force other stakeholders, including coastal property owners, businesses, non-profits and communities, to collaborate and lead the charge in addressing coastal threats. Public education on coastal issues and protection is another possibility for action no matter the future policy outcome. Stakeholders collectively expressed the belief that increasing demand and pressure on the provincial government would lead to the creation of a comprehensive policy and relieve pressure on municipalities. One stakeholder spoke of partnership already ongoing between provincial departments and municipalities to address coastal issues and was adamant that provincial policy changes will inevitably follow.

Provincial Policy Amendments. Three interviewees offered perspectives that found amendments undesirable. One interviewee working in environmental law explained that policy amendment is a lengthy process and, with the absence of coastal development or coastal erosion in existing legislation, creating a new policy would be easier and more effective at addressing

coastal issues. Another interviewee expressed concern at accumulating confusing “zombie legislation” if policies were continuously amended. However, another interviewee suggested that amendments to existing policy may provide complementary coastal regulation to the CPA, addressing issues such as aquaculture that is unlikely to be regulated in new provincial policy.

Municipal Coastal By-Law Model. Interviewees expressed concerns of inconsistent coastal protection if municipalities are left to address coastal issues alone. Two interviewees explained that many municipalities are already struggling to find resources and would be further burdened by the responsibility of managing coastal threats in the absence of provincial coastal policy. Other stakeholders expressed doubt that municipalities would take on more coastal leadership than at present and concern that, among those that do step up, not all will consult Mi’kmaq communities. However, two interviewees saw potential in municipal coastal by-laws as complementary policy to the CPA that could incorporate provincially-established setback limits and address specific coastal issues missing from the CPA. Other interviewees acknowledged municipal leadership on coastal issues builds on existing municipal planning powers established in the *Municipal Government Act* and allows flexibility and creativity for each municipality to develop localized coastal management strategies.

Coastal Protection Act. All seven interviewees agreed a comprehensive provincial coastal policy is the ideal outcome for Nova Scotia coastal areas. Reasons given include that the CPA provides a necessary coordinated response, relieves pressure on municipalities facing coastal threats and fills in gaps in existing environmental policies. Suggestions for CPA content range from setback limits and buffer zones, minimum planning and environmental standards, coastal access regulations, protection of critical ecosystems, education, emergency response procedures and infrastructure protection plans. One interviewee involved in the development of

the CPA specified that issues of tidal energy, fisheries and aquaculture will not be addressed in this policy as these controversial topics halted progress on the NDP Coastal Strategy in 2011. Interviewees also provided recommendations for a new provincial coastal policy to specify enforcement mechanisms, coastal research funding opportunities, decision-making structures and jurisdictions, and consultation processes. Stakeholders interviewed were divided as to whether current political will can persist and result in the creation of a comprehensive provincial policy. Other challenges for the CPA mentioned in interviews include enforcement, satisfying all interests, avoiding key controversial issues like aquaculture and balancing provincial and municipal powers.

Interviews with seven stakeholders of different backgrounds and experiences with coastal policy provided consistent results in terms of perspectives on key coastal issues, barriers, opportunities and future outcomes of provincial coastal policy. According to interviewees, the most pressing coastal issues are coastal development and coastal hazards such as sea level rise. Coastal management is stunted by lack of stakeholder collaboration, provincial involvement and enforcement, but public demand, municipal leadership, past policy attempts and Mi'kmaw knowledge provide opportunities for improvement. A CPA is the most supported direction for future provincial coastal policy by stakeholders, though a municipal coastal by-law and policy amendments may provide complementary coastal protection. Business as usual would leave coastal issues unaddressed, though provide space for non-governmental actors to collaborate in filling the gap in leadership.

4.3 Scenario Development

Building on the results from the policy analysis and stakeholder interviews, four scenarios are identified and developed to illustrate possible futures of coastal policy in Nova

Scotia and the implications on coastal areas. Relevant policy and interview data are clustered into four scenarios: the *No Policy Change*, *Provincial Policy Amendments*, *Municipal Coastal By-Law* and *CPA* scenarios. Scenario descriptions provide detailed narratives connecting key themes and illustrating outcomes of policy directions on coastal issues and sustainability.

No Policy Change Scenario

Relevant Policy and Interview Data

In this business-as-usual scenario, all 23 existing provincial policies related to the coast are relevant as the current baseline for coastal protection remains unchanged. Applicable interview data to this scenario includes the recurring theme of the municipal struggle to address coastal issues without guidance or support from the provincial government. Another important theme is the willingness of other stakeholders, including individuals and communities, to step up to tackle coastal issues in the absence of government involvement.

Scenario Description

The *No Policy Change* scenario involves the provincial government maintaining its current limited role in addressing key coastal issues. No new provincial policy is created in this scenario, nor is existing policy modified to better regulate coastal development or manage coastal ecosystems and hazards. Existing gaps in provincial policies related to the coast, as identified in the policy analysis, remain and the current level of legislative coastal protection accorded by these 23 policies persists.

While provincial policy remains unchanged, coastal hazards associated with climate change continue to worsen over the next five years. As sea level rise, coastal erosion and storm surges increasingly threaten the province, more coastal properties are flooded and ecosystems are

altered by storms and salt water. The environmental, economic and social integrity of coastal areas in Nova Scotia worsens.

In the absence of provincial leadership, this scenario may result in the empowerment of other stakeholders in addressing coastal issues. Municipalities experience the most direct pressure from communities to tackle coastal issues and many accept a greater role in long-term adaptation through by-law and planning strategy development. Other municipalities, lacking resources, invest in short-term mitigation solutions to satisfy immediate constituent needs related to coastal threats.

Non-governmental actors, including coastal property owners, communities, business leaders, non-profits and Mi'kmaw nations, also take on a more prominent role in addressing coastal issues in this scenario. Through public education on coastal issues and solutions, local adaptation projects and lobbying levels of government for action, these stakeholders have the potential to make a difference in the state of coastal areas. Stakeholders work both individually, and collaboratively by pooling resources and sharing knowledge, to better address coastal issues.

Without provincial policy changes, the *No Policy Change* scenario results in the deterioration of coastal sustainability under intensifying climate-related coastal hazards unless other stakeholders whether municipal government, individuals, communities or non-profits fill the gap in leadership on coastal issues.

Provincial Policy Amendments Scenario

Relevant Policy and Interview Data

The *Provincial Policy Amendment* scenario draws on the *Health Protection Act* (2004) and the *Environment Act* (1994) in developing a future outcome for coastal sustainability in

Nova Scotia. Relevant interview data includes the recurring stakeholder concern with gaps in provincial policy on coastal issues.

Scenario Description

The *Provincial Policy Amendments* scenario involves the revision of existing provincial policies, specifically the *Health Protection Act* (HPA) and the *Environment Act* (EA), to improve coastal sustainability in Nova Scotia.

While provincial policy currently lacks content on climate change, the HPA provides a response framework for public health emergencies that may be helpful in addressing coastal hazards related to climate change. The HPA defines health hazard as “(i) a condition of premises, (ii) a substance, thing, plant, animal or organism other than a human, (iii) a solid, liquid or gas, (iv) radiation, noise, vibration or heat, or (v) an activity, or combination of any of them, that poses or may pose a threat to public health” (2004). A health hazard becomes a public health emergency if it poses “an imminent and serious threat to public health” (2004). Once a public health emergency is declared, a series of special measures are instituted ranging from the construction of emergency infrastructure to establishing quarantines to developing volunteer teams for emergency home entries (2004).

In this scenario, the definition of health hazard is amended to include “(vi) an effect of climate change”. With this addition to the HPA, coastal hazards related to climate change, including sea level rise, coastal erosion and storm surges, are considered threats to public health and can be elevated to the status of public health emergency in the case of a disaster. As a result, applicable emergency measures such as the funding of emergency facilities and strategic evacuation of homes are facilitated and allow more effective support of coastal communities vulnerable to coastal hazards.

Among its functions, the EA regulates water-resource management in the province by designating protected areas and restricting human use (1994). The EA is confusing in its interchangeable use of the terms “water resource” and “watercourse”. Water resource refers to both fresh and marine waters, thus including coastal waters, while watercourse is defined as groundwater or shores of natural moving bodies of water, thus excluding coastal waters (1994). In the Water-Resource Management section of the EA, regulations apply differently to water resources and watercourses. Watercourses are accorded more protection including contaminant regulation, restrictions on withdrawal of water and watercourse alteration (1994). Water resources are mostly mentioned as a file under Minister of the Environment that requires sensitivity classification, sustainable use and fair allocation stakeholders (1994).

In this scenario, the EA is amended to expand regulation of water resources to the level of watercourses. All relevant regulations applied to watercourses in the EA are applicable to water resources, including protection of waters and pollution regulations. Some regulations for watercourses may not apply to water resources, such as specific restrictions on the use of drinking water sources. Despite minor differences, water resources, and the coastal water ecosystems included, are better protected from human-caused degradation with amendments to the EA.

The *Provincial Policy Amendments* scenario, through changes to the HPA and the EA, results in improved coastal policy through the application of an emergency response framework to coastal hazards and increased protection of coastal water ecosystems.

Municipal Coastal By-Law Model Scenario

Relevant Policy and Interview Data

The *Municipal Coastal By-Law Model* scenario draws on the *Municipal Government Act* (MGA), specifically regulations pertaining to municipal authority over development through the creation of planning strategies and by-laws (1998). Relevant interview data includes the recurring theme of imbalance between municipal planning capacities in Nova Scotia. Coastal issues represent a burden for municipalities unequipped with proper resources, but an opportunity for those sufficiently funded and staffed with planners. Other important themes from the interviews are the uncertainty of municipality's duty to consult Mi'kmaw communities in developing new by-laws and the presence of traditional "old boys' clubs" in municipal governments of Nova Scotia.

Scenario Description

In the *Municipal Coastal By-Law Model* scenario, municipalities in Nova Scotia take leadership in addressing coastal issues. Coastal municipalities cooperate in creating a model coastal by-law addressing key coastal issues. The by-law may include development setback limits, protection measures for coastal ecosystems such as buffer zones and emergency procedures for responding to coastal hazards. Each municipality then implements the by-law model to a degree deemed appropriate by municipal council and the community.

This scenario builds on the autonomy of municipal governments established in the MGA. Municipalities are authorized to cooperate without provincial approval under the MGA. Municipalities also have power over development within their boundaries through elaboration of planning strategies and by-laws. As such, municipalities can decide how much or how little of a

coastal by-law model is implemented within their jurisdiction, and this may differ between neighboring municipalities.

Due to the independence of each municipality under the MGA, this scenario results in a patchwork of coastal protection among municipalities in Nova Scotia. Municipalities implement the coastal by-law model differently depending on resources available, leadership and partnerships. Municipalities with significant financial and personnel resources and progressive leadership have the capacity to apply the by-law model and implement strong coastal protection regulations. Other municipalities without adequate resources and more traditional leadership are less inclined to invest in the full implementation of a coastal by-law model.

Another consideration in the uneven implementation of a municipal coastal by-law is the consultation of Mi'kmaw communities. Municipal governments do not have a legal duty to consult First Nations in creating new policy. With coastal regulation left up to municipalities in this scenario, some local governments will consult with local Mi'kmaw communities in implementing a coastal by-law while others will not depending on resource availability and relations with surrounding Indigenous peoples. In areas where Mi'kmaw are not consulted, coastal by-law implementation may not be achieved and enforced as successfully as other municipalities where consultation occurred.

By leaving coastal issues to municipalities to address, the *Municipal Coastal By-Law Model* scenario results in a coastal by-law model unevenly applied throughout the province.

Coastal Protection Act Scenario

Relevant Policy and Interview Data

All 23 provincial statutes related to the coast are relevant to the development of the *CPA* scenario which builds on current legislative coastal protection. Interview data considered

includes potential content of the CPA ranging from setback limits, to coastal areas access to minimal environmental and planning standards, etc. Also of interest are interviewee recommendations for a science-based provincial policy that incorporates enforcement mechanisms and decision-making structures for implementation. The duty of the provincial government to consult with First Nations in developing an Act is also relevant to the development of this scenario.

Scenario Description

In the *CPA* scenario, the government of Nova Scotia embraces a greater leadership role in coastal management and develops a new comprehensive policy addressing key coastal issues across the province. Filling gaps within existing provincial legislation, the CPA offers consistent regulations for restricting development, protecting ecosystems and managing hazards in coastal areas and ensuring coastal sustainability. This new coastal policy, by incorporating long-term adaptation strategies, provides much needed support to municipalities struggling to address immediate coastal threats with insufficient financial and informational resources. As a provincial Act, the CPA is enforceable and applied uniformly throughout all municipalities ensuring a cohesive level of coastal protection throughout Nova Scotia.

While the content of the CPA remains largely unknown to date, in this scenario the CPA includes regulations establishing coastal development setback limits, buffer zones, environmental and planning standards for coastal zones, beach access permissions, park designation of land vulnerable to coastal hazards, property sale information and living shoreline standards, educational programs and contingency or infrastructure adaptation plans. The CPA combines management approaches in both setting standards on some regulations for all municipalities to comply with and providing options of adaptation strategies for municipalities to

choose from and apply to their local context. The CPA also establishes enforcement mechanisms, decision-making structures, defined jurisdictions, conflict resolution processes and funding opportunities for effective application of coastal regulations across the province.

The CPA scenario provides opportunity for collaboration between government and other affected stakeholders. Beyond supporting the municipalities in addressing coastal issues, the provincial government is required to consult Mi'kmaq communities in developing a CPA. Consultation of vulnerable communities and knowledgeable stakeholders also occurs to strengthen the content of this new provincial policy.

While the specific direction of the CPA has yet to be determined, this scenario results in a comprehensive policy providing a consistent long-term approach to enhancing coastal protection across the entirety of Nova Scotia.

4.4 Scenario Analysis

The analysis of the four future scenarios aims to compare the potential advantages and disadvantages of each coastal policy outcome. Scenarios are assessed based on the following criteria: improvement to coastal sustainability, improvement to key coastal issues (coastal development, ecosystems and hazards), stakeholder support, long-term adaptation timeline, incrementality, political practicability, participation, desirability and feasibility (Appendix D). The analysis of the first seven criteria inform the overall desirability and feasibility of the scenario. A quadrant illustrates the final standing of scenarios with desirability and feasibility demarking the two axes (Figure 1).

The analysis of scenarios also revealed feedback loops, as defined in the systems-thinking method (see Methods section), which are noted at the appropriate scenarios.

No Policy Change Scenario

The *No Policy Change* scenario is ruled both undesirable and infeasible. In the absence of policy change, no progress is made on coastal sustainability or management of key coastal issues in Nova Scotia. Stakeholders are unsupportive of this outcome as the lack of provincial involvement in addressing coastal issues leaves municipalities to bear the burden of mitigation and adaptation efforts. As many municipal governments lack financial and informational resources, coastal protection may take the form of short-term repairs and reconstruction of infrastructure and emergency response protocols.

While doing nothing may be the most politically realistic option for the provincial government, stakeholders estimate demand is too high for this scenario to occur. Under pressure from municipalities, businesses, communities, coastal homeowners and non-profits, the Nova Scotia government must respond either by providing supportive policy or financing short-term municipal adaptation strategies. As a positive feedback loop in this scenario, the more the provincial government relies on other stakeholders to address coastal issues, the more funding it must provide to support their solutions. This situation can create a state of permanent financial instability among engaged stakeholders restricted to inexpensive short-term adaptation strategies to secure government funding.

The only way the outcome of the *No Policy Change* scenario can be improved is through the partnership of stakeholders in the absence of provincial leadership. If stakeholders collaborate in acting to address coastal issues, there is the potential for improved coastal sustainability despite a lack in policy. However, without a guarantee of stakeholder involvement in this scenario, it is difficult to evaluate the feasibility and likelihood of such cooperative results.

Provincial Policy Amendments Scenario

The analysis of the *Provincial Policy Amendments* scenario revealed an undesirable, though moderately feasible outcome. In this scenario, social and environmental sustainability in coastal areas is enhanced through amendments to the *Health Protection Act* (2004) and the *Environment Act* (1994), which apply emergency procedures to coastal hazards and accord better protection to coastal waters. These policy changes also contribute to addressing the key issues of coastal ecosystem conservation and hazard management.

However, stakeholders are unsupportive of this scenario as policy amendment is a lengthy process that results in gap-filled legislation. This scenario, through the application of regulations designed to address disease outbreak and protection of drinking water sources, cannot fully encompass all the complexities of coastal issues. In other words, the modification of the *Environment Act* and *Health Protection Act* will not consider the intricacies of stakeholder relations in the coastal policy landscape, nor the delicate balance of coastal ecosystem protection, coastal community resiliency and coastal industry stimulation that is needed in legislation. Amendments to these existing Acts can improve coastal protection, but will leave gaping holes. For example, as coastal development and erosion are not mentioned in existing provincial policy, this scenario has no foundation to build upon in regulating these issues.

While undesired, the *Provincial Policy Amendments* scenario offers a moderately feasible outcome. The incremental modification of existing policy may be more realistic and achievable than creating and passing new legislation. However, due to the high demand for a new coastal policy, political will is not currently interested in the pursuit coastal policy amendments. As such, this scenario is only slightly more feasible than the previous.

Municipal Coastal By-Law Model Scenario

The analysis of the *Municipal Coastal By-Law Model* scenario revealed a moderately desirable, but infeasible outcome. This scenario provides an opportunity for municipalities to cooperate in designing a coastal by-law, while ensuring the independence of each area to implement the model to a degree that fits within their local context. Building on the development powers of municipalities as stated in the *Municipal Government Act* (1998), this scenario allows municipalities to take advantage of their authority and adopt local solutions to address coastal issues. As a positive feedback loop, the provincial government accords power to municipalities through the *Municipal Government Act* which increases municipal planning independence, but impedes provincial leadership on the coastal development issue. As a result, though municipalities require support, their planning authorities increasingly hinder provincial action.

This scenario is only moderately desirable in the eyes of stakeholders because of the inconsistent outcomes in coastal protection. While municipalities with sufficient resources and knowledge on coastal issues can implement long-term adaptation measures from the by-law model, less equipped municipalities may be unable to apply a coastal by-law or may favour less costly short-term adaptation strategies. Consequently, trans-municipal coastal areas would be unevenly protected from coastal hazards, human use and development in this scenario. Such inconsistent regulation threatens to deteriorate coastal sustainability, but also amplify inequities between municipalities.

The feasibility of the *Municipal Coastal By-Law Model* scenario is low due to difficulty in uniting municipal governments. Over the past decade of provincial absence from coastal management, municipalities have not cooperated to fill the gap in leadership. Municipalities may find the development of a combined coastal by-law model to be applied separately in each

municipality challenging due to differences in economic interests, Mi'kmaw relations, financial and planning resources, etc. The outcome of this scenario is already beginning to manifest in Nova Scotia as a patchwork of inconsistent coastal protection between municipalities with differing interests and priorities.

Coastal Protection Act Scenario

The analysis of the CPA scenario revealed a desirable and feasible outcome. This scenario offers a comprehensive, provincially-applicable policy to address coastal issues and improve sustainability. While the content of the CPA remains unknown to date, coastal development setbacks and beach access regulations have been identified by stakeholders as priorities in the initial stages of this policy. Setback limits contribute to regulating development and mitigating the impacts of coastal hazards, including sea level rise, storm surges and erosion, while regulating beach access contributes to the protection of coastal ecosystems vital in their functions as wildlife habitat and buffer zones.

Stakeholders are most supportive of this scenario as municipalities are relieved of the responsibility to address coastal issues alone. The provincial government has more capacity than many municipalities to invest in a strategic long-term adaptation approach in developing coastal regulations. A provincial CPA can provide municipalities with support and clear direction on a standard for coastal protection and regulation enforcement. Also, the CPA scenario requires consultation of Mi'kmaw and other vulnerable communities thus creating a participatory process with more potential for partnership and leadership opportunities.

While perhaps more difficult to develop a new policy, this scenario is feasible due to the high demand from stakeholders and growing public support that has shaped current political will. As long as pressure persists on the provincial government to follow through on its promise to

develop a CPA, this scenario appears the most feasible path forward for coastal policy in Nova Scotia.

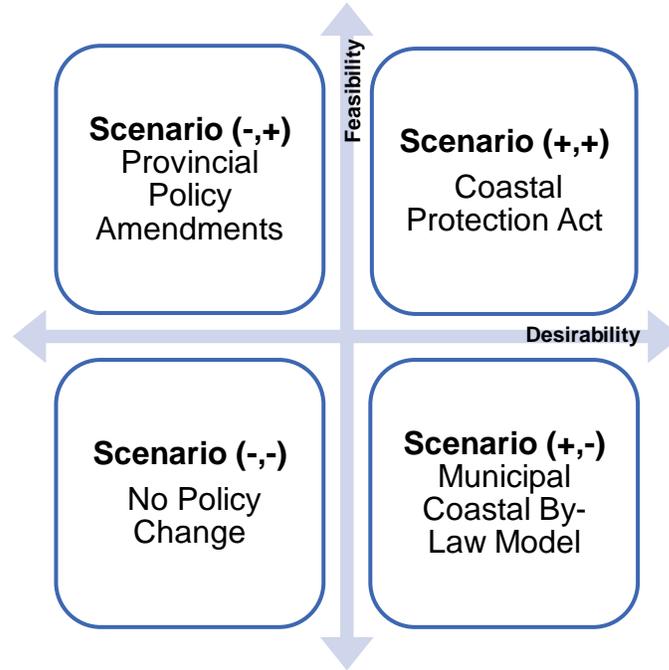


Figure 1. Scenario analysis quadrant. Desirability and feasibility of the four coastal policy scenarios are ranked positively (+) or negatively (-).

5.0 Discussion and Recommendations

Two important findings emerged from this study: a CPA offers the best policy solution in improving coastal sustainability in Nova Scotia, though additional stakeholder action, beyond the CPA, is also important in addressing coastal issues.

The policy analysis, stakeholder interviews and future scenario analysis revealed that the application and implementation of a CPA can offer a comprehensive policy addressing issues of coastal development regulation, ecosystem protection and hazard management consistently throughout the province. Deemed the most desirable scenario by stakeholders, the CPA can provide a long-term adaptation approach in policy to improve coastal sustainability in Nova Scotia. While a new policy may appear more politically challenging to pursue, the CPA scenario

is considered the most feasible due to overwhelming stakeholder and public demand that has shaped current political will.

The *CPA* scenario provides a flexible model for addressing coastal issues that incorporates growth, sustainability and complementary policies. Controversial issues such as aquaculture, fisheries and tidal energy which caused the death of the NDP Coastal Strategy in 2011 will likely not be included in the *CPA*, but as climate-vulnerable economic sectors, these issues must be addressed through alternative mechanisms such as policy amendments. Local solutions to coastal issues emerging from municipalities can also be included within the *CPA* scenario. Uniting all forms of coastal policy, the *CPA* scenario provides the most cohesive and comprehensive approach to addressing coastal issues and improving coastal sustainability.

As a study designed to support the coastal policy work of the EAC, the results confirm the organization's approach in demanding a *CPA* from the provincial government. Recommendations for additional stakeholder action, whether the EAC or other environmental non-profits, government, business or individuals, in effectively addressing provincial coastal issues also emerged from this research. The identified low-hanging fruit include:

Public Education. Raising awareness of coastal issues, adaptation strategies and identification of key stakeholders in coastal communities and beyond will contribute to preparing vulnerable populations for climate change impacts and generating more public pressure on provincial and municipal government. Education should be based on scientific evidence of coastal threats, while integrating local historical knowledge, from seniors for example, and traditional knowledge from Mi'kmaw communities. Depending on the policy scenario, educational efforts may be led by non-profits, like the EAC, government, community, or Mi'kmaw leaders.

Consultation. Engagement of coastal communities, homeowners and Mi'kmaw peoples will provide valuable insight on the needs of those directly experiencing coastal threats. The more information collected on the state of coastal areas and communities in Nova Scotia, the more educated adaptation strategies and policies can be. A variety of stakeholders may lead this particular action depending on the coastal policy scenario.

Stakeholder Collaboration. While cooperation among competing interests is challenging, with increasing impacts of climate change in coastal areas, stakeholders may be more inclined to pursue a shared objective for coastal protection. By pooling resources, knowledge, networks and tools, stakeholders can develop adaptation mechanisms to address coastal issues no matter the level of government involvement. Organizations such as the EAC can provide support in arranging meetings for key stakeholders across Nova Scotia and creating change on coastal issues. One important connection requiring urgent facilitation is that of higher learning institutions and municipalities. Knowledge transfer of research data on coastal issues from universities to local decision-makers can better educate municipal coastal adaptation strategies.

Complementary Policy. If a CPA is passed and implemented, coastal sustainability can be further improved by addressing any gaps in the new provincial legislation through other policy scenarios. Stakeholders like the EAC should consider the possibilities of amendments to existing provincial policies, for example on the issues of fisheries and aquaculture, which the CPA is unlikely to address. A municipal coastal by-law may also offer increased coastal protection if municipal governments can be brought together to discuss more localized solutions to coastal issues. A

6.0 Conclusion

With the vulnerability of the Nova Scotia coastline to climate change and the lack of policy in planning for these impacts, this study considered the potential for a CPA to improve provincial coastal sustainability. Through a policy analysis and stakeholder interviews informing a future scenario analysis, a CPA scenario was compared to *No Policy Change*, *Provincial Policy Amendments* and *Municipal Coastal By-Law Model* scenarios. The results of this study revealed that the CPA offers the most promising coastal policy outcome. Developed through a holistic and inclusive approach that integrates the principles of sustainability and contributions of diverse stakeholders, the CPA will provide comprehensive and consistent protection to coastal areas uniformly throughout Nova Scotia. These findings are intended to reaffirm the work of the EAC in pursuing a CPA and provide further recommendations for low-hanging fruit, or feasible actions to be taken on coastal issues. It is the hope that this thesis contributes to informing the EAC and other relevant stakeholders of the coastal policy options for Nova Scotia and the impacts of each alternative on coastal areas. Moving forward, this study of coastal policy futures can be improved through consultation of a larger pool of diverse stakeholders and the completion of a Strengths, Weaknesses, Opportunities & Threats (SWOT) analysis of the four future scenarios.

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8.0 Appendices

Appendix A: Policy Analysis Table

Legend

Environmental
Social
Economic
Selected Policy

Policy	Summary of Act	Link to coast	Sustainability			Provisions related to priority coastal issues: Hazards (CH) Development (CD) Ecosystems (CE)
			Environmental	Social	Economic	
Agriculture Marshland Conservation Act	Regulate agricultural development on marshlands	No explicit mention of coast, but marshlands exist in coastal areas	Marshes provide habitat	Protection of infrastructure in coastal communities	Important for coastal industries like fisheries and maintenance of infrastructure on coast	CH: marshlands important for protecting coastlines from storm surges CD: development around marshland may be periodically subjected to tidal flooding CE: marshlands provide habitat for animal and plant species

Angling Act	Not applicable. Fishing regulations apply specifically to rivers, streams and lakes.					
Beaches Act	Protect beaches for future generations by regulating human activities and protecting resources	Beach defined as land along coastline seaward of mean high watermark	Beaches provide habitat	Recreational value	Touristic value	CH: erosion creating more beaches that may fall under this Act CD: private ownership of beaches limits public access, and allows development CE: important coastal habitat
Beaches and Foreshores Act	Regulation of private ownership of Crown land, leasing of flat, beach and foreshores	Applies to beaches and foreshores along coast	Protection of fish and oyster species	Ownership and access to coastal areas	Regulation of oyster cultivation	CH: erosion creating more beaches and foreshores CD: Act limits development on provincial land CE: Act establishes species protection
Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act	Joint management of offshore petroleum resources by federal and provincial governments	Mention of “Coast Guard” and coast of bay as area calculation measure	Agreement on petroleum industry which has many environmental implications, including contributing to climate change	Partnerships between levels of government	Job creation for Nova Scotians	CE: coastal ecosystems may be at risk from spills if within offshore limits
Conservation Easement Act	Easements between land owner and	No explicit mention of	Intention to protect ecosystems, habitat,	Protection of public resource	Potential impact on natural resource	CE: implications for ownership of

	government or organizational body to protect biodiversity	coast	species		industries and access to their land	coastal land and its protection for ecosystem value
Crown Lands Act	Regulation of provincial lands specifically in relation to forests, water, wildlife and their habitat	No explicit mention of coast	Special areas set aside for forest management and research, protection of water flow, wildlife and habitat. Prevents dumping, pollution on Crown lands	Protection of public lands and assets; designation for recreational opportunities	Regulation of forestry industry	CE: Minister can set aside Crown lands for protection of wildlife, habitats which may include coastal ecosystems
Endangered Species Act	Protection of species and habitat to prevent extinction	No explicit mention of coast	Protection of ecosystems for species at risk, preservation of biodiversity, use of biological resources in sustainable manner	Emphasis on consultation, education, cooperation and, First Nations engagement in protection of species	Species-at-risk fund, regulation of corporations and resource extraction industries	CE: protection of wildlife and habitat which may include coastal areas
Environmental Goals and Sustainable Prosperity Act	Sustainable goals for Nova Scotia in consideration of environment, economy and society	No explicit mention of coast	Climate adaptation goals to protect biodiversity, sustainably management natural assets, prevent net loss of wetlands, sustainable building practices.	Emphasis on public involvement, community education and capacity-building	Emphasis on sustainable 'prosperity', energy affordability and productivity, innovation	CH: mostly focus on emissions reductions, impact on hazards CE: mention of natural resource management CD: mention of climate change adaptation, sustainable building practices
Environment Act	Protection of environment,	Mention of coastal	Protection of habitat for	Quality of water resources	Natural resource industries may be	CD: limited through

	ensure sustainable management of water resources	waters through the term 'water resources'	animals/plants	protected by this Act impact human health, recreational activities	impacted by regulations and protections	environmental assessments CE: coastal areas protected under this Act provide important ecosystem habitats
Fisheries and Coastal Resources Act	Support and regulate coastal industries and local economic development in coastal communities	Mention of "coastal zone aquatic resources" though no definition	No environmental protection	Stimulation of coastal community economies, encourage population growth and skill training	Promotion of fisheries and aquaculture industries, benefit to tourism with recreational fishing	CD: lands designated for aquaculture, sea harvesting, fisheries CH: industries vulnerable to climate change and coastal hazards
Health Protection Act	Regulation of health hazards and public health emergencies	No explicit mention of coast	None	Health protection	None	CH: potential for coastal hazards to be health hazards or even public health emergency?
Mineral Resources Act	Regulation of sustainable mineral resource management	No explicit mention of coast	Negative environmental effects of mineral extraction	Work safety standards set through lease	Promotion of mining industry, Crown royalties for production	CE: maybe implications if mineral resources in coastal areas
Municipal Government Act	Provision of power to municipal councils from Province	No explicit mention of coast	Protection of water supply areas from individual activities such as fishing, camp, development	Planning and development regulations: municipalities have planning authority through planning strategies, by-laws, permitting	Restriction on business and industry with planning by-laws and licensing	CD + CH: Act provides municipalities with power over development regulation in coastal areas, in preparation or reaction to CH

				that must be consistent with provincial standards		
Off-Highway Vehicles Act	Regulation of off-highway vehicle (OHV) use including ATVs, snowmobile, motorcycle	Explicit mention of coast	Prohibition of OHV use in coastal or highland barren, or sensitive area unless 30cm compacted snow. Prohibition of OHV use on beaches, core habitat, parks, protected areas, wilderness areas, etc.	Regulation of recreational activity	None	CE: impact on recreational use of coastal areas, level of protection of CE from OHVs
Provincial Parks Act	Legislation around creation, maintenance, management of provincial parks	No explicit mention of coast	Prohibition of destruction of trees, natural resources, garbage dumping in provincial park Regulation on development, protection of flora/fauna, removal of natural resources, etc.	Provincial parks aimed to provide space for locals and tourists to explore, discover, recreate in natural spaces Heritage resource protection Education programs and facilities	Provincial Parks Trust Fund: funding for provincial parks	CD: development prohibited in provincial parks CE: protection if designated as provincial park
Private Ways Act	Regulation on petitioning for right of way over private land for resource extraction or development of	Reference to tidal waters as destination for product from	Private way to access tidal waters threat to coastal ecosystem	Issue of access to private lands	Support industry and transport of products	CE: impact on accessibility to tidal water areas, destruction to ecosystem

	private way or road for access to property	industry				
Public Highways Act	Management and control, construction and maintenance, use of highways in Nova Scotia	No explicit mention of coast, but mention of watercourse	Province can reserve land for highway Prohibition on obstruction of watercourses around highways	Accessibility in province All levels of government involved in highway construction, maintenance	Provincial Highways Fund: finance public highways	CH: threat to highway maintenance and safety CE: impact from construction of highway, runoff from highway
Special Places Protection Act	Protection of ecologically significant sites	No explicit mention of coast	Preserve habitat	Conserve heritage sites	Limit to industry in designated areas	CD: prohibited on designated lands CE: preserved, but not very many of special places designated on the coast
Trails Act	Regulation of establishment and management of trails on Crown land, private land for recreational use	No explicit mention of coast, but mention of waterways/ Watercourses which does not include coastal areas	Special management zones established for ecosystem protection, prohibits disturbance of natural resources and pollution. Recreational Waterways Program maintains natural waterway quality. Environmental standards for trail construction and	Trails developed and maintained for recreational use. Education programs	Limit to industry in areas where trails established	CE: maybe impact from trail, though this Act mostly protects forest or waterways

			management			
Treasure Trove Act	REPEALED					
Oak Island Treasure Act	Regulation of provincial licensing for treasure hunting on Oak Island in Mahone Bay	No explicit mention of coast	License allows excavation and environmental destruction with permit	Historical significance: myth of treasure on Oak Island	Tourist value of Oak Island	CE: localize destruction for treasure hunting
Wilderness Areas Protection Act	Protection and management of wilderness areas	Explicit mention of coast as Canso Coastal Barrens Wilderness Area listed under this Act	Designation of wilderness areas where regulate activities e.g. energy projects, development, resource extraction. Management plans for wilderness areas	Providing public access for sport, hunting and recreation	Prohibition on industrial use or development in wilderness areas	CE: regulation of activities in wilderness areas for ecosystem protection CD: prohibition of development in wilderness areas
Wildlife Act	Protection, management, conservation of wildlife and habitats	No explicit mention of coast	Regulations for purchase, lease, acquisition of land title wildlife protection purposes, designation of sanctuaries, management areas, wildlife parks. Regulations on trapping and hunting, fishing. Extra regulation for protected wildlife species, including birds and turtles	Privately owned land may be designated by government as wildlife park (under conditions), serve education purposes	Habitat Conservation Fund: funding wildlife protection	CE: importance of designation of land for wildlife and habitat protection, regulations on trapping/hunting in coastal ecosystems

Appendix B: Interview Recruitment Materials

Dear [Name of Potential Interviewee],

My name is Caitlin Grady, I am an undergraduate student at Dalhousie University completing my thesis on coastal policy in Nova Scotia. I received your contact information from my supervisors Dr. Georgia Klein (College of Sustainability) and Samantha Page (Ecology Action Centre). I am looking to interview people knowledgeable on provincial coastal issues and management and your name was recommended.

My research pertains specifically to the sustainability of coastal areas in Nova Scotia with or without the implementation of the Coastal Protection Act promised by the provincial government. If you are willing to do an interview, I would be interested in your opinion on:

- Coastal issues of importance to you (threats to coastal health, human well-being, etc.)
- Barriers and opportunities for coastal management in Nova Scotia
- Potential content of a Coastal Protection Act

Participation in this study is voluntary. Your interview and personal data will be confidential and unidentifiable in the final thesis and other written documents. If you grant an interview and wish to withdraw, you will be able to do so at anytime. You are welcome to leave the interview or remove your data from this study any time up until April 2018 when this thesis will be submitted.

There are minimal risks foreseen for partaking in this study, however, I have attached a copy of the consent form which gives you full details about this study and associated risks if you are interested in learning more.

This study has been reviewed and cleared by the Dalhousie Research Ethics Board. If you any have any ethical concerns or questions about your rights as a participant you can contact: Research Ethics, Dalhousie University at (902) 494-1462 or email: ethics@dal.ca (and reference REB file # [ENTER FILE NO. HERE]).

For further questions, please don't hesitate to contact me at Caitlin.grady@dal.ca, or my supervisor Dr. Klein, georgia.klein@dal.ca.

Thank you so much for your time and consideration! If you have any questions, please do not hesitate to ask me.

Caitlin Grady,
Undergraduate Student,
Dalhousie University, Halifax, Nova Scotia
Tel: 902-580-0542
caitlin.grady@dal.ca



Project title: Coastal Protection Act: A Future Scenario Analysis of Coastal Sustainability in Nova Scotia

Lead researcher: Caitlin Grady, Undergraduate Student, Dalhousie University
Caitlin.grady@dal.ca ; 902-580-542 (phone)

Other researchers

Georgia Klein, Professor and student supervisor, Dalhousie University, College of Sustainability
Georgia.klein@dal.ca; 902-494-4031

Samantha Page, research advisor, Coastal Adaptation Coordinator, Ecology Action Centre

Introduction

We invite you to take part in a research study being conducted by Caitlin Grady, a student at Dalhousie University as part of her undergraduate thesis on coastal policy in Nova Scotia. Choosing whether or not to take part in this research is entirely your choice. There will be no impact if you decide not to participate in the research. The information below tells you about what is involved in the research, what you will be asked to do and about any benefit, risk, inconvenience or discomfort that you might experience.

Please ask as many questions as you like. If you have any further questions regarding the study after reading this consent form, please direct them to Caitlin Grady at (902) 580-0542 or caitlin.grady@dal.ca. If you have any ethical concerns about your participation in this research, you may also contact Research Ethics, Dalhousie University at (902) 494-1462, or email: ethics@dal.ca (and reference REB file # 2017-4400).

Purpose and Outline of the Research Study

The purpose of this study is to consider the impacts of the Coastal Protection Act currently under development by provincial government on the future of coastal areas in Nova Scotia. Six interviews will be conducted with individuals knowledgeable on coastal policy in the province from varying perspectives. Interviewees will be asked to share their expert opinion and ideas on:

- Coastal issues of importance to you (threats to coastal health, human well-being, etc.)
- Barriers and opportunities for coastal management in Nova Scotia
- Potential content of a Coastal Protection Act

Who Can Take Part in the Research Study

You may participate in this study if you are knowledgeable on coastal issues, management, or policy in Nova Scotia and can speak from the perspective of one of the following relevant sectors: government (federal, provincial, municipal), non-profit, business, community.

What You Will Be Asked to Do

You will be asked to meet for one in-person interview with the lead research in Halifax or, if an in-person meeting is not possible, to participate in a telephone interview. Interviews will be scheduled at a time and place convenient for you and will last between 30-45 minutes. In this semi-structured interview, you will be asked several open-ended questions. You will be asked if the interview can be audio recorded. If you prefer to not have the interview audio-recorded, the lead researcher will simply transcribe non-identifying information from the interview using pen and paper and an assigned alias.

Possible Benefits, Risks and Discomforts

Participating in this study may not benefit you, but we might learn about perspectives on existing coastal issues, barriers and opportunities for better coastal management strategies and policies as well as ideas on the content of a CPA. It is our hope that this study will help inform ongoing coastal policy decisions. The final thesis will serve the Ecology Action Centre as a policy tool for involving stakeholders in the implementation process of a CPA.

There are minimal risks associated with this study, but there is possibility of your discomfort in expressing your views on politically and socially relevant topics. This risk is minimal as your name and data will remain confidential and unidentifiable during analysis and in final thesis and all your personal information will be securely stored and deleted in April 2018 or upon you request. Furthermore, you will not be asked to identify and name persons, businesses, or corporations who might be barriers to improved coastal management.

Compensation / Reimbursement

There will be no compensation or reimbursements provided for this study.

How your information will be protected:

Steps will be taken to ensure the privacy of your data. The audio recording and transcript of your interview will be stored in a locked file and any electronic copies will be deleted following analysis. Analyzed data will be stored on a password-protected computer so only the research team has access to it. All data stored on the password-protected computer will be destroyed in April 2018 or upon your request.

Your personal and interview data will be confidential and unidentifiable in the final thesis and any written documentation. Following the interview, you will be assigned an alias for coding purposes. Your real name and contact information will be kept on a file locked in Dr. Klein's office only to be accessed by the research team. Your assigned alias will be used if necessary, in any written documentation for the study, including transcriptions, notes and final thesis, but will be untraceable to you. You will therefore not be identified in any way in final documents of this study.

If You Decide to Stop Participating

You are free to leave the study at any time. If you decide to stop participating at any point in the study, you can also decide whether you want any of the information that you have contributed up to that point to be removed. You can also decide for up to April 2018, when this thesis will be

submitted, if you want us to remove your data. After that time, it will become impossible for us to remove your data.

How to Obtain Results

You will receive an email with a link to the final thesis in April 2018 for your consideration of the research findings.

Questions

We are happy to talk with you about any questions or concerns you may have about your participation in this research study. Please contact Caitlin Grady at (902) 580-0542, caitlin.grady@dal.ca or Georgia Klein at (902) 494-4031, georgia.klein@dal.ca at any time with questions, comments, or concerns about the research study.

If you have any ethical concerns about your participation in this research, you may also contact Research Ethics, Dalhousie University at (902) 494-1462, or email: ethics@dal.ca (and reference REB file # 2017-4400).

Signature Page

Project title: Coastal Protection Act: A Future Scenario Analysis of Coastal Sustainability in Nova Scotia

Lead researcher: Caitlin Grady, Undergraduate Student, Dalhousie University
Contact information: Caitlin.grady@dal.ca; 902-580-542 (phone)

I, the research participant have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I understand that I have been asked to take part in a one interview that will occur in-person at a location and time convenient to me or on the phone. I understand that the views and ideas I express in the interview will inform the final thesis without identifying me. I agree to take part in this study. My participation is voluntary and I understand that I am free to withdraw from the study at any time, until April 2018.

I agree to have my interview audio-recorded Yes No

Participant Name

Signature

Date

Appendix C: Interview Guide

Hello, I am Caitlin Grady. Thank you for taking the time to meet with me.

Before we begin, I would like to go over what this study is, what your role will be and what the risks are.

In-person interview: I believe I sent you a consent form in our email conversation and have printed a copy here that I am hoping you could read. Please let me know if you have any questions.

[Allow time for interviewee to read the consent form and answer questions]

If you are comfortable and have no more questions, could you please sign the consent form?

[If consent form is signed, proceed to In-Person and Telephone Interview]

Telephone interview: I will read the letter of consent out loud. I believe I sent you this consent form when we communicated last over email if you would like to follow along. Please feel free to interrupt me with any questions you have.

[Read out Appendix B]

Do you have any questions?

[If yes, answer questions, if no continue]

I will now be asking for your verbal consent on one item, please respond verbally “yes” or “no”.

Do you agree to have this interview audio-recorded? [Yes No]

[If and when the participant consents, proceed to In-Person and Telephone Interview]

In-Person and Telephone Interview: Thanks very much. Now we begin. I will ask a series of open-ended questions, please answer them based on your own knowledge and experience.

- What local coastal issues are most concerning to you?
- What are the barriers/obstacles to better coastal management in Nova Scotia?
- What infrastructure would be needed to overcome these barriers?
- What do you think a Coastal Protection Act should include/focus on?

That ends the planned interview questions. Is there anything else you would like to add?

Thank you again for taking the time to meet/speak with me today.

Appendix D: Scenario Analysis Table

Criteria/Scenarios	No Policy Change	Provincial Policy Amendments	Municipal Coastal By-Law Model	Coastal Protection Act
Improvement to Coastal Sustainability	<u>Low</u> None beyond existing legislation	<u>Medium</u> Improvement to environmental and social sustainability with more emergency planning and water regulation	<u>Medium</u> Improvement to environmental, social and economic sustainability in select municipalities	<u>High</u> Improvement to environmental, social and economic sustainability in all municipalities
Improvement to Key Coastal Issues: Hazards (CH) Ecosystem (CE) Development (CD)	<u>Low</u> None beyond existing legislation, unless other stakeholders step in	<u>Medium</u> Improvement to CE and CH issues	<u>Medium</u> Improvement to CE, CD and CH in select municipalities	<u>High</u> Improvement to CE, CD and CH in all municipalities
Stakeholder Support	<u>Low</u> Stakeholders want government support	<u>Low</u> Unsupportive due to long process with remaining policy gaps	<u>Low</u> Unsupportive due to inconsistent regulation caused by municipal resource gaps	<u>High</u> Supportive because comprehensive coastal policy is needed
Consideration of Long-Term Adaptation	<u>Low</u> Shot-term approach to dealing with immediate threats	<u>Medium</u> Improvement to long-term ecosystem protection, but still short-term hazard response	<u>Medium</u> Both short-term or long-term depending on municipal capacity	<u>High</u> Capacity for province-wide long-term planning
Desirability	<u>Low</u> Risk of key issues unaddressed	<u>Low</u> Inefficient approach to coastal management	<u>Medium</u> Improved but inconsistent protection	<u>High</u> Need CPA to offer consistent regulation and relieve municipalities
Incrementality	N/A	<u>High</u> One policy amendment at a time	<u>Medium</u> One municipality at a time	<u>Low</u> Unless issues added in increments to CPA

Political Practicability	<u>High</u> Easy to do nothing	<u>Medium</u> Feasible if political will exists, which it does not	<u>Medium</u> Dependent on resources, tools, leadership of municipality	<u>Medium</u> Political will now but uncertainty if it will remain
Participation	<u>Low-Medium</u> Potential for stakeholder collaboration in absence of government action	<u>Low</u> Likely driven solely by provincial government	<u>Medium</u> Dependent on resources, tools, leadership of municipality as unclear duty to consult	<u>High</u> Province has duty to consult
Feasibility	<u>Low</u> Too much demand for government action	<u>Low-Medium</u> Little political will, but government action	<u>Low</u> Challenge of cooperation	<u>High</u> If demand and political will persist