

Exploring Issues, Engaging Partners: Risk Management, Climate Change & Coastal Planning



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Ecology Action Centre
Coastal Issues Committee



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3. Bottom left: Hurricane Juan damage at Prospect Point, Environment Canada, accessed at <http://www.atl.ec.gc.ca/weather/hurricane/juan/photos/25.jpg> 15 August 2008.
4. Bottom right: coastal development in Herring Cove Road from Jonathan Graham

Additional copies of this report are available from:

Ecology Action Centre – Coastal Issues Committee
2705 Fern Lane
Halifax, Nova Scotia
Canada B3K 4L3

Tel: (902) 442 - 046

Fax: (902) 405- 3716

E-mail: coastal@ecologyaction.ca

Web: http://www.ecologyaction.ca/coastal_issues/coastal_issues.shtm

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EXECUTIVE SUMMARY

Climate change and its associated uncertainty create a new element of risk for many industries and stakeholders that do business along Nova Scotia's coasts. Coastal areas of Nova Scotia, with their intense residential, commercial and industrial development and cultural and ecological significance, are particularly susceptible to this added degree of risk. With this knowledge, most sectors are starting to think about and plan for these risks. This project sought to build on previous research and dialogue by engaging stakeholders in the insurance, land development, and real-estate industries around climate change and risk management issues as they relate to Nova Scotia's coastline. Government agencies in the areas of emergency measure operations, climate change, and coastal planning also were significant in this research. Funding for this project was provided by the Ocean Management Research Network working group on the Socio-Economics of Climate Change. The project took place between June and September 2008.

Project objectives were:

1. to explore the perspectives of and relationships between targeted stakeholders on risk management, climate change, and coastal planning; and
2. to identify common issues, challenges, approaches and emerging priorities

The report is divided into three sections. The first provides background information on the project and climate change impacts in coastal areas. The second includes general research and consultation findings and is divided into 'General Findings' and 'Stakeholder Activities and Perceptions' (please see full report for stakeholder specific findings). The final section looks at the role of government, industry, and civil society in addressing risk management and climate change issues. This section concludes the report with a short discussion on next steps and final thoughts.

Consultations and research demonstrated that the different stakeholders contacted for this project are taking these issues seriously and starting to develop a response. While the stakeholders bring their own lens to the discussion, many of the issues, challenges, and emerging priorities across sectors are the same. Future dialogue and multi-sector collaboration is essential to reduce the uncertainty of climate change impacts, mitigate associated risks, and strengthen the resilience of Nova Scotia's communities and coastal ecosystems.

Key Project Findings:

Risk

- Risk is future-oriented and multi-dimensional. Risk can be posed to finances/assets, property and infrastructure, natural systems, socio-cultural systems, and people.
- Managing risk requires planning carefully, proposing and evaluating options, implementing mitigation and recovery programs, and monitoring the effectiveness of risk management strategies that are implemented

Issues, Challenges & Knowledge Gaps

- Level of global and local uncertainty regarding impacts makes it difficult to develop a response
- Implications around liability and disclosure
- Limited financial and human resources

- Lack of strong leadership in developing a broader response
- Finding a balance between current limitations and future objectives
- Establishing what level of risk is acceptable, particularly in the face of uncertainty
- Dealing with increasing severe-weather related claims (insurance and government)
- Adapting policy and site-plans so they take into account future events
- More information, particularly web-based and information targeted at specific sectors, on specific impacts of climate change on coastal areas of Nova Scotia is needed

General Strategies for Overcoming the Issues

- Use the best available information and science to make decisions and err on the side of caution
- Respond province wide with provincial leadership and resources
- Recognize the role of municipalities in emergency measures, education, and planning
- Develop the ability to adapt and modify policy and strategies as the level and implications of risk change over time
- Use the internet as an educational tool
- Look to other countries/jurisdictions to see what they are doing
- Consider both short-term and long-term risk when planning
- Work across government departments and disciplines to find solutions
- Encourage development techniques and land use planning strategies that reduce exposure

Emerging Priorities

- Reducing the uncertainty associated with climate change impacts in coastal areas
- Increasing data collection and mapping efforts around the province
- Planning for these issues with a long-term outlook
- Showing leadership by engaging in and responding to these issues
- Continuing multi-stakeholder cross-disciplinary dialogue to find solutions
- Including future mitigation strategies in severe weather recovery efforts
- Thinking differently about how we use the land and where we put infrastructure and buildings

Role of Stakeholders

- Government's role includes leadership, education, collaboration, research/data collection and management, policy/program development, and taking action when the public demands it
- Industry's role includes educating members of the profession and clients about relevant risks, working with government and other partners on issues of concern to that particular industry, conducting research, and clearly communicating its perspective to other stakeholders
- Civil society's role includes facilitating dialogue, creating and disseminating resources, raising awareness and educating relevant stakeholders

Next Steps

- Continue cross-sector dialogue around climate change adaptation and risk management issues.
- Encourage and support the government in its role to develop responsive programs and policies
- Identify and implement strategies to reduce the uncertainty associated with impacts in N.S.
- For the Ecology Action Centre, continue to build on the results of this project and to develop relationships with members of government and industry and facilitate future multi-stakeholder dialogue around issues of risk management, climate change, and coastal planning

1.0 PROJECT BACKGROUND

1.1 Overview

Climate change and its associated uncertainty create a new element of risk for many industries and stakeholders that do business along Nova Scotia's coasts. Coastal areas of Nova Scotia, with their intense residential, commercial and industrial development and cultural and ecological significance, are particularly susceptible to this added degree of risk. With this knowledge, most sectors are starting to think about and plan for these risks. Research conducted by the Ecology Action Centre (EAC) in the spring of 2006 indicated that the global insurance and reinsurance industries were moving forward rapidly in identifying and assessing climate change related risks.¹ Furthermore, in order to better understand emerging issues, the EAC recently began a dialogue with members of the real-estate industry in N.S. around coastal issues and climate change impacts. This project sought to build on this initial research and dialogue by engaging stakeholders in the insurance, land development, and real-estate industries around climate change and risk management issues as they relate to Nova Scotia's coastline. Government agencies in the areas of emergency measure operations, climate change, and coastal planning also were significant in this research. Exploratory in nature, the project evolved over its course from an initial focus on the insurance industry to one engaging multiple stakeholders around issues of risk management, climate change and coastal planning.

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The report is divided into three sections. The first provides background information on the project and climate change impacts in coastal areas. The second includes general research and consultation findings and is divided into 'General Findings' and 'Stakeholder Activities and Perceptions'. The final section looks at the role of government, industry, and civil society in addressing risk management and climate change issues. This section concludes the report with a short discussion on next steps and final thoughts.

1.2 Information Collection & Project Limitations

Consultations with key stakeholders were the main method of collecting information for this project. A number of informal consultations were conducted with different stakeholders and questions and themes adapted as needed (see Appendix A for list of consultation participants). Consultations ranged from phone calls and e-mails to meetings with small groups of government officials. Also, a roundtable discussion targeted at members of the real-estate, insurance and development industries and private sector planners was held on July 23, 2008 from 1:30-4:00. The event, held in partnership with the

¹ Nicol, Amber. Spring 2006. Unpublished. Available from Jennifer Graham, Ecology Action Centre Coastal Issues Coordinator at coastal@ecologyaction.ca

Dalhousie School of Planning, also included representatives from provincial government departments responsible for climate change and coastal policy and programs. Nine participants from representing diverse sectors attended the roundtable discussion. Although no one from the insurance industry was able to attend the session, representatives at the Insurance Bureau of Canada (IBC)² were given the opportunity to comment on the draft of this report.

Appendix B includes the invitation to the session while Appendix C details the participants and discussion highlights. In addition to these consultations, stakeholder websites, publications, and policy documents were reviewed. This project was limited by its small exploratory scope and a timeline which had key consultations taking place during the summer.

1.3 Climate Change Impacts

Much of Nova Scotia’s coastline is identified as having ‘moderate’ or ‘high’ sensitivity to sea-level rise.³ Biophysical and socio-economic impacts of climate change in coastal areas are found in Table 1.

Table 1: Potential Impacts of Climate Change and Sea Level Rise in the Coastal Zone⁴

Biophysical Impacts	Socio-economic Impacts
<ul style="list-style-type: none"> • More extensive coastal inundation • Increased coastal erosion • Saltwater intrusion into freshwater aquifers • Reduced sea-ice cover • Higher storm-surge flooding • Higher sea surface temperatures • Loss of coastal habitat 	<ul style="list-style-type: none"> • Damage to coastal infrastructure, including that used for transportation and recreation • Increased length of shipping season • Increased property loss • Increased risk of disease • Increased flood risks and potential loss of life • Changes in renewable and subsistence resources • Loss of cultural resources and values

2.0 RESEARCH & CONSULTATION FINDINGS

2.1 General Findings

This section presents common findings from the consultations. While the results are based primarily on the findings of the roundtable discussion (this discussion touched directly on most of the topics below), information from the informal consultations was used to supplement the points made at the discussion. Many of the comments raised in the roundtable discussion were echoed during the informal consultations.

2.1.1 Defining Risk

While the definition of risk differs across disciplines, some general elements of risk in the context of climate change and coastal planning emerged clearly during the consultations.

² The IBC is the national trade association of the property and casualty insurance industry. Its member companies provide nearly 95% of the private home, car and business insurance sold in Canada. For more information visit: <http://www.ibc.ca/>

³ Shaw et al., 1998, *Geological Survey of Canada Bulletin 505: Sensitivity of the Coasts of Canada to Sea-Level Rise* (Ottawa, ON: Natural Resources Canada), 31.

⁴ Natural Resources Canada, 2006, *Climate Change Impacts and Adaptation: A Canadian Perspective – Coastal Zone*, available from http://adaptation.nrcan.gc.ca/perspective/summary_8_e.php, accessed 15 July 2008.

- Risk is future-oriented and multi-dimensional.
- The risk can be posed to finances/assets, property and infrastructure, natural systems, socio-cultural systems, and people.
- Managing risk requires planning carefully, proposing and evaluating options, implementing mitigation and recovery programs, and monitoring the effectiveness of risk management strategies that are implemented.
- Specific questions and risks associated with climate change and coastal planning identified in the roundtable discussion are included in Appendix C.

2.1.2 Reoccurring Issues

This section outlines reoccurring points of discussion and concern in the consultations. Key issues brought forward most commonly were the level of uncertainty associated with climate change impacts, implications around liability, and resource limitations.

- Level of global and local uncertainty regarding impacts makes it difficult to develop a response
- Implications around liability and disclosure are unclear
- Concerns about imposing restrictions that pose a financial risk to current landowners and uses
- Limitations in terms of financial and human resources
- High degree of financial risk associated with severe weather events
- Lack of strong leadership in developing a response
- Difficulty finding balance between current limitations and future objectives
- Uncertainty where to go to find relevant information and resources in some sectors

2.1.3 Challenges and Information Gaps

Consultation participants identified a number of challenges and information gaps in developing a response to climate change and mitigating their risk in this area. Included here are the main general challenges and information gaps mentioned. At the roundtable discussion, a number of sector-specific and societal challenges were mentioned as well (see the section ‘Stakeholder Activities and Perceptions’ and Appendix C for more information).

General Challenge

- Uncertainty of future impacts and cumulative impacts
- Inability to identify risk for each property
- Human and financial resource constraints to look at these issues
- Difficult to determine what level of risk is acceptable (particularly in the face of uncertainty)
- Rate at which change in coastal areas is happening
- Property rights are perceived to be very strong in N.S. which might make it harder to address these issues
- Lack of guidelines/policy to respond to these issues and lack of a catalyst to create the needed guidelines/policy
- Finding a way to move forward in the face of this uncertainty
- Vertical and horizontal coordination of governments
- Dealing with increasing severe-weather related claims (insurance and government)
- Adapting policy and site-plans so they take into account future events

Knowledge Gaps

- Impacts of climate change on specific areas of Nova Scotia's shoreline
- Liability and disclosure issues for different stakeholder groups
- Information on where members of specific industries can learn about the issues as they relate to their industry (do these resources even exist?)

2.1.4 Strategies

Consultations also identified a number of strategies for overcoming the challenges discussed and for developing a response to climate change impacts. The findings are organized into 'General Strategies', representing broader approaches, and 'Specific Strategies', which respond to particular challenges.

General Strategies

- Err on the side of caution as we do not have the best available information
- Include grassroots strategies
- Use the internet as an educational tool
- Look to other countries/jurisdictions to see what they are doing
- Set a target for action on a specific strategy and adjust it as needed
- Respond province wide with provincial leadership and resources
- Recognize the role of municipalities in emergency measures, education, and planning
- Use the best available information and science to make decisions
- Develop the ability to adapt and modify policy and strategies as the level and implications of risk change over time
- Consider both short-term and long-term risk when planning
- Work across government departments and disciplines to find solutions
- Engage individuals/new partners with information relevant to their sectors
- Encourage vertical and horizontal collaboration within government
- Encourage development techniques and land use planning strategies that reduce exposure

Specific Strategies

- Make municipal land use maps and regulations and site-plans very specific: clearly show which areas are developable, which are of concern, and where buffers are located. Make this information public
- Educate homeowners and businesses about climate change risks and what steps they can take to reduce their exposure and vulnerability to these risks
- Amend risk assessments in planning strategies and land use bylaws as the coastline changes and new information becomes available
- Develop better and more wide-spread mapping and flood modelling scenarios
- Develop a 'risk criteria' sheet to conduct a risk assessment of specific properties
- Plan the location of infrastructure carefully. Keep in mind the public safety element and the need for ongoing maintenance
- Look to Halifax Regional Municipality's work in this area (e.g. LiDAR mapping, Climate-SMART, number of relevant policies in their municipal planning strategy, the Developers Guide to Risk-Management)

- Develop an information booklet on risks and climate change as these relate to your industry and distribute through the industry association (noted in reference to the real-estate industry which already has such educational booklets on other topics but is relevant to other industry associations)
- For real-estate agents, be reasonable and prudent when making judgements about selling properties with potential hazard concerns
- For surveyors, make sure to include detailed notes about specific hazards and adaptation strategies on survey plans (ensures property-owners/home-buyers are aware of the risk)

2.1.5 Emerging Priorities

Through the consultation process, a few priorities emerged. These priorities tie together the information in the proceeding sections.

- Reducing the uncertainty associated with climate change impacts in coastal areas
 - Increasing data collection and mapping efforts around the province
- Planning for these issues with a long-term outlook
- Showing leadership by engaging in and responding to these issues
- Continuing multi-stakeholder cross-disciplinary dialogue to find solutions
- Including future mitigation strategies in severe weather recovery efforts
- Thinking differently about how we use the land and where we put infrastructure and buildings

2.2 Stakeholder Activities & Perceptions

This section presents findings specific to the activities and perspectives of the targeted stakeholders. Findings are based on informal consultations, the roundtable discussion (as applicable, see participant’s list Appendix C), and review of stakeholder websites, publications, and policy documents.

2.2.1 Insurance Industry

The insurance industry is focused around evaluating and managing financial risk. Insurance companies provide specific types of coverage to individuals, businesses, and governments, via an insurance policy for a premium. These premiums are used to payout insurable damages as required. While not involved directly in all coastal-risks, the insurance industry is active in climate change issues in general. The Insurance Bureau of Canada (IBC) identifies the industry as having expertise in risk management, prevention, recovery and finance.⁵

The industry is concerned with both increased claims from severe weather events and exposure to the insurance industry. Robert Tremblay with the IBC notes that “our industry is liable by contract to assume risks before we know what they are”.⁶ A changing climate poses a particular challenge as future weather-related risks are estimated based on historical trends which are no longer good indicators; the “big question then becomes what to expect?”⁷ While climate change models are relatively accurate at the continental level, local risks and impacts are very difficult to predict. With this

⁵ For more information on the IBC visit <http://www.ibc.ca/>.

⁶ Tremblay, Robert, personal communication, 12 September 2008.

⁷ Ibid.

in mind, a major area of focus for the insurance industry is trying to better understand the nature and degree or exposure while ensuring its ability to meet contractual agreements.⁸

Major climate change related initiatives undertaken by the IBC include the creation of a research-based institute, the Institute for Catastrophic Loss Reduction (ICLR)⁹, and the Insurance Research Lab for Better Homes,¹⁰ both in partnership with the University of Western Ontario. Websites for the IBC and ICLR include a variety of educational materials on reducing damage to property and maintaining 72-hour preparedness for homes and businesses. In addition, senior IBC executives have made a number of presentations recently on the insurance industry's perspective on climate change at conferences across the country (examples include conferences on climate change, disaster management, and municipalities). This reflects the IBC's support for multi-stakeholder dialogue around these issues.

The IBC identifies four priorities for all levels of government to work together to respond to climate change:

- Reinforce/improve infrastructure;
- Strengthen building codes and build in climatic design values;
- Consider sweeping land use revisions; and,
- Improve disaster management.¹¹

In terms of specific types of coverage, in coastal areas, flooding, wind-damage, and erosion pose the greatest potential for damage to infrastructure, businesses, and homes. In Canada, only sewer-back-up related flooding is covered while overland flooding (most types of coastal flooding) is classified as an uninsurable peril;¹² private companies cannot provide this coverage at an affordable price due to the catastrophic nature of most flooding events. With a few minor exceptions, flood-related or gradual erosion damage is not covered by Canadian insurance companies. At this time the creation of a government subsidized national flood-insurance program similar to the one operating in the U.S. is not under serious consideration.¹³ Wind damage however is covered by Canadian insurance companies. Wind coverage will become increasingly important as the climate warms and more severe storms hit the Atlantic region. Storm surge damage (includes both flood and erosion risk) is sometimes covered by insurance companies through wind policies as storm surges are generated by wind. The application

⁸ Ibid. Tremblay notes further that "those mechanisms will range from adequate premiums to cover the losses, to acceptable re-insurance arrangements to loss management/reduction initiatives."

⁹ The ICLR is a research institute committed to reducing the loss of life and property caused by severe weather and earthquakes. For more information visit: <http://www.iclr.org/>

¹⁰ The Insurance Research Lab for Better Homes is housed in the Engineering faculty with the intent of making houses more resistant to extreme weather. For more information visit:

http://www.abc.ca/en/Natural_Disasters/Insurance_Research_Lab.asp

¹¹ IBC Media Release. 7 May 2008. "Insurance Bureau of Canada CEO to deliver keynote address at Atlantic Conference on Disaster Management: Stressed urgent need to adapt to climate change." Available from http://www.abc.ca/en/Media_Centre/News_Releases/2008/05-07-2008.asp accessed 12 August 2008.

¹² The IBC defines uninsurable peril as: "events or situations for which insurance coverage cannot be purchased. The damage as a result of these incidents is usually predictable or preventable. For example, if you build your house on a flood plain, your house will, at some point, be flooded. Flooding, in this case, is an uninsurable peril." Available from http://www.abc.ca/en/Need_More_Info/Glossary/U.asp#Uninsurable_Perils accessed 12 August 2008.

¹³ The National Flood Insurance Program was developed to provide flood insurance to homeowners and businesses in participating communities. This program covers both coastal flooding and flood-related erosion. Erosion however is identified as a problematic part of this policy as its associated risk is not factored into the actuarial calculations to evaluate the true cost posed by this risk. For more information visit: <http://www.fema.gov/business/nfip/>

of this concept however is not consistent across the industry. Following Hurricane Juan, local insurance companies did cover some storm surge damage through wind policies.¹⁴ Of note, coverage for secondary home, for example a summer cottage, is more limited than for a primary home. While a representative of the ICLR noted the insurance industry is always looking to develop new products, he did not anticipate the development of policies to fill in the above gaps in the near future.¹⁵ He noted that currently coastal-related claims are a much smaller problem in Canada than in the United States where devastating hurricanes are a frequent occurrence.

2.2.2 Emergency Measures

Emergency Measures refers to the government response to large-scale emergencies. Municipal governments in Nova Scotia are responsible for creating local emergency plans. The provincial Emergency Management Office (EMO), housed in the NS Department of Public Safety, supports municipal governments in their efforts as well as administers the province's response to an emergency situation. The EMO office receives its mandate from the Emergency Management Act.¹⁶ Its responsibilities include but are not limited to integrated emergency planning and response, business continuity management, emergency preparedness training, and disaster financial assistance. The Federal Government EMO supports provincial governments through any means possible during emergencies of national significance following an invitation to get involved by the relevant provincial government. The Federal Disaster Assistance (DFA) Guidelines outline the amount and type of financial support provided to provincial governments. DFA is not considered a fund which can be accessed at all times but a program, endorsed by government in a vote, which is initiated when circumstances require it.¹⁷

In coastal areas, the most likely cases for a DFA program to be initiated are major storms and/or flooding events. To initiate such support the recovery effort must be greater than a minimum of \$1 per capita. The implication of this policy is when the total amount of damage does not meet this minimum requirement no DFA is available for those affected. For example, homes damaged in small-scale localized storm-surge flooding would not be eligible for DFA if no program is declared. Also not eligible include second residences, for example, summer homes, and expenses covered by insurance. Erosion damage is not covered in most situations however pre-existing erosion control structures are eligible.¹⁸

Both federal and provincial EMO representatives identified climate change as something that is now factored into their planning. A primary concern with respect to DFA and climate change for government is that increased frequency and severity of major storms will result in greater DFA-claims and other associated expenses. Another issue identified is the challenge of preventing repeat claims of a similar nature for the same property. DFA guidelines now include a portion of funding to be used for adaptation and mitigation efforts. While EMO representatives have an interest in seeing improvements in mapping and changes in land use in high-risk areas, EMO offices in Canada tend to be limited by

¹⁴ Charles, John, personal communication, June 2006.

¹⁵ Sandiuk, David, personal communication, June 2006.

¹⁶ NS EMO Office, 2004, "Our Legislation," available from <http://www.gov.ns.ca/EMO/AbsPage.aspx?id=1031&siteid=1&lang=1> accessed 12 August 2008.

¹⁷ Information in this section based on informal consultations with Andrew Lathem, Paul MacNeil, & Adam Rostis in July 2008 (NS EMO), Ernie MacGillivray in June 2008 (NB EMO), & Stephen Braham in August 2008 (Public Safety Canada).

¹⁸ For more information on Disaster Financial Assistance see <http://www.publicsafety.gc.ca/prg/em/dfa/index-eng.aspx>.

their mandate and generally only engage indirectly in these issues. For example, in both Nova Scotia and New Brunswick, provincial EMO officials are involved in internal government consultations to develop coastal and climate change policy but are not the lead agency.

2.2.3 Real-Estate Industry

The real-estate industry is concerned with the buying and selling of property. Coastal waterfront property is one of the driving forces behind the industry in Nova Scotia. Risk in the context of climate change and coastal planning presents a complex dynamic for the industry.

- Potential liability risk to the broker if hazards are not properly disclosed
- Potential financial risk (or gain, see above) to the broker if a decision is made not to sell a property the realtor deems unsuitable for development
- Potential financial risk (and loss) to buyers who purchase a vulnerable property
- Potential financial risk to property owners whose property is deemed fully or entirely unsuitable for development

Real-estate brokers face the challenge of navigating this dynamic situation in order to earn a living. Issues of disclosure and who decides what is and what is not suitable for development complicate the matter. In addition, realtors at the roundtable discussion identified a lack of resources available for them to educate themselves about unique risks of coastal properties and to educate their clients. The use of the Nova Scotia Association of Realtors (NSAR)¹⁹ to educate members was identified as a strategy. Another strategy proposed informally was to look at developing some form of risk assessment for a property, similar to a home inspection, so the potential buyer is aware of the risks. While working at the association level is one strategy, also identified is the ability of small real-estate firms to take innovative approaches to responding to climate change and coastal planning issues. On a broader level, the NSAR recently implemented a government relations strategy to proactively approach issues that affect the real estate industry and the general public.²⁰ Of note, the increase of value for properties not at high risk to coastal hazards could be seen as a benefit of climate change.

2.2.4 Other Stakeholders

Consultations (either informal or as part of the roundtable) also were conducted with a surveyor, a private sector environmental planner, and provincial and municipal coastal and climate change policy makers. While not enough information was collected to discuss each of these groups in detail, a few key points for each are included.

Land Surveyor

- A lack of local information and site-specific data on coastal hazards and projected climate change impacts poses a major challenge
- Incorporating future impacts into a site-plan based on the present situation is a challenge
- Issues of disclosure and liability are important
- Educating members of the profession and clients about risks is essential

¹⁹ The NSAR represents “over 1,600 brokers, salespeople and affiliate members (e.g. solicitors, appraisers, banks) through the province” and “serves its members through a wide variety of educational programs, publications and special services.” Available from <http://www.nsar-mls.ca/> accessed 15 August 2008

²⁰ Two representatives from this association attended the roundtable.

Environmental Planner (private-sector)

- Education of members of the organization and clients is important.
- Changing the way we think about land use and where we put building and infrastructure is essential in the future.
- Uncertainty poses a major challenge.

Government Coastal & Climate Change Policy Makers

- Progress is being made to work on these issues across departments
- Government encourages cross-sector dialogue to seek solutions
- Public education and engagement is important
- Short-term political time frames make working on long-term issues a challenge
- Resource constraints can be an issue

3.0 MOVING FORWARD

3.1 Role of Government, Industry & Civil Society

The findings of this project show that responding to issues of risk management, climate change, and coastal planning requires an interdisciplinary cross-sector approach to be effective. One aspect of this project was to start identifying the different yet complementary roles of government, industry and civil society. While it is recognized that these categories are broad they represent a starting point for this discussion. Table 2 outlines the results of the consultations (see page 15).

Table 2: Role of Government, Industry & Civil Society

<i>Government</i>	<i>Industry/Private Sector</i>	<i>Civil Society</i>
<ul style="list-style-type: none"> • Leadership (identifying and acting on issues) • Education and awareness • Create responsive and adaptable policy • Disaster prevention, mitigation, and response • Support and funding • Research and mapping • Data collection/management • Facilitate access to information • Communicate to other sectors • Respond to industry concerns • Maintain aging infrastructure • Collaboration/action between different areas/levels of government • Work with communities • Link initiatives and potential risks with economics • Get and respond to public input • Take action when there is collective public will for it • Specific to the Government of Nova Scotia: <ol style="list-style-type: none"> a. Develop guidelines for municipalities (e.g. zoning options, provincial interest statement) b. Create a provincial task force but include a large proportion of local level representation c. Set provincial standards (e.g. wetlands, beach management) d. Make more information on coastal planning and climate change easily accessible. Get out into communities around the province more with this information. e. Work with civil society groups and associations to provide information and develop necessary guidelines and policies. 	<ul style="list-style-type: none"> • Evaluate what your company is doing and what it could be doing to adapt to impacts • Be informed • Do the right thing • Educate employees and clients about these issues. • Communicate clearly (about risks and options) • Identify your company/industry’s priorities and concerns and work with government and others to ensure the issues that matter are researched and addressed • Pressure government to take action (helps create much-needed political will) • Conduct research as it relates to your industry • Educate others on your industry’s perspective on the issues • Tap into the potential of industry associations to: <ol style="list-style-type: none"> a. Educate members b. Develop relevant strategies and tools c. Communicate needs and priorities to government 	<ul style="list-style-type: none"> • Facilitate dialogue between stakeholders • Conduct research and develop resources • Distribute and share information and resources • Get people engaged in the issues and eliminate barriers to participation • Generate interest in the issues • Work with industry associations and government • Pressure government to take action (helps create much-needed political will)

3.2 Next Steps

In general consultation participants saw the need to continue cross-sector dialogue around climate change adaptation and risk management issues. Many participants also indicated a need for government leadership in this area through responsive policy and program development. Identifying and implementing strategies to reduce the uncertainty associated with climate change and its impact on specific coastal areas of Nova Scotia was viewed by many stakeholders as an important next step.

The Ecology Action Centre's specific next steps include:

- Disseminate the project report to key stakeholders and make it available on-line
- Continue to compile and make accessible relevant resources
- Build on relationships with contacts gained through this and similar initiatives
- Develop relationships with professional associations representing landscape architects, architects, and engineers (identified through the course of this project as key stakeholders)
- Continue to facilitate dialogue and policy development around these issues
- Pursue future project options to build on the findings of this exploratory project

3.3 Final Thoughts

This project explored the different roles and perspectives of government, industry, and to a lesser extent, civil society with respect to risk management, climate change and coastal planning. Consultations and research demonstrated that the different stakeholders contacted for this project are taking these issues seriously and starting to develop a response. While the stakeholders bring their own lens to the discussion, many of the issues, challenges, and emerging priorities across sectors are the same. Future dialogue and multi-sector collaboration is essential to reduce the uncertainty of climate change impacts, mitigate associated risks, and strengthen the resilience of Nova Scotia's communities and coastal ecosystems.

APPENDICES

Appendix A – Informal Consultations

<i>Name</i>	<i>Position/Organization</i>
Bill Adams	Insurance Bureau of Canada Nova Scotia
Stephen Braham	Critical Infrastructure Analyst NS Regional Office, Public Safety Canada
John Charles	Planner Halifax Regional Municipality
Lucia Fanning	Program Chair, Marine Affairs Dalhousie University
Paul Jordan	Community Planner Integrated Planning Section (Coastal), NB Dept. of Environment
Andrew Lathem	Director Emergency Programs, NS Emergency Management Office NS Dept. of Public Safety
Ernest MacGillivray	Director N.B. Emergency Measures Organization NB Dept. of Public Safety
Paul MacNeil	Disaster Assistance Emergency Management Office NS Dept. of Public Safety
Gary Mersereau	Manager Community Planning Section NS Dept. of Environment
David Mitchell	Coastal Strategist Provincial Oceans Network NS Dept. of Fisheries & Aquaculture
Adam Rostis	Senior Policy Advisor Emergency Management Office NS Dept. of Public Safety
Dan Sandink	Manager, Resilient Communities Institute for Catastrophic Loss Reduction
Robert Tremblay	Insurance Bureau of Canada National

Appendix B – Roundtable Invitation

Informal Roundtable Invitation: Risk Management, Climate Change & Coastal Planning

July 23, 1:30-4:00pm, the Dalhousie School of Planning

Organized by the Ecology Action Centre. Supported by the Dalhousie School of Planning.

Overview

The roundtable is about issues around risk management, climate change, and coastal planning. We are inviting stakeholders that play key roles in influencing or addressing these issues. This includes individuals in the real-estate, insurance, and development industries as well as planners and one or two government people. We anticipate between 8-12 people total. The purpose of this discussion is to gain a better understanding of how different stakeholders perceive issues around risk management and climate change (with an overall focus on coastal areas). We will be discussing perceptions of the issues, trends, priorities, and strategies/approaches in this area. It is our hope that some common themes will emerge through the discussion.

If you are sending an individual from an industry association, we would suggest you choose someone with a good understanding of general trends and issues in the industry as well as knowledge and/or an interest in climate change, coastal, and risk management issues.

Event Details

The roundtable will be held from 1:30 - 4:00pm Wednesday July 23 at the Dalhousie School of Planning, 5410 Spring Garden Road (Ralph M. Medjuck Building, across from the public library) in Room HB-2. The session will start with a short introduction and presentation by the organizer followed by some general discussion around some guiding questions. We will take a short break and snacks/coffee will be provided.

Project/Organizer/Funder

This event is organized by the Ecology Action Centre Coastal Issues Committee and is supported by the Dalhousie School of Planning. This roundtable is part of a small exploratory EAC project to (1) look at different stakeholder perspectives on risk management, climate change, and coastal planning and (2) identify emerging issues, trends, and common themes and approaches. In addition to this roundtable, discussions were conducted with government officials in the areas of emergency measures, coastal policy, and climate change, as well as individuals with national organizations affiliated with the targeted industries. A 4-page briefing paper will be completed in August based on these discussions and research. A small amount of funding was provided to complete this exploratory project by the Ocean Management Research Network working group on the Socio-Economics of Climate Change.

Contact Information/RSVP

For further information or to RSVP please contact:

Amber Nicol, M.Plan
Researcher, Ecology Action Centre
Tel: 420-9111, Email: amber.nicol@dal.ca

Appendix C – Roundtable Discussion Highlights & Participants

EAC Informal Roundtable Discussion

Risk Management, Climate Change & Coastal Planning
Dalhousie School of Planning, Rm HB-2 (5410 Spring Garden)
1:30-4:00, July 23

1.0 Background & Participants

1.1 Purpose

The purpose of this informal roundtable discussion is to gain a better understanding of how different stakeholders perceive issues related to risk management and climate change (with an overall focus on coastal areas) and identify areas for future collaboration. The discussion will focus on perceptions of major issues, responses, priorities, knowledge gaps, challenges/opportunities, and the role of industry, government, and civil society in advancing planning for climate change in Nova Scotia.

1.2 Objectives of the Day

- Engage targeted stakeholders around issues of risk management, climate change, and coastal planning
- Identify issues, responses (including specific tools/strategies), priorities, challenges and opportunities, and knowledge gaps with respect to each of the stakeholders at the table
- Discuss the role that industry, government, and civil society can play in advancing climate change planning in Nova Scotia
- Determine next steps and areas of future collaboration

1.3 Agenda

- Welcome & Introductions
- Overview of the Day
- Clarifying Impacts & Terms
- Issues & Responses
- Challenges, Knowledge Gaps & Opportunities
- Role of Stakeholders
- Next Steps, Priorities & Closing Remarks

1.4 Participants

Name	Position/Organization
Lester Berrigan	Surveyor Berrigan Surveys Ltd.
Barbara Claussen	Broker Claussen-Walters & Associates Ltd.
Jennifer Graham	Coastal Issues Coordinator Ecology Action Centre (also acted as note-taker)
Wendy Harrington	Sales Representative, Prudential Property Specialists NS Real Estate Association - Government Relations Committee
David Kerr	Managing Associate Broker, Royal LePage Atlantic NS Real Estate Association - Government Relations Committee
Kyla Milne	Climate Change Program Administrator NS Department of Energy?
David Mitchell	Coastal Strategist, Provincial Oceans Network NS Dept. of Fisheries & Aquaculture
Gordon Smith	Manager, Environmental Planning CBCL Consulting Engineers, Ltd.
Tony Walters	Broker Claussen-Walters & Associates Ltd.

2.0 Discussion Highlights

The discussion last approximately two-hours (excluding the short presentation and break). Participant's seemed eager to have an opportunity to discuss issues of risk management, climate change and coastal planning with others in their sector and in different sectors. While the discussion flowed freely between agenda item topics, for sake of clarity, these highlights were organized roughly along the themes outlined in the agenda in section 1.3.

2.1 Rationale for Attending

Participant's identified a variety of reasons for attending the session.

- Better represent clients/communicate the issues to clients
- Concerns about liability and disclosure issues
- Issues are becoming increasingly more important to participant's work
- Interest in the issues/desire to raise awareness about them

- Recognize need to identify where we are headed and plan for the future
- Desire to learn what different sectors are thinking and identify areas for collaboration
- Developing policy in a related area

2.2 Background Presentation

The event organizer completed a short presentation outlining the goals and objectives of the day as well as basic background about climate change, coastal planning and risk management. The purpose of this was to ensure all participants had a clear understanding of the purpose of the session and the concepts to be talked about. To receive a copy of this presentation e-mail Jennifer Graham, Coastal Issues Coordinator for the Ecology Action Centre at coastal@ecologyaction.ca.

2.3 Looking at 'Risk'

General Elements of Risk

- Definitions of risk tend to be industry dependent
- Concepts of 'risk' and 'risk management' are future-oriented and multi-dimensional
- Specific risks are difficult to define and as such, are generally not well defined
- Elements of risk include:
 - financial
 - property and infrastructure
 - natural systems
 - social-cultural systems
 - bodily harm

Some Risks Associated with Climate Change in Coastal Areas of NS

- risk of liability to governments, land development-related companies, and real-estate agents
- risk of creating a rush to develop ahead of the implementation of new regulations and monitoring strategies
- risk that restrictions will inflate the value of land available for development while lowering the value of land deemed to be vulnerable to hazards/climate change impacts
- risk of developing a response that is too conservative
- risk of losing public good interests incrementally through unforeseen cumulative impacts
- risk of financial loss to existing landowners of vulnerable properties
- risk to social-cultural heritage as land use changes in coastal areas and historic properties become increasingly more vulnerable
- risk in not being able to assess the risk

Pertinent Questions

- What does risk mean for my property?
- What is the risk of doing nothing?
- How do we balance public rights versus private privilege?
- How do we predict risks at the local level? What role do models have in this process?
- What about people who already own the land? What happens to their property value?
- What is the impact of proper risk assessment on insurance coverage and rates?

2.4 Key Issues

- The great deal of uncertainty around the range of climate change risks is problematic. Risk in terms of climate change in N.S. coastal areas is not well-defined; we do not know what it means and what the implications are. This makes it difficult to plan and advocate for especially when sacrifices are required.
- In coastal towns, the choice will be between defending and retreating and identifying the balance between these two options.
- There is currently no means to work with buyers/property owners to identify local risks. The global picture is too theoretical for a lot of people but it is not always clear how to identify vulnerable areas and related risks in a given location.
- Implications of implementing policy that will hurt existing property owners
- Lack of clear leadership on these issues

2.5 Challenges & Knowledge Gaps

General Challenges

- Uncertainty of future impacts and cumulative impacts
- Inability to identify risk for each property
- Human and financial resource constraints to look at these issues
- Difficult to determining what level of risk is acceptable (particularly in the face of so much uncertainty)
- Rate at which change in coastal areas is happening
- Property rights are very strong in N.S. which might make it harder to address these issues
- Lack of guidelines/policy to respond to these issues and lack of a catalyst to create the needed guidelines/policy
- We will never be able to give everyone the certainty they are looking for. Challenge is in finding a way to move forward in the face of this uncertainty

Specific Challenges

- How to prevent people from rushing in for permits prior to the stricter environmental legislation getting passed?
- Survey plans represent a given point in time. How can these best take into account future impacts and changes to the coast?
- For municipalities, providing supporting measures when using section 220 of the *Municipal Government Act* to identify low lying or hazardous lands formally in local land use policy. Municipalities risk a legal challenge if adequate science-based evidence is not shown.
- Specific to real-estate:
 - How do you handle selling vulnerable properties? Do you refuse them?
 - Lack of experience with coastal properties amongst some agents

Societal Challenges

- How to create a public impetus to change?
- How to best demonstrate that addressing these issues is for the public good so we can move forward?

- How to encourage people to change their behaviour in order to protect natural systems and minimize the impact ‘downstream’

Knowledge Gaps

- Impacts of climate change on specific areas of Nova Scotia’s shoreline
- Liability and disclosure issues for different stakeholder groups
- Information on where to refer buyers/property owners if they are looking for more resources on assessing site vulnerabilities and quantifying the level of risk
- Information on where members of specific industries can learn about the issues as they relate to their industry (do these resources even exist?)

2.6 General Strategies & Approaches

General Strategies & Approaches

- Err on the side of caution as we do not have the best available information.
- Action at the grassroots level is important
- Web-based information is effective
- Look to other countries/jurisdictions to see what they are doing
- Set a target and adjust it as needed
- Response needs to be province wide with provincial leadership and resources. Municipalities play an important role as well. Federal agencies should provide additional support and resources.²¹
- Use the best available information and science we have now to make decisions
- Develop the ability to adapt and modify policy and strategies as the level and implications of risk change over time
- Consider both short-term and long-term risk in planning for coastal areas
- Work together across government departments and disciplines to find solutions
- Engage individuals/new partners by making it relevant to them (example cited where people are more concerned after their home is flooded)

Specific Strategies

- Make municipal land use maps and regulations and site-plans very specific: clearly show which areas are developable, which are of concern, and where buffers are located. Make this information public. All stakeholders need certainty. Planners play an important role in this process.
- Amend risk assessments in planning strategies and land use bylaws as the coastline changes and new information becomes available over time.
- Develop better and more wide-spread mapping and flood modelling scenarios
- Develop a ‘risk criteria’ sheet to conduct a risk assessment of specific properties.
 - Brokers for Claussen-Walters indicated they are looking at conducting their own risk assessment and saying no to properties which do not meet the base standard (this raised the question, when advising your clients, where is the line drawn?)

²¹ A comment was made expressing concern that the Federal government does not see addressing these issues as a high priority.

- The analogy of a home inspection as a guide for a property assessment was suggested
- Plan the location of infrastructure carefully. Keep in mind the public safety element and the need to maintain
- Look to Halifax Regional Municipality's work in this area (e.g. LiDAR mapping, Climate-SMART, number of relevant policies in their municipal planning strategy, the Developers Guide to Risk-Management)
- Develop an information booklet on these issues as they relate to your industry and distribute through the industry association (noted in reference to the real-estate industry which already has such educational booklets on other topics but is relevant to other industry associations)
- For real-estate agents, be reasonable and prudent when making judgements about selling properties with potential hazard concerns.
- For surveyors, make sure to include detailed notes about specific hazards and adaptation strategies on survey plans. This ensures property-owners/home-buyers are aware of the situation.

2.7 Role of Government, Industry, & Civil Society

Government

This discussion was not broken down into the role of each level of government. When a specific level of government was identified, this was indicated.

- Education
- Leadership
- Policy making
- Research and mapping
- Facilitate access to information
- Communication
- Increase awareness
- Collaboration/action between different areas and levels of government
- Work with communities
- Direct emergency measures planning and response
- Link initiatives and potential risks with economics²²
- Get public input
- Take action when there is a collective public will to do so

- Specific to the Government of Nova Scotia:
 - Develop guidelines for municipalities (e.g. zoning options, provincial interest statement)
 - Create a provincial task force but include a large proportion of local level representation
 - Set provincial standards (e.g. wetlands, beach management)
 - Make more information on coastal planning and climate change easily accessible. Get out into communities around the province more with this information.

²² One participant commented that research shows that a future potential gain must be equal to six times the value of what is being given up in order for the person to be willing to give up what is required.

Industry/Private Sector

- Evaluate what your company is doing and what it could be doing
- Be informed
- Do the right thing
- Educate employees and clients about these issues.
- Communicate clearly (about risks and options)
- Identify your company/industry's needs and concerns and work with government and others to ensure the issues that matter are researched and addressed
- Pressure government to take action (helps create much-needed political will)
- Tap into the potential of industry associations to:
 - Educate members
 - Develop relevant strategies and tools
 - Communicate positions/work with government

Civil Society

- Facilitate dialogue between stakeholders
- Conduct research and develop resources
- Distribute and share information and resources
- Get people engaged in the issues and eliminate barriers to participation
- Generate interest in the issues
- Work with industry associations and government
- Pressure government to take action (helps create much-needed political will)

2.8 Next Steps & Priorities

Time constraints prevented the group from going into much detail on next steps and priorities. The general consensus amongst participants was that this session addressed important issues in the context of both their work and the future of the province's coastline. Participant's indicated a willingness to share contact information and relevant resources. Further dialogue of a similar nature was suggested for the future. Specific next steps for the Ecology Action Centre include:

- Write and circulate the project report, including the highlights of this discussion
- Circulate participant contact information amongst participants
- Compile and send out any resources suggested by participants following this session
- Seek funding for a larger project to build on the results of this exploratory project.
- Continue to facilitate dialogue and policy development around these issues.