



Atlantic Climate Adaptation Solutions Project Report

Emergency Management Office

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Introduction

Climate conditions in Atlantic Canada are changing quickly. Precipitation is more erratic and extreme, storms are more frequent and intense, and the average ocean level and temperature are rising. Many Nova Scotians now live, own or provide services to property in areas that are vulnerable to such threats as enhanced flooding, erosion, sedimentation and salt-water intrusion. As climate change advances, such threats put public safety and critical infrastructure at risk and in time may affect property values and insurance coverage. To adapt will require re-thinking where communities are located and how they are designed and maintained, both now and in the future. By taking climate change into account when setting new or updating old codes, standards, schedules, policies or regulations, governments can encourage more sustainable and resilient development.

As the provincial agency responsible for emergency preparedness and response, the Emergency Management Office (EMO) has an important role to play in climate adaptation. As climate conditions become more volatile in Nova Scotia, there may be a need to re-examine the effectiveness of current emergency management plans.

The link between climate change and disaster management raises a number of important issues. These include whether and to what extent climate adaptation is reflected in emergency management legislation, policy and practice, and what measures need to be taken to ensure that the threats posed by climate change are reflected in emergency planning activities across Nova Scotia.

These are some of the key questions and issues which were explored over the course of three years as part of the Atlantic Regional Adaptation Collaborative (RAC). As a partner in the Atlantic RAC and a participant in the Atlantic Climate Adaptation Solutions project (ACAS), EMO had a unique opportunity to join a team of colleagues who are working on climate adaptation solutions across the province. This report documents the work done by and on behalf of EMO with respect to the ACAS project, and the role of EMO with respect to climate adaptation now and in the future.

Emergency Management Office

Mission

By assuming a leadership role in emergency management, EMO will help ensure Nova Scotians live in a safe environment that contributes to their social and economic well-being.

Vision

To be recognized by our citizens for our integrity, innovation and responsiveness in administering high quality emergency management programs, while encouraging intergovernmental and international partnerships for greater governmental efficiency through effective mitigation, preparedness, response and recovery strategies.

Mandate

To ensure the safety and security of all Nova Scotians and their property by providing for a prompt and coordinated response to emergencies (*Emergency Management Act*).

Pillars of Emergency Management

EMO maintains four core business areas (described below), which are guided by the four pillars of emergency management: mitigation, preparedness, response and recovery. These pillars, and the programs administered by EMO to support them, serve to protect Nova Scotians as they go about their daily lives.

Mitigation

The aim of mitigation is to eliminate or reduce the impacts and risks of hazards through proactive measures taken before and during an emergency event. Mitigation strategies can be either structural or non-structural in nature. Structural strategies involve building, restoring or enhancing protective structures such as dams, dykes, berms, fire roads and dry hydrants. Non-structural strategies include such things as land-use management by-laws, public education and public alerting.

Preparedness

Once available mitigation strategies have been exhausted, and with the realization that not all events can be prevented or mitigated, preparedness is the next level of readiness. Preparedness builds the capacity to effectively and rapidly respond to an emergency management event that is threatening the safety of people, property or the environment. Preparedness encompasses the planning, exercising, evaluating and education crucial to achieving a state of readiness.

Response

Response includes those actions taken immediately before – when time allows - during and after an emergency in order to manage its consequences as well as minimize suffering and loss. Response

actions include but are not limited to multi-agency coordination, support of first responders, public information, evacuations, search and rescue efforts.

Recovery

Recovery is the coordinated management of resources necessary to restore communities and conditions to a state of normalcy. Examples include the restoration of power, water management, return of evacuees, counseling and financial assistance.

Organizational Structure

EMO is a division of the Department of Justice. The Executive Director of EMO reports to the Deputy Minister of Justice. The Minister of Justice has the responsibility to ensure that there will be a prompt and coordinated response to an emergency in Nova Scotia. In times of emergencies the Minister chairs the Executive Emergency Management Committee (EEMC), which provides oversight and direction to the Minister regarding mitigation, emergency preparedness, response and recovery.

Core Business Areas

Emergency Programs

The primary focus of the Emergency Programs Unit is ensuring the operational readiness of the Province. This is accomplished through the management of the Joint Emergency Operations Centre, as well as through field personnel who are dedicated to working with municipalities to ensure a seamless and integrated approach to emergencies. Functions administered by this section include:

- Consulting on emergency management services with municipalities;
- Liaising with provincial departments to ensure their readiness;
- Liaising with federal partners to ensure an integrated approach and response;
- Ensuring the development and maintenance of emergency management plans;
- Liaising with other jurisdictions to ensure a national and international level of readiness and response.

Emergency Services

The Emergency Services Unit administers the provincial 911 emergency reporting service, as well as the public alerting platform. These invaluable services ensure that Nova Scotians can report emergencies when they occur, can receive assistance in a timely manner, and can be warned of any impending threats to their safety.

Communications/Public Affairs

Effective internal and external communications are vital - to the success of the Emergency Management Office. These functions are woven throughout the various business lines of EMO, and include corporate communications, media relations, public information and education, and policy.

Security and Intelligence Management Services

Security Intelligence Management Services (SIMS) is responsible for providing consistent and continuous monitoring, planning and communication of potential risks associated with public safety and security. It must ensure the protection of infrastructure, event prevention and countermeasures against terrorism, major crime, or other threats. It is also responsible for the business continuity and critical infrastructure programs.

In addition to the core business functions, during an emergency to which the province must respond, EMO becomes operationally deployed and forms the nucleus of an Incident Command Team assembled to deal with the effects of that emergency.

Climate Change and Adaptation Issues

In order to fulfill its mandate, EMO takes an “all-hazards” approach to emergency management. This approach recognizes that a comprehensive and balanced framework of mitigation, preparedness, response and recovery can be used to address the impact of all types of disasters, both natural and human.

It is clear that the impacts of climate change will substantially influence the nature and severity of the emergency events that occur in Nova Scotia. Indeed, a sizable proportion of the events that EMO and local emergency response organizations face are weather-related (e.g. wind, rain and snow storms, floods, fires and coastal storm surges). Climate change researchers predict an increase in the frequency and severity of extreme weather events. They also predict advancing and/or accelerating protracted changes such as coastal erosion, sea level rise and saltwater intrusion. As a result EMO must be prepared to face more frequent and severe emergencies in Nova Scotia.

In practice, the central climate change and adaptation issue for EMO is whether the organization is adequately positioned to conduct and support emergency planning in the face of escalating weather threats. A major related issue is whether municipalities and emergency managers at the local level, as key planning partners with EMO, are sufficiently aware of climate change issues and their potential impact.

The invitation to participate in the ACAS project prompted reflection on how climate adaptation and emergency management are connected. And it led to the development of a project plan for exploring how climate adaptation is reflected both in EMO’s mandate and core business and in emergency plans across the province.

ACAS Inputs and Activities

Project description

As part of the ACAS project, EMO contracted Gardner Pinfold Consultants to undertake a review of the approach taken in Nova Scotia at the provincial and municipal levels to incorporate climate adaptation principles in emergency planning policy and practice.

The primary goal of this study was to evaluate provincial emergency management legislation and selected municipal emergency plans, and to gather key stakeholder input with the aim of adapting emergency planning, management and legislation in Nova Scotia to better incorporate future climate change impacts. To do this, the study involved three key elements:

Document review

A range of selected key documents were reviewed, including:

- Nova Scotia Emergency Management Act
- Nova Scotia Civil Emergency Planning Regulations
- Emergency management plans and legislation in other provinces
- Current periodicals, academic journals, professional publications, policy documents, and government

Stakeholder consultations

In-person and telephone interviews were conducted with officials from EMO, regional emergency management coordinators, municipal emergency managers, municipal government representatives, and staff from the Climate Change Directorate at the Nova Scotia Department of the Environment. Information was gathered using a combination of structured interview guides and free-form discussion.

Case analyses

In other jurisdictions, steps have been taken to address climate change in emergency management practices. Two specific examples - tropical storm preparedness in the Cayman Islands and disaster preparedness for seasonal flooding in Norway - illustrate how these concepts can be unified. These cases are relevant to the situation in Nova Scotia because they represent disaster events that occur on a regular basis in the province, and they are events that are linked to climate change.

Findings

A review of the *Emergency Management Act* noted that as it focuses primarily on two of the four pillars of emergency management - response and recovery. It does not explicitly address the potential impact of climate change.

However, the *Act* can be interpreted as requiring measures to prevent, mitigate and respond to all potential emergency events, including climate change, through hazard assessment, mitigation activities, and public education. Moreover, the *Act* empowers EMO to “make surveys and studies to identify and record actual and potential hazards that may cause an emergency”, and “conduct public information programs related to the prevention and mitigation of damage during an emergency”, thus providing two direct opportunities to incorporate climate adaptation into provincial emergency planning.

Similarly, climate adaptation is not explicitly incorporated in municipal emergency plans in Nova Scotia, but rather is implicitly incorporated. Municipalities have detailed emergency management plans that deal with contingencies which are related to climate change, including floods, hurricanes, ice storms, snow storms, prolonged power failure, and forest fires. Contingency planning, however, addresses only the response element of emergency management, whereas effective adaptation to climate change needs to occur at an earlier stage. Further, the implication of climate changes is that these weather events will occur more often and with greater severity, which would not be accounted for in current plans.

When interviewed, stakeholders did not view the fact that climate adaptation is not explicitly addressed in emergency management legislation and policy as a problem, and did not see a need for legislative change. Rather, it was generally held that the all-hazards planning model provides an adequate framework for dealing with any emergency regardless of the cause.

Stakeholders interviewed agreed that climate adaptation is important, and has a place in emergency planning; many noted that it could be better integrated at the mitigation phase of emergency planning. Further, it was recognized that the key mechanism through which climate adaptation and mitigation could be implemented is through land-use planning. All interviewees stated that, although emergency management legislation and policy require no change, climate adaptation must be better reflected in the land-use planning policies and activities of municipalities.

The case analyses also provided interesting and useful insights with respect to incorporating climate adaptation principles into emergency planning.

In 1988, the Cayman Islands were affected by Hurricane Gilbert, a category-5 hurricane. There was severe damage to crops, trees and pastures, and several homes were destroyed. In response, the regulatory environment in the islands changed considerably, with a specific focus on improving resiliency through land use and building code changes.

In 1995, a severe flood affected the Glomma-Lagen river basin in Norway. High snow accumulation levels in the spring, the late start to snow melt, and sudden heavy rainfall contributed to its severity.

There was considerable damage to public infrastructure, and the displacement of 7,000 residents. In response, previous centralized flood mitigation efforts were decentralized, coordination and communication between levels of government were improved, and new construction and land use standards were implemented.

Insights garnered from these two case studies could help inform approaches to climate adaptation and emergency management in Nova Scotia, in particular, through mitigation activities that occur as part of a broader land use and development strategy, and by encouraging cross-disciplinary collaboration and communication at all levels of government and the public. Moreover, climate adaptation can be integrated into emergency management at the community level.

Recommendations

Upon completion of the study, Gardner Pinfold concluded that the most effective mechanism for the integration of climate adaptation and emergency management is mitigation, specifically through hazard assessment, education and capacity building, and land-use planning.

Any adaptive strategy must begin with a critical assessment of the hazards and vulnerabilities that exist in a community in light of the expected impacts of climate change. Currently, there is no legislated mandate for municipalities to conduct hazard assessments, although many report that they do so as part of emergency planning processes.

Education and capacity-building activities are also critical to better integrate climate adaptation and emergency management. Information about climate change is abundant and readily available, but lacks a direct connection to emergency preparedness and specific mitigative strategies that individuals and communities can use to adapt. All levels of government can help build capacity through such activities as identifying community-level resource and communication gaps in light of the expected impacts of more frequent and intense weather events. Municipal emergency management organizations and government officials have expressed a desire to have access to better information about potential impacts, and the ACAS initiative is responding by making all findings and data available.

Finally, the research clearly suggests that land-use planning is the most direct and powerful tool for effectively integrating climate adaptation and emergency management. There is currently no mandate for emergency management organizations in Nova Scotia to play a role in land-use planning. Stakeholders interviewed agreed that mandating this role is unnecessary, but that municipal development and emergency management should be better connected.

Climate Adaptation – Moving Forward

The research undertaken by Gardner Pinfold on behalf of EMO confirmed that while there is no legislative or policy mandate to incorporate climate adaptation into emergency management at the provincial or municipal levels, the obvious link between climate change and a large proportion of weather-related emergency events in Nova Scotia is such that it is clearly implicit in emergency management activities on a daily basis. That noted, the research provides opportunities for climate adaptation to become a more integral and intentional aspect of the work that EMO does.

EMO supports the position that climate adaptation need not be reflected in the *Emergency Management Act*, nor become formalized through regulatory processes at the municipal level. However, the research, and indeed participation in the ACAS project, has highlighted the importance of recognizing how climate change will increase the potential risks to Nova Scotian communities, and of incorporating climate adaptation strategies into emergency planning activities.

As noted, the focus of the *Emergency Management Act* is on response and recovery, with mitigation and preparedness merely implied. In practice, all four pillars are central to the work that EMO does during the majority of the time when emergency events are not occurring or imminent.

Gardner Pinfold concluded that enhancing mitigative activities would be the most effective way to integrate climate adaptation into emergency management. From an emergency management perspective, mitigation work occurs at the strategic planning level, and also at the physical infrastructure level. To that end, EMO has identified a number of considerations that will help sharpen the focus of emergency management moving forward.

Land Use Planning

The research found that land use planning would be the most direct and powerful tool with which to integrate climate adaptation and emergency management. Currently, there is no mandate for emergency management organizations to have a role in land use planning at the local level.

EMO, through the regional Emergency Management Planning Officers, will encourage municipal emergency management staff to work with land use planners to ensure that emergency management considerations, including climate adaptation issues, are taken into account.

Leveraging Knowledge

One of the primary benefits for EMO of participating in the ACAS project was the opportunity to build a knowledge network with other departments, as well as with municipalities and academic institutions. Being able to tap into climate change data and climate adaptation planning that is taking place across the region will enable EMO to provide municipalities and critical infrastructure partners with emergency management services that leverage the most current and relevant information that can help to mitigate the effects of climate change on Nova Scotians and their property. Such knowledge can be used to

support municipalities in updating local emergency management plans, in identifying shared threats and resources across jurisdictions, and in working with partners in government and the private sector to plan for and respond to more frequent and severe weather events.

EMO will build upon the knowledge gained through participation in the ACAS project to enhance the services provided to all levels of government, NGOs and the private sector, and will continue to seek opportunities for collaboration on climate adaptation projects.

Focusing on Mitigation

While the legislated mandate of EMO will remain focused on response to and recovery from emergency events, and while its core function and strengths will continue to support this mandate, there is a growing recognition that mitigation is an invaluable part of effective emergency management. Moreover, when done proactively and thoroughly, mitigation work directly impacts the nature and extent of the response and recovery that is required in the event of an emergency.

It does appear as if mitigation is becoming a priority in emergency management community. Issues such as fiscal constraint, risk management and aging infrastructure are juxtaposed against the increasing threats of climate change, and the increasing human and material costs of dealing with its impacts. In this environment, mitigation has become an increasingly vital component of overall emergency management programs.

To that end, there are a number of ways that EMO can help promote and advocate mitigation activities in Nova Scotia. Through the EMPO's and the municipal emergency planning processes, EMO can work directly with communities to help identify specific threats and potential mitigative actions to address them. At the provincial level, EMO is involved with a number of other departments in a broad initiative to develop hazard and enterprise risk assessment capacity in Nova Scotia. Finally, at the national level, EMO is directly involved in a federal/provincial/territorial working group of the Senior Officials Responsible for Emergency Management in the development of a National Disaster Mitigation Program, which will result in a cost-shared program for identifying and funding mitigation work in each province and territory.

EMO recognizes the importance of mitigation in reducing the impacts of all hazards, including climate change, and will continue to be a strong advocate for developing additional capacity and resources aimed at addressing the impacts of emergency events on Nova Scotians before they occur.

Conclusion and Lessons Learned

Participating in the ACAS project has provided a unique opportunity for EMO to gain a broader perspective on how climate change can impact Nova Scotia communities, as well as all levels of government and the private sector. Given that weather-related events constitute a large proportion of the emergency incidents to which EMO must regularly respond, and given the complexity involved in both assessing recent climate change trends at a local level and projecting longer-term impacts, the knowledge, networks and momentum generated by the project will continue to be of great benefit.

The ACAS project, and the various projects involved within it, highlights the importance of localized solutions to the specific threats posed by climate change. While EMO plays a leadership role in emergency planning and response across Nova Scotia, it is clear that climate adaptation, and mitigation in general, is best done at the community or regional level. However, EMO remains uniquely positioned to leverage knowledge, resources and best practices, in collaboration with local emergency planning personnel and subject matter experts.

It is encouraging that so many government departments, municipalities and members of the academic community are committed to identifying and implementing solutions which will lessen the impact of global climate change. Hopefully the momentum generated by the ACAS project will continue once the project concludes, and these groups can continue to come together in the spirit of collaboration around the common goal of keeping Nova Scotians safe.