Issues Exploration Paper:

Disaster Management and Sustainability

Presented to

The National Round Table on the Environment and the Economy

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Executive Summary

This paper provides background information and context for discussions around a potential National Round Table on the Environment and the Economy (NRTEE) program on Disaster Management and Sustainability. Such a program is needed because dramatic increases in the frequency and consequences of disasters are becoming a major obstacle to sustainable development. At the same time, links between disaster management and sustainable development issues and approaches create opportunities for synergy that are not being taken advantage of. Current disaster management practices in Canada have recently been criticized and reforms are being developed, making this an ideal opportunity to incorporate sustainability objectives.

An NRTEE program is an effective way to use this opportunity because of NRTEE's expertise in multidisciplinary research and sustainable development issues and its reputation for excellence in policy development. Crucially, there is a need to include non-traditional stakeholders in discussions on disaster management and sustainability: NRTEE's reputation for inclusiveness and neutrality allow it to address this need.

This paper gives a brief overview of disaster management principles and their links to sustainable development, identifies six key disaster management and sustainability issues and proposes four potential NRTEE program areas:

1. Integrating prevention/mitigation and recovery more systematically into development planning, taking advantage of opportunities for synergy with sustainable development planning tools.
2. Developing environmental tools for disaster management.
3. Exploring economic tools for encouraging vulnerability reduction and sustainable choices.
4. Increasing synergies between government disaster management and sustainable development initiatives at the federal, provincial and municipal levels.

1 Introduction

The National Round Table on the Environment and the Economy (NRTEE) is currently considering themes that could become the basis of new NRTEE program areas as of fiscal year 2005-2006. This paper explores the issues related to one of these themes, Disaster Management and Sustainability, and outlines why NRTEE is uniquely positioned to create a platform for addressing these issues. The purpose of this paper is to provide background context and information for use as a resource during discussions at the NRTEE Plenary Meeting, to be held 19-20 August 2004, and for relevant meetings going forward.

2 Context

2.1 Why is work needed in this area?

Canada's vulnerability to disasters of all types is on the rise. Climate-related disasters have steadily increased in frequency and severity for the last fifty years, and scientists warn that future disasters could be worse than anything seen to date. Growth in high-risk sectors and the development of new technologies expose us to higher levels of technological risk. Our increasingly complex society also increases the spread of disaster effects: linkages between critical infrastructures such as electricity generation and information technology mean that a shutdown of one system can paralyze the rest; and the constant flow of goods and people across borders creates vectors for epidemics and economic disruption. Simultaneously, degraded ecosystems and poorly planned development in vulnerable areas amplify the effects of disasters.

Major Disasters in Canada: Examples

Assiniboine, Red and Winnipeg Rivers Floods Manitoba, May 1997
Floods affected 17 communities and forced the evacuation of over 25 000 people
Estimated cost : Over $817 million

Ice Storm
Eastern Ontario to New Brunswick, January 6-10 1998.
50 to 100 mm of freezing rain fell in a corridor extending from Kingston to New Brunswick, causing massive power outages. Over 250 municipalities declared a disaster.
Estimated Cost : over $5.4 Billion

Mississauga Train Disaster
Mississauga, November 10, 1979
A CPR train of 106 cars carrying multiple loads of hazardous materials derailed in Mississauga and burst into flames. The potential for a propane gas explosion to cause a massive release of chlorine gas forced the evacuation of 225,000 people.

The environmental, social and economic costs of disasters are growing exponentially. Annual worldwide economic costs of natural disasters alone have multiplied by *fourteen times* between 1960 and 2001[1]; in Canada, for example, our three most costly disasters occurred in the last 10 years, with the 1998 Ice Storm costing over $5.4 billion[2]. The human costs in terms of mental and physical health, disrupted social networks and the loss of confidence in our governments are harder to quantify but equally important. Disasters accelerate ecosystem degradation, disrupt natural processes, and when hazardous materials are involved, can contaminate environments for decades.

Clearly, sustainable development goals cannot be achieved without effective disaster management. Disaster management also presents opportunities to advance sustainable development: 1. Similarities in goals, approaches and arguments create prospects for synergy between the two areas. 2. The prevention/mitigation and recovery stages of disaster management are prime opportunities to incorporate sustainable development approaches into development decisions.

Critics have identified many weaknesses in current disaster management practice in Canada that put the sustainability of the country's development at risk. It also seems clear that we aren't taking advantage of many opportunities to incorporate sustainable development considerations into disaster management. Addressing these problems will require consultation with a broad range of stakeholders and the integration of knowledge from widely disparate fields into a cohesive research agenda. An inclusive, neutral, multi-stakeholder platform is needed to comprehensively identify policy and program tools to increase disaster management effectiveness and maximize synergies between disaster management and sustainable development. Owing to its mandate, process and achievements, NRTEE is ideally situated to provide such a platform.

2.2 Potential NRTEE program areas

Although all improvements to disaster management will improve Canada's sustainability, we have identified four key areas of disaster management where a need for action is combined with particular relevance to sustainable development goals and NRTEE strengths.

1. Integrating "prevention/mitigation" and "recovery" activities (see Section 3 for definitions) more systematically into development planning, taking advantage of opportunities for synergy with sustainable development planning tools. Prevention/mitigation and recovery are relatively new additions to the disaster management field. They involve a much wider group of stakeholders than the traditional "preparedness" and "response" elements and have the potential to be much more effective financially but can be a "hard sell" to policy makers, since it is difficult to demonstrate the benefits of avoided disasters. Efforts typically tend to be reactions to "the last disaster" when what is needed is systematic consideration of hazards.[3] A particularly valuable NRTEE contribution would be the investigation, through its multi-stakeholder processes, of strategies to advance an inclusive national disaster prevention and mitigation strategy.
2. Developing environmental tools for disaster management. Well managed natural environments can be used to reduce the probability and the consequences of many disasters. For example, wetlands can absorb heavy rainfalls and reduce flooding and can filter contaminants from those floods that do occur. This raises the possibility of potential synergies between environmental protection and disaster management. Research is needed to identify key areas for environmental disaster management and develop tools and strategies for developing these areas.

3. Exploring economic tools for encouraging vulnerability reduction and sustainable choices. Many aspects of our current economic system have been criticized for encouraging companies and individuals to ignore disaster risks. More specifically, existing government disaster assistance programs and the insurance industry have sometimes created perverse incentives that encourage community vulnerability and non-sustainable forms of development. For example, historically incentives have been created for rebuilding in hazard zones such as flood plains. Work is needed to identify these perverse incentives and replace them with incentives that encourage vulnerability reduction and sustainable choices.
4. Increasing synergies between government disaster management and sustainable development initiatives at the federal, provincial and municipal levels. The municipal level is particularly important because of municipalities' role on the 'front lines' of disaster management. NRTEE's strong background in urban issues could be a solid foundation for work in this area.

Both sustainable development and disaster management can be achieved most effectively when considered at the development planning level, but the goals of these areas are too often ignored. Both areas involve long term decisions with hard to quantify returns. Both depend on action that crosses organisational boundaries and brings together diverse stakeholders. The two areas are limited by a lack of planning mechanisms that take the necessary strategic, global view. Developing planning tools, therefore, that combine sustainable development and disaster management has many advantages: combined planning tools could streamline processes and costs, and arguments for considering each area could be mutually supportive.

2.3 Why a NRTEE program?

NRTEE is well positioned to investigate solutions in these program areas for several reasons:

1. Crucially, there is a need to enlarge the scope of current debates about disaster management to incorporate non-traditional perspectives and management tools. NRTEE's ability to assemble inclusive, neutrally facilitated multi-stakeholder discussions is proven and highly regarded. NRTEE's process will help ensure that the necessary stakeholders get involved.
2. NRTEE networks already extend far beyond existing disaster management networks in Canada. NRTEE works closely with many of the non-traditional partners not currently reached in disaster management.
3. NRTEE's track record (e.g. its Cities initiative, as well as its work on eco-efficiency indicators and on brownfield regeneration) gives it the leverage needed to make the type of strategic recommendations that are likely to come out of this program. NRTEE's current Program on Capital Markets & Sustainability, which is interested in the connection between Corporate Responsibility and financial returns, will no doubt see the connection between disaster management, individual business and industry continuity strategies (perhaps particularly in single industry towns or regions) and sustainability.
4. NRTEE's existing expertise in sustainable development issues and initiatives will allow it to identify opportunities for synergy with disaster management activities in Canada.
5. NRTEE's expertise in conducting multi-disciplinary research will provide the program with needed rigorousness and credibility.

2.4 Potential risks of undertaking the program

This potential program could be criticized for overlapping with existing disaster management activities within the federal government, such as Public Security and Emergency Preparedness Canada's (PSEPC) work on a National Disaster Mitigation Strategy. Stakeholders[4], however, have indicated the need for a wider approach. The potential for criticism can be minimised by ensuring that federal stakeholders such as PSEPC are included in the process, and by underscoring the advantages of including non-traditional stakeholders, using a neutral platform for research, and finding links between sustainable development and disaster management.

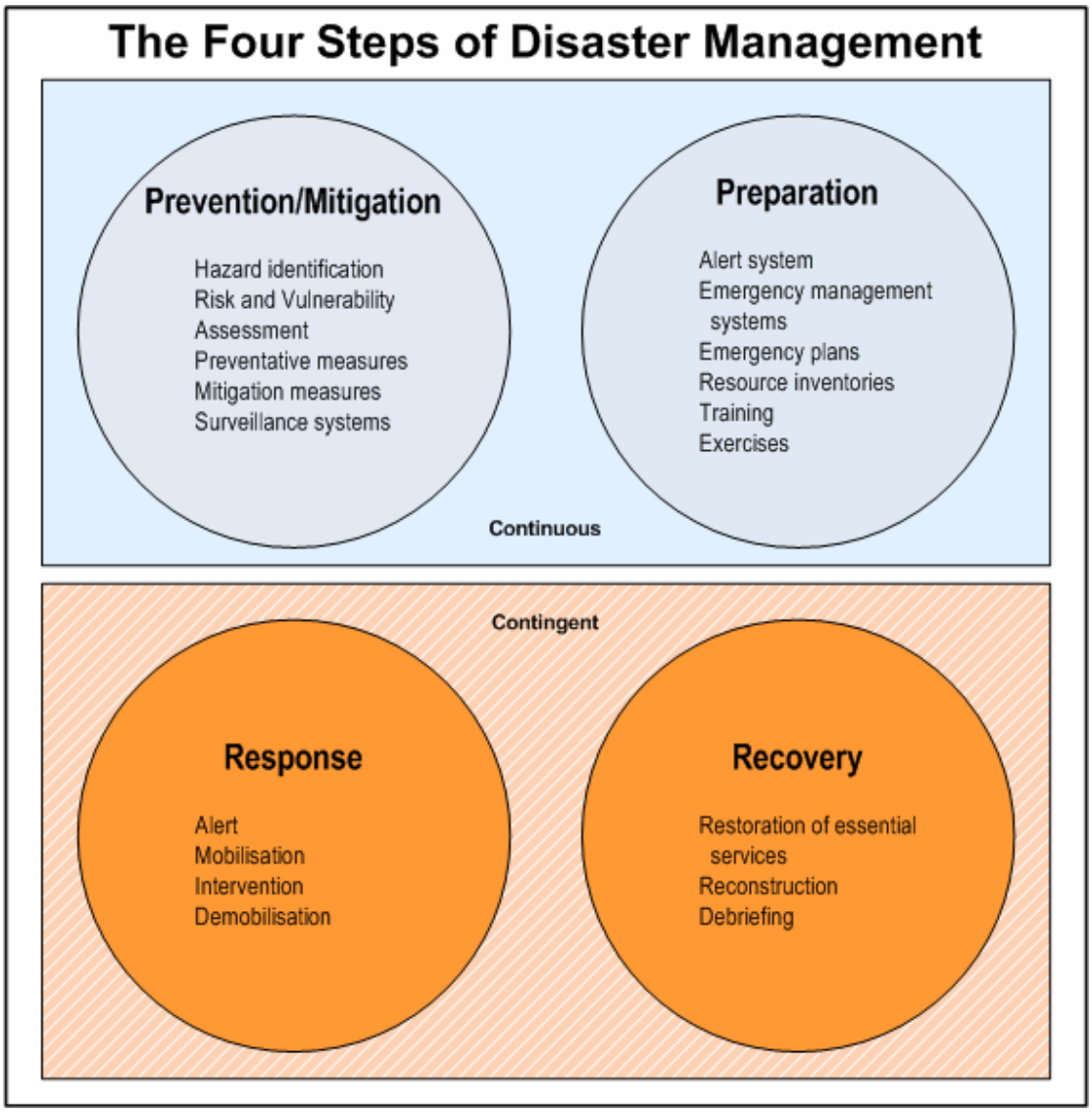
3 Background - disaster management

A few key terms are important for understanding disaster management as a field:

- A useful working definition of disaster is an event that causes or threatens to cause damage to human beings, to property, or to the environment, that surpasses the normal response capacity of the affected organisation and/or community.
- Disaster management consists of all activities, before, during and after a disaster, aimed at reducing the probability of a disaster occurring and its potential consequences; managing its actual occurrence and consequences and repairing any damage done to the extent possible.
- Hazards are phenomenon that can cause human, material and environmental damage. Hazards are generally classified as social, technological or natural in origin.
- The risk posed by a hazard is a combination of the probability of its occurrence combined with its potential consequences.
- The vulnerability of an organisation or community to a hazard is its potential to be adversely affected by the consequences of a disaster. It can be expressed as the risk of the hazard divided by any mitigating or protective measures in place

Disaster management activities are generally categorized within a four-step model:

- Prevention and mitigation are grouped together. Prevention aims at reducing the probability that an emergency will occur, while mitigation aims at reducing the consequences of an emergency, even before it occurs. Types of prevention/mitigation efforts are diverse, and have historically not been integrated with other disaster management activities. Prevention and mitigation are key areas for integrating sustainable development goals.
- The preparedness phase prepares an organisation to intervene in the event of an emergency. Common elements include: the creation of contingency plans such as emergency response plans and business continuity plans; personnel training; equipment acquisition; and use of exercises to test emergency response preparations.
- The goal of the response phase is to eliminate or minimise the source of an emergency and/or minimise its immediate consequences, once the emergency has occurred.
- Once an emergency and its immediate consequences have been dealt with, management moves into the recovery phase. Although recovery can imply a return to a 'normal', pre-emergency state, the effects of an emergency often make this impossible. The recovery phase is also an opportunity for change and improvement, and a key moment to take prevention and mitigation (and thus sustainable development) into account.



Effective disaster management is based on a thorough assessment of a community or organisation's vulnerability to all types of hazards. Disaster management practitioners generally recommend that an organisation's disaster management activities should be coordinated as a comprehensive, strategically planned whole, integrated into the organisations normal management cycle. In reality, however, disaster management efforts are often isolated from usual business activities and focus on the preparation and response phases, with recovery planning limited and prevention/mitigation activities reactive and uncoordinated.

4 Disaster management and sustainability: issues

4.1 Increasing levels of vulnerability

Both the probability and the severity of many hazards are increasing, both nationally and internationally. Most likely due to climate change, many climate-related natural hazards have markedly increased in frequency, severity and consequences since the 1940s.[5] Sources of technological hazards have been steadily increasing in concert with economic development[6], and increases in international terrorist activities are a source of social hazards.

At the same time, the potential consequences of emergencies have grown dramatically. Increases in population and economic development, particularly in hazard zones; our dependency on technology; and aging infrastructures are some of the factors contributing to this growth.

Development has also brought emerging systemic risks. Closely interconnected infrastructures, the development of complex, high risk industries, and increased connections between populations have increased our vulnerability to the 'domino effect'.[7]

4.2 Exploding economic costs

Natural disaster costs alone have skyrocketed worldwide in the last half century, doubling approximately every seven years since the 1960s. If costs continue to increase at this rate, then "around 2065 the world's wealth would be entirely consumed by the costs of natural disasters. Clearly such a 'limits to growth' projection is naïve…however there is no room for complacency".[8] Stakeholders have underscored the need for dramatically increased prevention and mitigation in countering this trend, although all aspects of disaster management must play a role.[9]

4.3 Disaster effects and environmental degradation

Disasters are linked to environmental degradation in two closely linked ways. Firstly, disasters can cause or aggravate many environmental problems. This is not limited to the effects of environmental disasters such as hazardous materials releases. For example, although ecosystems naturally adapt to the effects of natural disasters, these disasters often cause secondary environmental damage. Multiple small secondary hazardous material spills, waste clogged landfills and air and water pollution from cleanup operations are common effects.[10]

Secondly, increasing ecosystem loss and environmental degradation from non-sustainable development has amplified the consequences of many hazards, and can also create hazards. Weakened ecosystems are less able to recover from emergencies and to protect human societies from disaster effects. Reductions in ecosystem capacities can exacerbate or cause hazards, for example flooding caused by the removal of marshlands that normally absorb rainwater, or landslides caused by human removal of groundcover.[11]

4.4 The challenge of multi-organisational coordination

Multi-organisational coordination is one of the most difficult challenges in disaster management. Many disparate initiatives are underway that attempt to solve the problems involved, but they are the subject of debate and are sometimes criticized for not including all stakeholders. An inclusive discussion hosted by a non-traditional and credible player such as NRTEE could advance solutions in this area.

The involvement of multiple organisations is needed in all aspects of disaster management. Dozens and even hundreds of organisations can easily be involved in the response and recovery phases of a disaster, creating immense resource allocation, communication and planning problems that must be resolved within tight timelines. The same organisations must also be involved in disaster preparation, and even wider groups are implicated in prevention. This makes multi-organisational coordination one of the biggest challenges in disaster management. Jurisdictional conflicts, the lack of overall coordination mechanisms, and the lack of working relationships and mutual knowledge can all aggravate the logistical problems involved.

4.5 Criticisms of the legislative and policy framework

Existing laws and regulations at all levels of government in Canada regarding disaster management have been criticized as lacking measurable requirements and have been seen as insufficiently applied. Gaps in the legislative framework have been identified, most particularly for disaster prevention and mitigation.[12] Work is needed to evaluate these criticisms, outline options for new legislation and identify strategies for increasing the effectiveness of existing legislation. This work could be particularly timely in light of upcoming new provincial legislation.

At the same time, a multitude of laws and policies exist that address specific hazards or affect disaster management in indirect ways, and the interactions between these tools are not always understood. Research is needed to clarify these interactions, identify gaps in their coverage and find opportunities for increasing their effectiveness. A review of legislative arrangements is a natural fit for NRTEE, given its past experience in acting as a catalyst for change at the federal and other levels of government.

4.6 Problems with economic incentives for disaster resilience

Several aspects of our economy have been criticized for increasing our vulnerability to disasters. Firstly, the private sector tends to focus on relatively short term profits and the consequences of disasters since their probability appears to be so low for any one case. Secondly, efficiency gains from 'just in time' type management increase organisations' vulnerability to disruption, which is amplified when critical infrastructures are involved. Thirdly, the integration of world markets has created interdependencies that also amplify our exposure to disruption. Finally, the current structure of the insurance system and for governmental disaster assistance programs are said to create incentives to disregard insured risks in some situations. Research is needed to determine the validity of these criticisms, understand negative incentives and develop policy tools to replace them with positive incentives for increasing disaster resilience.[13]

4.7 Barriers and opportunities for action

Barriers include our inability to affect the probability and severity of natural disasters and our limited ability to affect the forces driving social threats such as terrorism. A second obstacle is the strong momentum of many of the societal trends (increases in complexity, interdependence of markets, environmental degradation, etc.) that are increasing our vulnerability, caused by the advantages they provide. A third barrier is the lack of development planning mechanisms with the global, strategic perspective and jurisdiction needed to make disaster management most effective.

Opportunities include the recent restructuring of disaster management at the federal and provincial levels (such as the creation of Public Security and Emergency Preparedness Canada), which creates opportunities to influence their emerging mandates. Ongoing reforms to laws at the provincial level in Ontario and Quebec will also create opportunities to incorporate NRTEE recommendations over the next three years. Moreover, awareness within the disaster management community of the need for reform to financial assistance could generate support for research and recommendations on this issue.

In addition, recent amendments to the Criminal Code under Bill C-45 will make senior management more responsible for risks generated by their activities or inadequate management on their part. This could be used as a lever for justifying disaster management efforts. Similarly, companies affected by new federal environmental emergencies regulations are currently creating new structures within their organisations to respond to regulatory requirements: NRTEE guidance could encourage the incorporation of these structures into larger, more comprehensive disaster management systems.

Finally, increased public awareness of our vulnerability, caused by terrorist acts and recent high profile criticisms of the Canadian disaster management system,[14] could increase the profile of NRTEE discussions and be used as a lever for NRTEE recommendations.

5 The legislative framework of disaster management in Canada

As discussed under Issues (see section 4), our understanding of the interactions between legislation is incomplete. This section describes the principal existing frameworks for disaster management in Canada; however, many relevant laws exist that are not always identified as directly affecting this field. The main areas are described below.

Municipalities

Municipalities are the 'front lines' of disaster management in Canada. They are responsible for overall disaster management within communities. Using systems based on multi organisational coordination, municipal authorities generally coordinate the response to a disaster, with other levels of government providing support. Most provinces require that municipal or local authorities develop emergency plans as part of their preparation for disasters. Municipal planning legislation is a key tool for disaster prevention and mitigation.

Provinces and territories

Provincial and territorial legislation generally sets out three roles for this level of government. Provinces and territories are to provide guidance for municipal disaster management activity and support municipalities during the response to a disaster. Provincial and territorial departments will also take the lead for disasters affecting specific areas of provincial responsibility and ensure their preparedness for municipal support.

Each province or territory develops emergency management plans that coordinate the actions of their departments under the lead of an emergency management organisation. In the case of a disaster that overwhelms the capacity of a municipality, provincial or territorial authorities can take the lead.

Federal legislation

In Canada, two federal laws focus on disaster preparedness. These laws describe how public authorities should work before, during and after a disaster.

Legislation	Purpose	Principal Elements
Emergency Preparedness Act	Describes the responsibilities of federal authorities during an emergency	• Responsibilities of the Minister of Public Safety and Emergency Preparedness Canada • Responsibilities of specific federal departments • Requires federal ministers to ensure that the departments under their supervision are adequately prepared to act in the event of an emergency. • Gives the Prime Minister and cabinet the authority to define when a provincial emergency is of national concern, whereby federal financial and other assistance can be extended to the province.
Emergency Act	Sets out the conditions under which the federal government can declare four types of states of emergency, authorizing the taking of special temporary measures to ensure safety and security.	• Public Welfare Emergency • Public Order Emergency • International Emergency • War Emergency • Conditions for compensation • Parliamentary Supervision

Other legislation that addresses some elements of disaster management include: the Canadian Environmental Protection Act, the Canadian Environmental Assessment Act, the Explosives Act, the Nuclear Energy Act and the Transportation of Dangerous Goods Act and the Canada Shipping Act and recent amendments to the Criminal Code under Bill C-45.

The secretariat of the Treasury Board of Canada has adopted many policies with relevance to disaster management, including: a Risk Management Policy; a Government Security Policy; a Business Continuity Planning Program; a Hazardous Substance Directive; and a Federal Emergency Management Policy.

Public Safety and Emergency Preparedness Canada is the federal department responsible for coordinating efforts in the field of disaster management. However, most departments have some disaster management responsibilities. The departments most directly involved are Environment Canada, Transport Canada, Health Canada and the Department of National Defence, but some stakeholders indicate that the division of responsibilities remains unclear and that current work towards a national disaster mitigation strategy (See section 7) is inconclusive.[15] NRTEE could provide a neutral environment for discussions and act as a catalyst for change in partnership with PSEPC and leading government departments and stakeholders.

6 Key disaster management and sustainability stakeholders in Canada

For present purposes, the term stakeholder encompasses everyone with roles, responsibilities rights and interests related to disaster management. It includes management and employees from risk generation organisations, key economic sectors public authorities at all levels, members of the public, academic researchers and disaster management professionals. Many of these stakeholders are also often involved in sustainable development issues. The following table provides examples of key stakeholders within each of these categories.

Key Disaster Management and Sustainability Stakeholders	
Category	Examples
Key Economic Sectors	• Private businesses and associations within high risk sectors such as: chemical production, petroleum refining, energy distribution, and heavy manufacturing. • Critical infrastructure sectors such as water purification and distribution, sewage treatment, electricity generation, telecommunications, information technology and transportation. • The insurance industry and financial institutions • Canadian Chemical Producer's Association • Canadian Federation of Independent Businesses • Canadian Manufacturer's Association

Public Authorities	• Municipal authorities and associations such as the Canadian Federation of Municipalities
	• City and urban planners
	• Provincial departments of security, health, environment and transport.
	• Federal departments and institutions
	  • Public Safety and Emergency Preparedness Canada
	  • Environment Canada
	  • Transport Canada
	  • Health Canada
	  • Department of National Defence

Public Interest Groups	• Consumer associations • Community associations
NGOs	• Canadian Red Cross • Disaster Recovery Institute Canada • Canadian Standard Association • Canadian Institute for Economic Evaluation • International Council on Monuments and Sites - Canadian Committee (ICOMOS Canada)[16] • Canadian Center for Emergency Preparedness • International Council for Local Environmental Initiatives (ICLEI) • Registered Engineers for Disaster Relief Canada (REDR Canada)[17]
Academic Researchers and Institutions	• Institute for Risk Research • Emergency Preparedness Information eXchange (EPIX – Simon Fraser) • Institute for Catastrophic Loss Reduction • Emergency Communication Research Unit (Carleton University) • Natural Resources Institute (University of Manitoba) • Justice Institute of British Columbia • Institute for Environmental Studies (University of Toronto) • Applied Disaster & Emergency Studies Program (University of Brandon, Manitoba)
Disaster Management Professionals	• Canadian Association of Fire Chiefs • Canadian Association of Chiefs of Police • Paramedic Association of Canada • Disaster Recovery Institute of Canada • Canadian Emergency Preparedness Association • *Conseil régional des accidents industriels majeurs*

7 Key initiatives related to disaster management and sustainability

Canadian Initiatives		
Initiatives	Organisation	Description/Goals
Prevention Dividend Project	Canadian Institute for Economic Evaluation, March 2000	"Encouraging the understanding, and use of, economic evaluations in Canada's non-profit and public sectors."
Public Safety and Emergency Preparedness Canada Sustainable Development Strategy 2003-2006	Public Safety and Emergency Preparedness Canada, 2003	Strategy integrating sustainable development goals into federal emergency preparedness activities.
Action 21 Implementation Program	Environnement Québec, February 2004	Examples of Quebecois initiatives in sustainable development, with some disaster reduction initiatives.
My City, My Heritage, My Future	International Council on Monuments and Sites - Canadian Committee, 2004	Work on conserving the heritage of Canadian cities includes elements on disaster mitigation and preparedness
National Disaster Mitigation Strategy Development	Public Safety and Emergency Preparedness Canada, ongoing	Work towards the development of a comprehensive national approach to mitigation.
International Initiatives		
Initiatives	Organisation	Description/Goals
Disaster Reduction and Sustainable Development	United Nations International Strategy for Disaster Reduction, 2003	Understanding the links between vulnerability end risk to disasters related to development and environment
Understanding the Economic and Financial impacts of Natural Disasters	The World Bank, 2004	Understanding the economic and financial impacts of natural disasters
An improved Database for the Social and Economic Analysis of Disaster Impact	ProVention Consortium, 2001	Gathering, analysing and sharing information on the economic and social impacts of disasters
Strategic Plan of Action: Disaster Reduction and Sustainable Development	Hemispheric Congress on Disaster Reduction and Sustainable Development, 1996	Plan of action for the Americas with multiple initiatives aimed at developing synergies between sustainable development and disaster reduction.
The Last Straw: Integrating Natural Disaster Mitigation with Environmental Management	The World Bank, 2002	Exploring linkages between environmental management and disaster mitigation strategies and activities.
Déclaration de Genève	*Office international de Protection civile,* November 2000	Declaration regarding the links between emergency preparedness and sustainable development
Décret relatif aux plans de prévention des risques naturels prévisibles	*France,* October 1995	Legislative framework for integrating sustainable development principles into disaster risk management.

8 Potential outcomes of a NRTEE program

Potential outcomes of a NRTEE program on Disaster Management and Sustainability include:

1. Research: A thorough scoping of current debates, knowledge, policy and legislation, and initiatives regarding the links between disaster management and sustainability, identifying best practices and establishing a research agenda to address gaps in current knowledge.
2. Policy and legislative recommendations: Recommendations could be developed regarding the harmonization of diverse legislation and policies to take advantage of opportunities for synergy, and the creation of new policies and legislation aimed at developing strategic planning mechanisms and economic incentives that will encourage disaster resilient communities.
3. Educational programs: programs could be developed targeting non-traditional stakeholders with a role to play in sustainable disaster management but a lack of knowledge concerning the issues and the tools needed to play their role effectively.
4. Mechanisms for stakeholder dialogue: Stakeholder discussions re disaster management and sustainability within the NRTEE context could be used as a springboard for developing more permanent mechanisms for inclusive dialogue on these issues.

9 Conclusion

It is becoming increasingly evident that disaster management and sustainability goals and approaches must be integrated. Furthermore, disaster management may provide a new and useful lens through which to view and promote sustainable development. Public awareness of vulnerability, recent criticisms of our current disaster management system, and ongoing reforms to federal and provincial emergency preparedness frameworks have created an opportunity to set a comprehensive agenda for needed economic, policy and legislative reform that will advance disaster management and sustainable development goals. NRTEE is the ideal organisation to take advantage of this opportunity: its extensive multi-stakeholder networks, sustainable development expertise, and reputation for policy excellence give it the tools and leverage needed to address these issues.

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16. ICOMOS Canada's initiatives on heritage conservation include disaster management activities.
17. RedR Canada (and RedR International) is a non profit NGO which provides a roster of qualified and experienced personnel available on short notice who work in humanitarian aid and disaster relief situations worldwide and provides training in disaster relief operations to agency staff in accordance with their unique needs.