

# *Walking through the 10 Essentials for Disaster Risk Reduction*



## **Resiliency Planning Charrette**

*Charrette de planification de la résilience*

October 1, 2014

### **Eddie Oldfield**

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Member, Resilient Communities Working Group,

National Platform for Disaster Risk Reduction [www.drr-rrc.ca](http://www.drr-rrc.ca)

# Hyogo Framework for Action



**Goal:** *The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries.*

**Involves:**

- **governments** (federal, provincial/state/territorial, local)
- **regional and international organizations**
- **civil society** including volunteers, the private sector and the scientific community

**<http://www.unisdr.org/campaign/resilientcities/>**

# Resilient Communities Working Group, National Platform for Disaster Risk Reduction

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## Emergency Management

### Disaster Prevention and Mitigation

[About Disaster Mitigation](#)

[Canada's National Disaster Mitigation Strategy](#)

[Canada's Platform for Disaster Risk Reduction](#)

[Financial Support to Provinces and Territories for the 2011 Flood Mitigation Investments](#)

### Emergency Preparedness

[Emergency Management Planning](#)

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[Capability Improvement Process](#)

[All-Hazards Risk Assessment](#)

[National Public Alerting System](#)

[Chemical, Biological, Radiological and Nuclear and Explosives Resilience](#)

[Communications Interoperability](#)

### Responding to Emergency Events

[Government Operations Centre](#)

[Urban Search and Rescue Program](#)

### Recovery from Disasters

## Canada's Platform for Disaster Risk Reduction: Working Groups

Interested Platform members can assemble Platform-related Working Groups based on specific issues or priority activities. The composition of each Working Group is determined by the task/issue at hand. All Working Groups must be connected to Canada's Platform via the Advisory Committee. The Platform Advisory Committee must approve both the establishment of the Working Groups themselves as well as their Terms of Reference. There are currently four established working groups:

### Resilient Communities Working Group

The United Nations International Strategy for Disaster Reduction (UN/ISDR) has recognized the need for cities and local governments need to get ready to deal with potential disasters, reduce the risks and become resilient to disasters. Since 2009 the UN/ISDR has been campaigning together with its partners for this to happen. The 2010-2011 World Disaster Reduction Campaign "Making Cities Resilient" addresses issues of local governance and urban risk while drawing upon previous ISDR Campaigns on safer schools and hospitals, as well as on the [sustainable urbanization](#) principles developed in the [UN-Habitat World Urban Campaign 2009-2013](#).

*"Through the Campaign towards safer cities and urban risk reduction, we can save lives, achieve gains towards the Millennium Development Goals, help protect natural resources, the urban heritage and the economic activities..." Mr. Rishi Raj Lumsali, Chairperson of the Association of District Development Committee of Nepal*

Within this context the Resilient Communities Working Group provides Canada's Platform with informed advice on relevant strategies and takes the lead in identifying disaster risk reduction (DRR) activities to foster disaster resiliency. It will guide, set priorities, and support the development of a Canadian network of disaster resilient communities and actively seek for opportunities for collaboration to increase community-based disaster resiliency.

For Additional Information on the Resilient Communities Working Group, Contact the Working Group co-chairs:



Making Cities Resilient: My City is Getting Ready



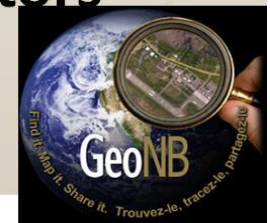
## Cities Getting Ready – UN ISDR 10 Essentials for Disaster Risk Reduction



- Global Cities Getting Ready Campaign, UN ISDR (Hyogo Framework for Action)
- 10 Essentials, Key Questions for each
- Local Government Self-Assessment Tool (**LGSAT**) rating Process / Application
- Community Stakeholder Engagement e.g. meeting with NB CAOs and EM coordinators
- Sharing Adaptation Best Practices

<http://www.unisdr.org/campaign/resilientcities/>

*See flood maps:*



# Making Cities Resilient Campaign (UN ISDR)



**Communities have the opportunity to:**

- o assess their work toward disaster resilience in relation to United Nations best practices**
- o identify strengths to be proud of and areas that need further attention**
- o share the work that has been achieved with other communities and to learn from others**
- o draw elected officials' attention to disaster resilience and involve community partners in your nomination and build relationships.**





#### District of Saanich, BC

The District of Saanich provides comprehensive disaster risk education programs and workshops to thousands of individuals each year as part of their Neighbourhood Emergency Preparedness Program. Utilizing staff and volunteers to support engagement with citizens, community organizations, businesses and schools is key to the success of the program.



#### District of North Vancouver, BC

The North Shore Emergency Management Office (NEMO) is responsible for emergency management for the District of North Vancouver along with two other North Shore communities. NEMO provides increased efficiency and effectiveness for emergency management programs, an increased volunteer pool, and coordinated planning, response and recovery strategies.

#### Amaranth Township, ON

This rural-urban community, located in the P.E. Simard area of Ontario (see inset map), has experienced an increasing number of severe weather disasters over the last three decades with more anticipated under climate change. Emergency response and preparedness plans are extremely well developed, including regular hands-on training using realistic "mock disaster" involving all emergency services and residents in the community. This training includes multiple disaster scenarios for humans, their property and their animals. Amaranth Township and Cuffey County are fully compliant with Ontario disaster management legislation and all of the ten essentials to help improve a community's resilience.

## Ten essentials for making cities resilient:



- 1 Put in place organization and coordination to understand and reduce disaster risk, based on participation of citizen groups and civil society. Build local alliances. Ensure that all departments understand their role to disaster risk reduction and preparedness.
- 2 Assign a budget for disaster risk reduction and provide incentives for homeowners, low-income families, communities, businesses and public sector to invest in reducing the risks they face.
- 3 Maintain up-to-date data on hazards and vulnerabilities, prepare risk assessments and use these as the basis for urban development plans and decisions. Ensure that this information and the plans for your City's resilience are readily available to the public and fully discussed with them.
- 4 Invest in and maintain critical infrastructure that reduces risk, such as flood drainage, adjusted where needed to cope with climate change.
- 5 Assess the safety of all schools and health facilities and upgrade these as necessary.
- 6 Apply and enforce realistic, risk-compliant building regulations and land use planning principles. Identify safe land for low-income citizens and develop upgrading of informal settlements, wherever feasible.
- 7 Ensure education programmes and training on disaster risk reduction are in place in schools and local communities.
- 8 Protect ecosystems and natural buffers to mitigate floods, storm surges and other hazards to which your City may be vulnerable. Adapt to climate change by building on good risk reduction practices.
- 9 Install early warning systems and emergency management capacities in your City and hold regular public preparedness drills.
- 10 After any disaster, ensure that the needs of the survivors are placed at the centre of reconstruction with support for them and their community organizations to design and help implement responses, including rebuilding homes and livelihoods.



#### Sainte-Adèle, QC

To raise its resiliency, the semi-rural Laurentian community of 10,000 people engages its network of volunteers and citizens to build awareness, education, preparedness and planning of mutual aid, disaster, through cooperation, coordination and collaboration amongst all community organizations.



#### Fredericton, NB

The City of Fredericton has been recognized nationally and internationally as a smart and sustainable city. Within the past decade, the City has undertaken various measures to deal with the increased frequency and severity of extreme weather resulting from climate change. This has included efforts related to storm water management, infrastructure renewal, planning bylaws, emergency preparedness, and most recently, the creation of a sustainable development division targeting municipal operations and the community.



# "My city is getting ready"

## Making Canadian communities safe from disaster is everybody's business.



The United Nations "Making Cities Resilient Campaign" proposes a checklist of Ten Essentials for Making Cities Resilient to serve as a guide for commitment by Mayors.

Have your City Council and local government sign up now!

Join the growing number of communities and gain energy from being part of a global campaign.

1. Explore the Resilient Cities website at:  
<http://www.unisdr.org/we/campaign/cities>
2. Fill in the application form:  
<http://www.unisdr.org/english/campaigns/campaign2010-2015/signup/>
3. Identify one stakeholder partner from an academic institution, civil society or the private sector
4. Ask your Mayor and Council to sign your application - decide if your community wishes to be considered a Champion, a Role Model City, or a Participant
5. When your application is completed email to: [isdr-campaign@un.org](mailto:isdr-campaign@un.org)

**Sign up today** to make your city resilient to disasters

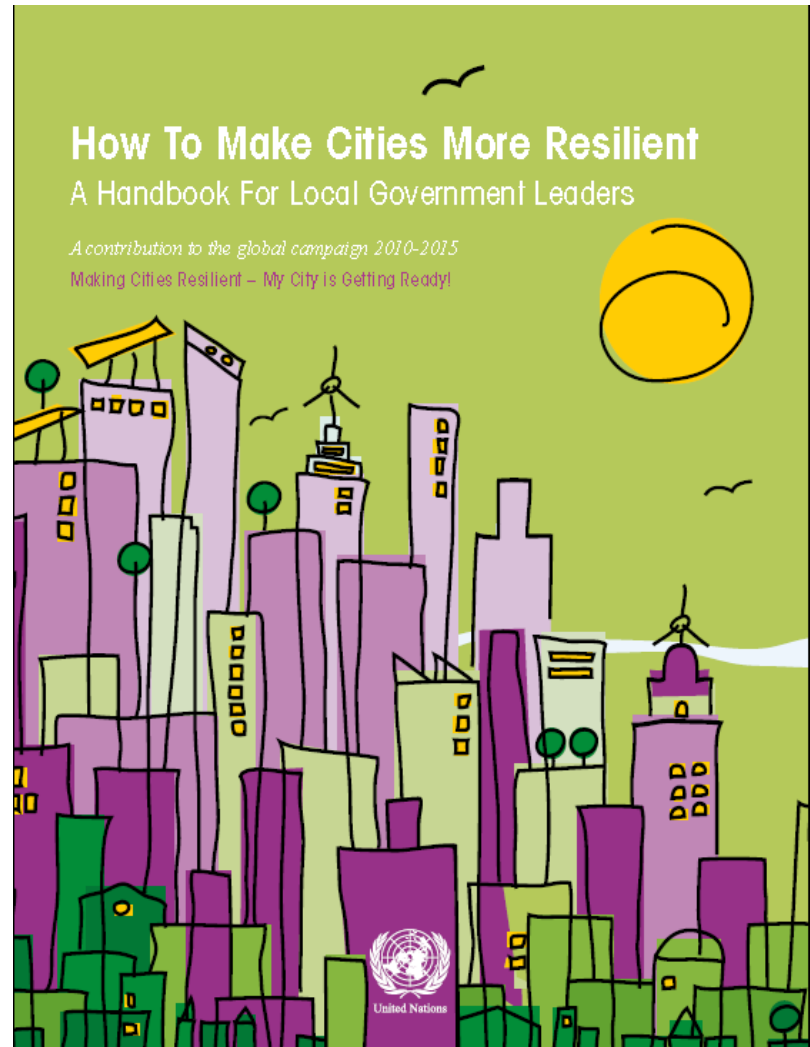
There is a helpful Self-Assessment  
Guide for Local Governments:



**A practical guide to  
LOCAL HFA:  
Local Self-Assessment of Progress  
in Disaster Risk Reduction  
First Cycle (2011 – 2013)**



...and a helpful Handbook for  
Local Elected Officials:



# Download or complete online

## Making Cities Resilient: My City is Getting Ready



**UNISDR**

The United Nations Office for Disaster Risk Reduction



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[HOME](#) > [A TOOLKIT FOR LOCAL GOVERNMENTS](#) > THE LOCAL GOVERNMENT SELF-ASSESSMENT TOOL (LGSAT)

## The Local Government Self-Assessment Tool (LGSAT)

The Local Government Self-Assessment Tool (LGSAT) provides key questions and measurements against the Ten Essentials for Making Cities Resilient and builds upon the priorities and national indicators of the Hyogo Framework for Action. Using the Local Government Self-Assessment Tool will help cities and local actors to set baselines, identify gaps and have comparable data across local governments, within the country and globally, to measure advancements over time.

The main purpose of the LGSAT is to:

- ✓ Help local governments engage with different stakeholders to map and understand existing gaps and challenges in disaster risk reduction in their city or locality.
- ✓ Set a baseline and develop status reports for cities and municipalities that have committed to the Making Cities Resilient Campaign and its Ten Essentials.
- ✓ Complement information gathered through the national Hyogo Framework for Action monitoring system (HFA Monitor) by providing local-level information. Cities can choose to share their results with national HFA focal points as part of the national reporting process.

The online system and template were developed by UNISDR, in consultation with several partners, local and national government representatives. The online version includes local context indicators, presented as 'key questions,' each of which shall be assessed on a scale from 1 to 5. Key questions are aligned to the HFA priority areas and core indicators as well as to the Ten Essentials of the Making Cities Resilient. The self-assessment will enrich the national HFA review process and the online profile of local governments participating in the Making Cities Resilient Campaign. The self-assessment is suggested to coincide with the national HFA monitoring cycle, to be undertaken every two years.

### Log in to LGSAT

Login ID

Password

Login

You need information on your password? Please contact [isdr-campaign@un.org](mailto:isdr-campaign@un.org)

### Links

[The 10 Essentials](#)

[A Handbook for Local Government Leaders](#)





# Communities assess the level of achievement for each of the ten essentials areas by marking:

1 (poor/nothing in place);

2 (some progress in place),

3 (in place, well functioning) or  
N/A (not applicable):

My City is Getting Ready

### TEN-POINT CHECKLIST – ESSENTIALS FOR MAKING CITIES RESILIENT

The campaign provides a checklist of ten essentials for Making Cities Resilient that can be implemented by mayors and local governments. The checklist derives from the five priorities of the Hyogo Framework for Action 2004-2015: Building the Resilience of Nations and Communities to Disasters, a key instrument for implementing disaster risk reduction, achieving all, or some, of these ten essentials will help cities to become more resilient. Have your City Council and local government sign up to this!

- ☐ Put in place organization and coordination to understand and reduce disaster risk, based on participation of citizens groups and civil society, build local alliances. Ensure that all citizens know understand their role in disaster risk reduction and preparedness.
- ☐ Assign a budget for disaster risk reduction and provide incentives for businesses, the private sector, communities, businesses and the public sector to invest in reducing the risk they face.
- ☐ Develop up-to-date data on hazards and vulnerabilities, prepare risk assessments and use these as the basis for urban disaster management plans and decisions. Ensure that the information and the plans for your city's resilience are readily available to the public and fully discussed with them.
- ☐ Invest in and maintain critical infrastructure that reduces risk, such as flood drainage, subjected where needed to cope with climate change.
- ☐ Assess the safety of all schools and health facilities and upgrade them as necessary.
- ☐ Apply and enforce national, risk compliant building regulations and land use planning principles. Identify safe land for low-income citizens and develop approach of informal settlements, wherever feasible.
- ☐ Ensure that education programmes and training on disaster risk reduction are in place in schools and local communities.
- ☐ Protect ecosystems and natural buffers to mitigate floods, storm surges and other hazards to which your city may be vulnerable. Adapt to climate change by building on good risk reduction practices.
- ☐ Install early warning systems and emergency management capacity in your city and build regular public preparedness drills.
- ☐ After any disaster, ensure that the needs of the survivors are placed at the centre of reconstruction and support the short and long-term recovery organisations to design and help implement measures including rebuilding homes and livelihoods.

Sign up today to make your city resilient to disasters

## 40 Questions across 10 Essentials

1. Take some time to review the 10 Essentials below. Answer the questions (at a high level, to the best of your knowledge). Rank your municipality for each question, as follows:

Level of achievements: ☐ 1 ☐ 2 ☐ 3 ☒ 4 ☐ 5    Unknown ☐ , where:

**1** = Achievements are **minor** and there are few signs of planning or forward action to improve the situation.

**2** = Achievements have been made but are **incomplete**, and while improvements are planned, the commitment and capacities are limited.

**3** = There is some institutional **commitment and capacities to achieving DRR** but progress is not comprehensive or substantial.

**4** = **Substantial achievement** has been attained, but with some recognised deficiencies in commitment, financial resources or operational capacities.

**5** = **Comprehensive achievement** has been attained, with the commitment and capacities to sustain efforts at all levels.

2. Assign your community an overall Score for each Essential:

1 = Nothing in Place



2 = Something in Place, Needs Improvement



3 = In Place, Functioning Well





# The Ten Essentials are:

1. Organization & Coordination to reduce disaster risk – based on the participation of citizen groups....build local alliances. Ensure that all departments understand their role in disaster risk reduction & preparedness
2. Assign a budget for disaster risk reduction & provide incentives for homeowners, low-income families, communities, businesses & public sector to invest in reducing risk...
3. Up-to-date data on hazards & vulnerabilities, prepare risk assessments & use as a basis for urban development plans & decisions. Ensure that plans are readily available to the public & fully discussed with them.





## Ten Essentials cont'd...

4. Invest in & maintain critical infrastructure that reduces risk.... adjusted where needed to cope with climate change.
5. Assess the safety of all schools & health facilities & upgrade as necessary.
6. Apply & enforce realistic, risk compliant building regulations & land use planning principles. Identify safe land for low-income citizens...
7. Ensure that education programmes & training on disaster risk reduction are in place in schools & communities.



## Ten Essentials cont'd...

**8. Protect ecosystems & natural buffers to mitigate floods, ...& other hazards to which your city may be vulnerable. Adapt to climate change by building on good risk reduction practices.**

**9. Install early warning systems & emergency management capacities in your city & hold regular public preparedness drills.**

**10. After any disaster, ensure that the needs of the survivors are placed at the centre of reconstruction with support for them & their community organizations to design...rebuilding homes & livelihoods.**

# Here's a sample of completed section by Saanich for Essential #1



## Essential 1 – Risk reducing organization and coordination in place

Status - 3

Progress and achievements - The District works with Neighborhood Associations, service organizations, sports groups, churches and business to support and strengthen the community. First responders are organized through the British Columbia Emergency Response Management System. The Emergency Program liaises with the business community on a regular basis to improve communication and consultation on municipal issues related to economic development. While early warning systems are primarily provided by the province, warning information is relayed through community responders.

Plans - Building stakeholder engagement to increase preparedness and build a more resilient community. Development of business recovery volunteer trainers through the local Chamber of Commerce and Business Improvement Association.

It allows a community to establish a baseline, develop an action plan and measure its progress



# Resilient City Role Model



- If you rate a “3” in at least five out of the ten essential areas for resilient cities, *and*
- If you are willing to provide opportunities for other local governments to learn from you.



## Resilient City Participant

If you are a local government that is in the early stages of risk reduction planning and management and you pledge to improve resilience and safety to disasters.



## Champion and Good-Will Ambassador

You can also Nominate a community leader, a Mayor, Governor or other influential figure who is willing to support UNISDR and the partners during the campaign to help and support others.



## ***Moving Forward is Easy!***



1. Explore the Resilient Cities website  
<http://www.unisdr.org/campaign/resilientcities/>
2. Get the Mayor and Council to agree to join the campaign
3. Fill in the on-line application form
4. Identify one stakeholder partner from an academic institution, civil society or the private sector
5. Ask your Mayor to sign your application – decide if your community wishes to be considered a Champion, a Role Model City, or a Participant



# Benefits to Canadian Communities

1. Communities can assess what they have done & work toward disaster resilience in relation to United Nations' best practices, gathered from around the world
2. Communities can identify strengths to be proud of and areas that need further attention
3. Communities can share their work with other communities in Canada and around the world; learn from others





## Benefits...



4. Participating in the campaign will draw local elected officials' attention to disaster resilience
5. Participating will involve community partners and build relationships
6. There is positive energy from being part of global campaign

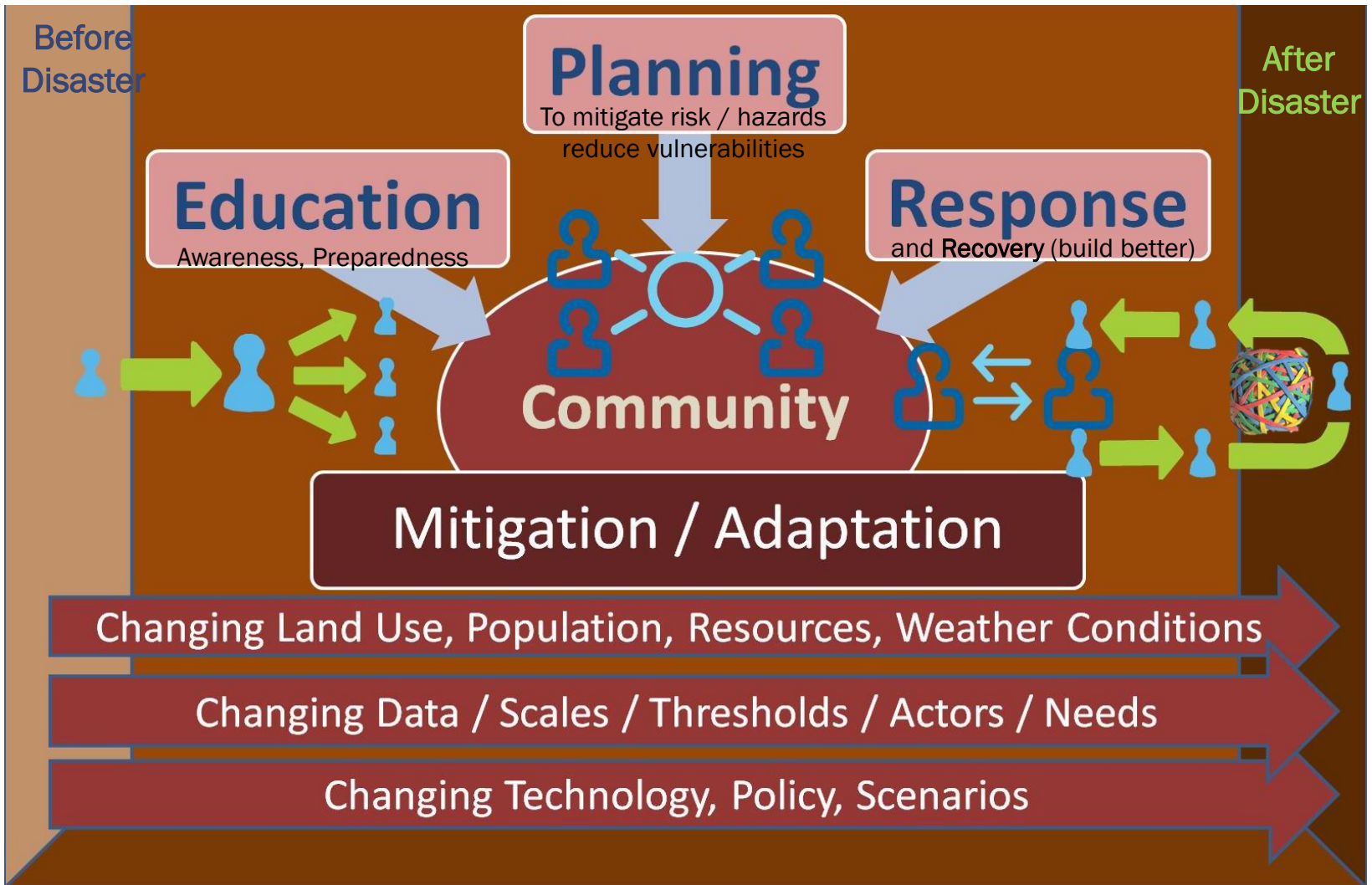
# *Who's Joined So Far?*

## Participating Local Governments



- I met with 15 communities (large and small) - 2013
- Key Issues raised: flooding, erosion, extreme weather, heat events, freeze-thaw cycles, other climate change impacts, & resource constraints
- Good uptake in LGSAT (10 Essentials)
- Next Steps: resilience assessment, UNISDR
- Future Areas of Research / Action
  - Workshop / Table-Top Exercise
  - Local vulnerability/risk and resiliency assessments, applications to UN ISDR
  - Develop Resilience Platform  
(for information exchange, visualization, best practice / technical documentation)
  - ROI analysis for mitigation, adaptation, and response measures
  - Centralized resources / exchange best practices










# Relevant Stakeholder Engagement

- Municipal Council and Staff
- Business and Industry
- Not-for-Profit / Charities
- Academic Institutions
- Local provincial officials (GNB)
- Regional Service Commissions
- Professional Associations
- The Public / Citizenry
- People with disabilities
- Others





*A few additional resources highlighted next.*



# PIEVC

Public Infrastructure Engineering Vulnerability Committee

[http://www.pievc.ca/e/index\\_.cfm](http://www.pievc.ca/e/index_.cfm)

**Adapting infrastructure  
to a changing climate**

**Home**  
**About PIEVC**  
**Documents**

- Fact Sheets
- Glossary / Definitions
- Infrastructure Climate Risk Assessment Backgrounder
- PIEVC Engineering Protocol (Part 1)
- Introduction
- Case Studies
- Training Workshops
  - Workshop Advertisement
  - Typical Abstract Agenda
  - Workshop Video Promotion
- Infrastructure Codes and Standards Reviews
  - Water-Related
  - Roads and Associated Structures
- First National Engineering Assessment Report
- External Presentations
- Links

## PIEVC Engineering Protocol - Version 10 October 2011 - Part 1

The protocol is a five step process to analyze the engineering vulnerability of an individual infrastructure e.g. a building or an infrastructure system e.g. a potable water treatment and supply system to current and future climate parameters such as extreme heat or extreme rainfall. It is not a spatial risk assessment tool to identify areas of high, medium or low risk. If this is your application use other tools, not this one.

**Step 1**  
Project Definition

↓

**Step 2**  
Data Gathering & Sufficiency


↓

**Step 3**  
Risk Assessment

↓

**Step 4**  
Risk Assessment

30 P.Eng (Engineers)  
trained in New Brunswick  
in 2012, with Engineers  
Canada



making and improves its resilience to the impacts of current and future climate.

Contact Engineers Canada for more information  
Website: <http://www.engineerscanada.ca/>

# Land Use Planning Guide



## Risk-based Land-use Guide

LAURIE PEARCE, BERT STRUIK

### 6 Step Risk Management Process

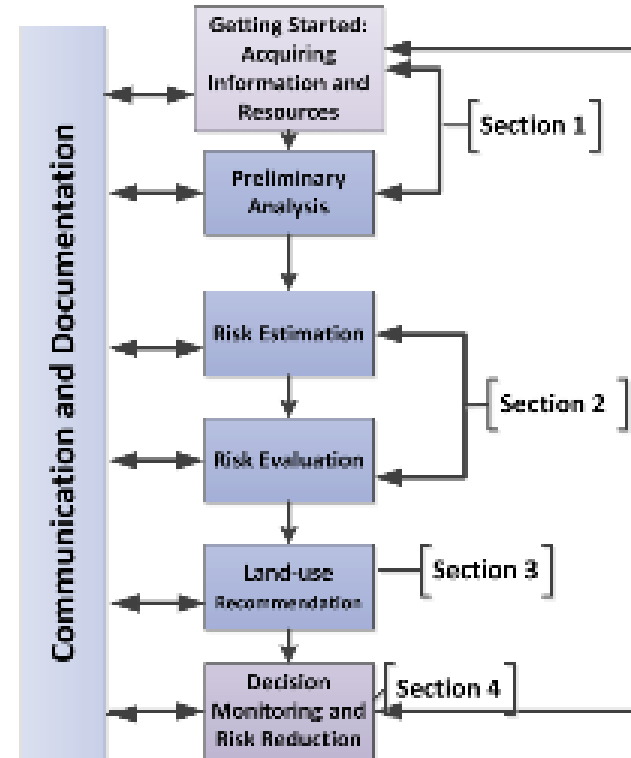


Figure 1: Six Step Risk Management Process

This diagram shows the six steps of risk management as

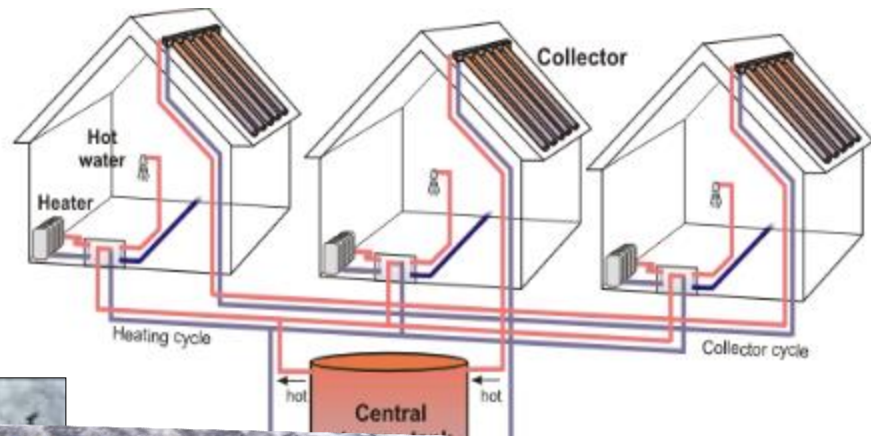
Contact Laurie Pearce, Justice Institute of British Columbia

## *Safe + Sustainable = Resilient*

<b>Sustainable Development &amp; Energy Security</b>	<b>Community Disaster Mitigation</b>
Sustainable land-use and soil stabilization	Mitigates floods, wildfires, mud slides, erosion, effects of drought
Sustainable water and storm-water management	Mitigates drinking water contamination, flooding, drought and emergencies related to sewer capacity overload
Sustainable energy measures (e.g. district heating, renewable energy, bio-mass energy, energy conservation programs, public transport)	Mitigates energy emergencies due to failure of transmission lines Reduces energy demand Increases energy capacity Climate change protection
Sustainable waste management (e.g. recycling, bio-waste used as an energy source, and hazardous waste management)	Mitigates soil and water contamination, tire fires etc. Increases energy capacity Reduces pressure on land-fill and waste transport

*Safe and Sustainable*

This....



Would avoid this.....





# Public Health Adaptation



Monitor trends in chronic illness and infectious disease

Provincially Adjusted Morbidity Trends per 1,000

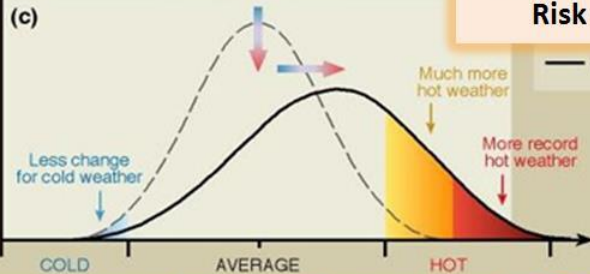
- Low
- Average
- High
- Very High

Asthma-COPD Morbidity Trends, 2005  
Age-Adjusted Cases per 1,000 Standard Million (Census 2001)

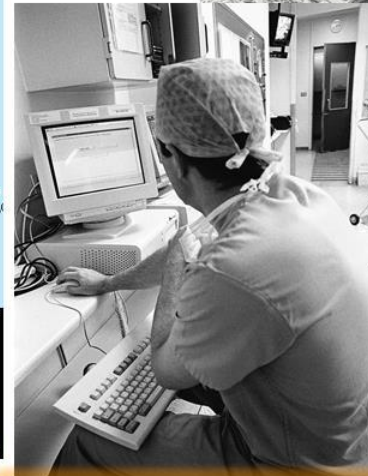


Probability of occurrence

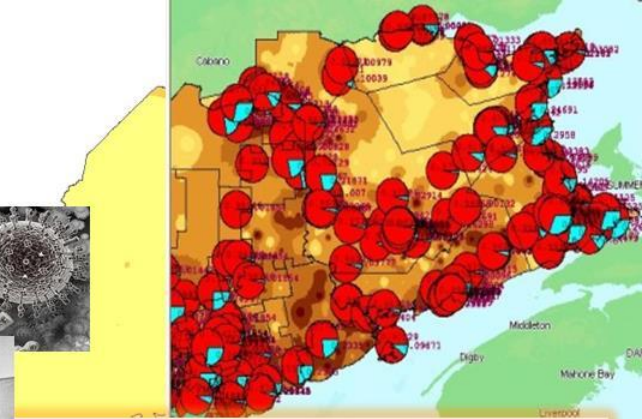
Increase in mean and variance of temperature



Model Climate Change and Health Impacts for Risk Assessment



Prevention, Alerting, Response, Recovery



Time series pandemic surveillance

1	2	3	4	5	6	7	8
Risk: Low (1 - 3)			Moderate (4 - 6)			High (7 - 10)	

Current

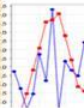
Observed at  
11:00 AM EDT Thursday 24  
April 2008

4  
Moderate Risk

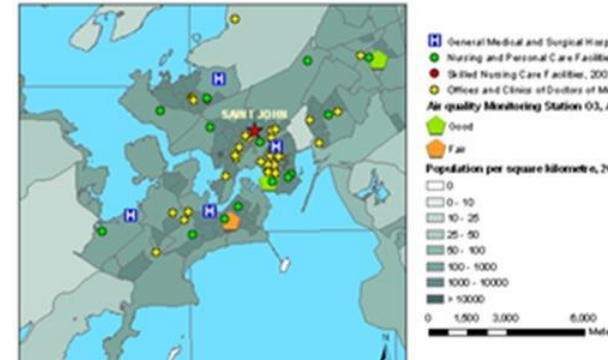
At-Risk Population:

- If you have heart or breathing problems, and experience reducing physical exertion outdoors or reschedule activities index is lower.

Public education, resource planning  
(including vaccination campaigns)



Assess Vulnerable Populations / Zones





# *Heat Alert Response System (HARS)*

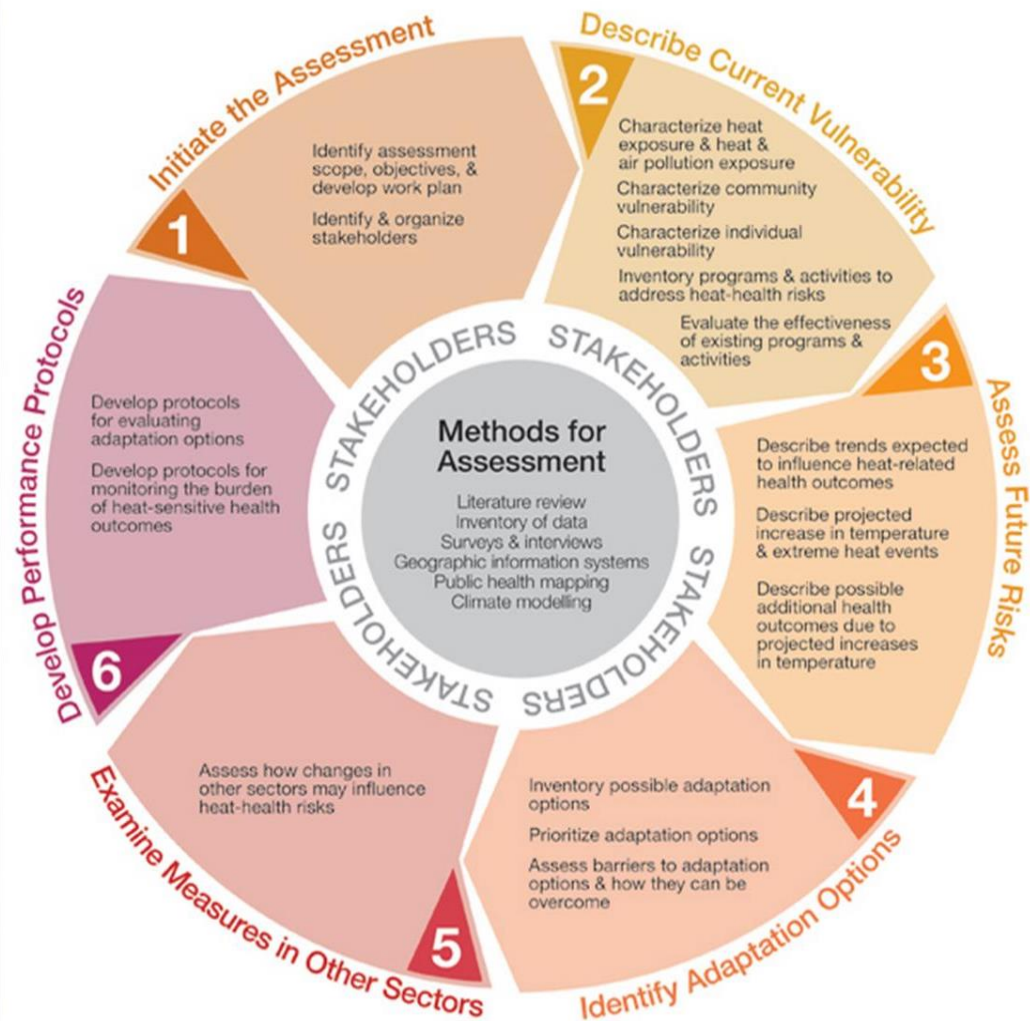
## *o* Pilot Phase

included Fredericton



- o* Extension to pilot phase will include other NB communities, particularly along Saint John river (but resources limited).
- o* HARS Plans can be developed locally (using Health Canada model)
- o* Focus: Vulnerability Assessment, Response Planning, Messaging, Community Engagement and Preparedness
- o* Additional Heat-Health Vulnerability Indices and Mapping Resources are available:
  1. Health Canada Resources: <http://www.hc-sc.gc.ca/ewh-semt/climat/adapt/heat-chaleur-eng.php>
  2. Comparing Heat Health Vulnerability Indices, authored by Eddie Oldfield (Spatial Quest Solutions) for the Climate Change and Health Office, Health Canada, 2013
  3. ACASA Maps – [www.acasamaps.com](http://www.acasamaps.com)

**Figure 6: Steps for conducting an extreme heat and health vulnerability assessment**



# ***Table Top Discussion / Exercise***

- ◌ 20 min – Discuss RDRP process – hydrological hazards
- ◌ 20 min – Discuss 10 Essentials / Applicability
- ◌ 20 min – Walk through 10 Essentials for your community

*Complete Dashboard*



**Spatial Quest Solutions**

[www.spatialquest.com](http://www.spatialquest.com)



"Get Your Spatial Quotient"

**Eddie Oldfield**

**Tel: 506-209-0887**

**Email: [eoldfieldsqs@outlook.com](mailto:eoldfieldsqs@outlook.com)**

**Principal/Owner, Spatial Quest Solutions**

**Member, Resilient Communities Working Group,**

**National Platform for Disaster Risk Reduction – [www.drr-rrc.ca](http://www.drr-rrc.ca)**

**Member, OGC - [www.opengeospatial.org](http://www.opengeospatial.org)**

**Member, QUEST - [www.questcanada.org](http://www.questcanada.org)**

**Technical Expert, SGIP PAP 21**

Spatial Quest Solutions: Business /HST Number: 83696 5905 RT0001