



# **Adapting to Climate Change in Ottawa**

## **A Risk Management Approach to Adaptation Decision-making**

Al Douglas

Ontario Centre for Climate Impacts and Adaptation Resources



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# Ontario Centre for Climate Impacts and Adaptation Resources OCCIAR

OCCIAR is a university-based, resource hub for researchers and stakeholders searching for information on climate change impacts and adaptation



# OCCIAR Mandate

- Effectively communicate the science of climate change including its current and future impacts;
- Encourage the development and implementation of adaptation strategies in order to reduce climate vulnerability and increase resiliency;
- Create and foster partnerships with stakeholder groups;
- Support the work of Ontario's Expert Panel on Climate Change Adaptation;

all within the Province of Ontario and beyond. The Centre will also be a hub for climate change impacts and adaptation activities, events and resources.

# Ontario's Expert Panel on Climate Change Adaptation

Co-Chairs

Dr. Ian Burton and Dr. David Pearson

Panel members:

Grand Council Chief John Beaucage, Grand Council Anishinabek Nation

Alain Bourque, Ouranos

Dr. Quentin Chiotti, Pollution Probe

Dr. Judith Guernsey, Dalhousie University

David Lapp, Engineers Canada

Eva Ligeti, Executive Director, Clean Air Partnership

Dr. Gord McBean, University of Western Ontario

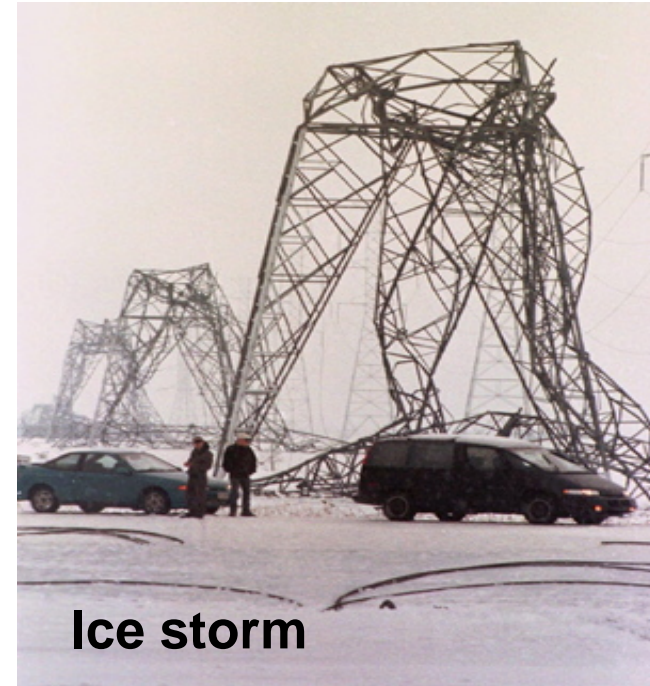
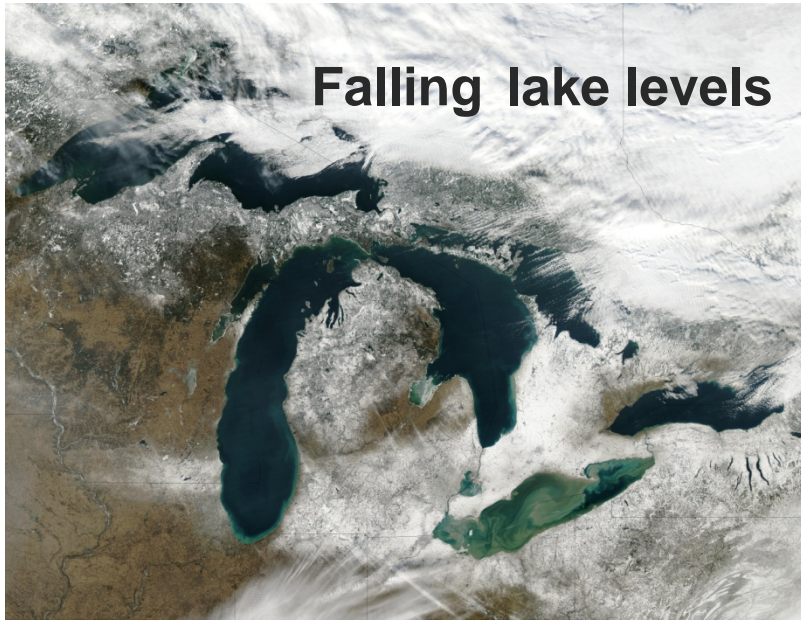
Jo-Ellen Parry, International Institute for Sustainable Development

Dr. Barry Smit, University of Guelph

# The Goals

- What we know, what we've heard, what we did, where we're at.
- The Process,
- Outcomes,
- Next steps.

# Direct Impacts - Extreme events





**Georgian Bay Dry Docks**

Karl Schiefer EcoMetrix

# Impacts





# The Goals

- What we know, **what we've heard**, what we did, where we're at.
- The Process,
- Outcomes,
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# The Call for Methods and Tools

- We understand that climate is changing and...
  - We realize that it is and will impact our systems and...
    - We know we need to adapt but...
      - Adapt to what, specifically and...
        - **HOW DO WE DO IT?????**

# A Risk Management Approach

- Canadian Standards Association Guideline
  - CAN/CSA-Q850-97 Risk Management: Guideline for Decision-Makers
- Guideline adjusted for climate change adaptation and first used in the Caribbean (Adapting to Climate Change in the Caribbean – ACCC project) 2001-2004
- Global Change Strategies International (M. Egener, J. Bruce, others)
- Used by C-CIARN Ontario in 2003, 2004, 2005
- GCSI develops **An Overview of the Risk Management Approach to Adaptation to Climate Change in Canada, 2005**

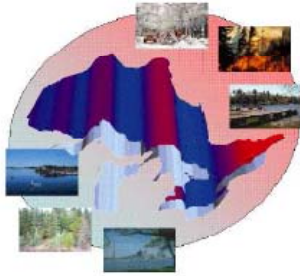
# The Goals

- What we know, what we've heard, **what we did**, where we're at.
- The Process,
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# Workshop Components

- A package for delegates includes:
  - A community case
  - The risk assessment framework including flow chart, tables and facilitator
- Read the case
- Brief introduction to the process
- Facilitated walk through the process
- Successful end point is adaptation strategies

# Managing Risk from a Changing Climate



## Making Adaptation Happen in Ontario

A report of C-ClARN Ontario's March 24 & 25, 2004 conference and workshop

# Development and Delivery of Framework

## Climate change effects on fisheries and aquatic resources: Exploring the reality of adaptation across the Great Lakes basin

Symposium - Workshop

January 10th and 11th, 2005, Great Lakes Ballroom,  
Hilton Windsor, Windsor, ON, Canada



Canadian Climate Impacts and Adaptation Research Network

Ontario

## Economic and Social Impacts of Climate Change in Northern Ontario: A Community Perspective

November 18-19, 2004  
Holiday Inn Sault Ste. Marie Waterfront  
Sault Ste. Marie, ON

November 29, 2004  
The Valhalla Inn  
Thunder Bay, ON

## Workshop on the Integration of Climate Change Impacts and Adaptation into Municipal Policy and Programs: A Focus on Water Management

November 3, 2005  
Black Creek Pioneer Village, Toronto



Canadian Climate Impacts and Adaptation Research Network

ONTARIO

TORONTO AND REGION  
**Conservation**  
for The Living City

# Workshops



## **Adapting to Climate Change in the Niagara Region of Ontario Workshop Report**

**May 14, 2008** - Holiday Inn, St Catharines, ON



## **Adapting to Climate Change Challenges & Opportunities**

**March 20, 2008**  
Valhalla Inn, Thunder Bay ON

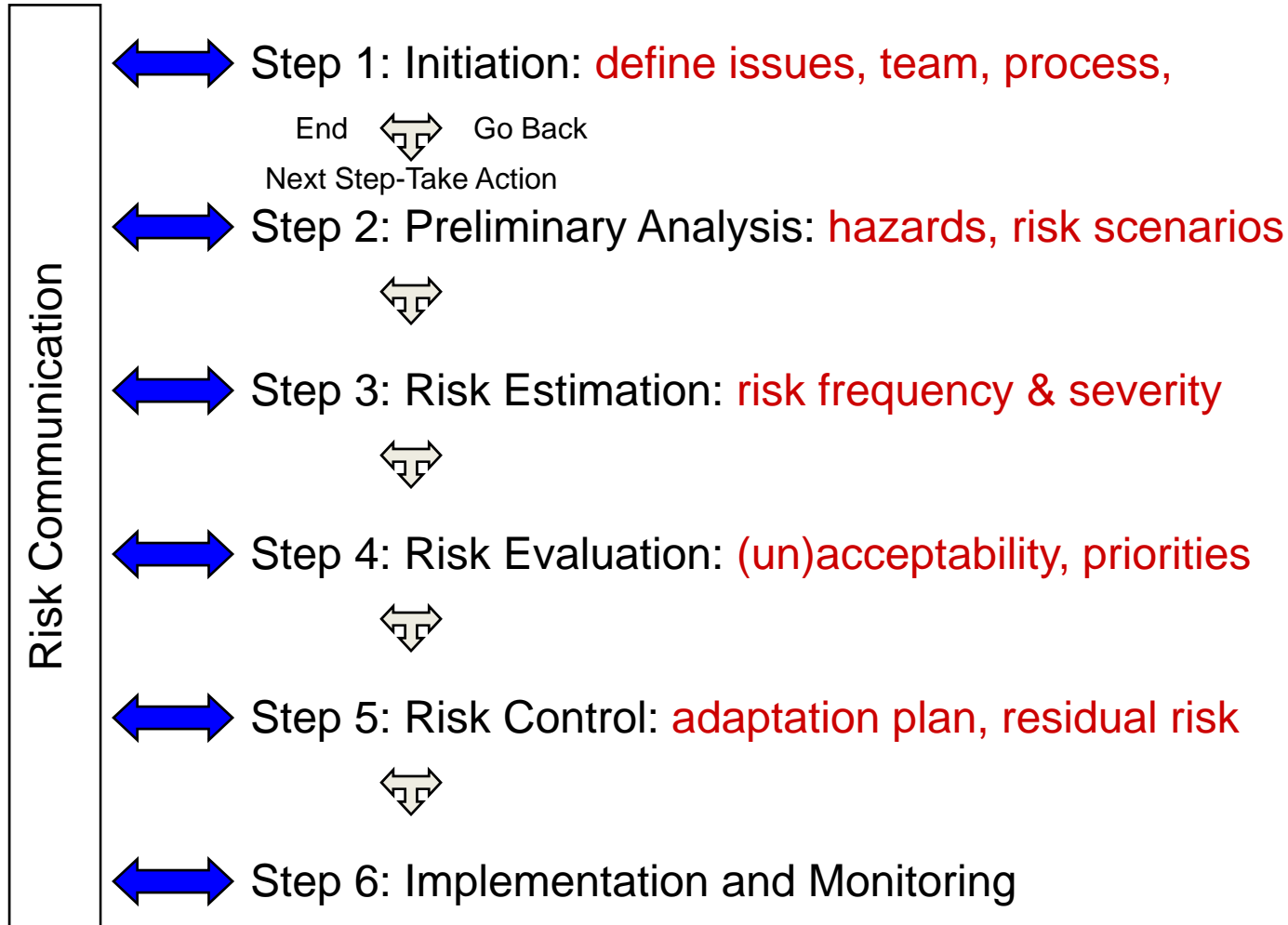
# A Risk Management Approach

- An Overview Of The Risk Management Approach To Adaptation To Climate Change In Canada; Global Change Strategies International, 2005
- Adapting to Climate Change: A Risk-based Guide for Ontario Municipalities, Bruce et al., 2006

# Objectives of the Risk Management Tool for Adapting to Climate Change

- To raise awareness of decision-makers to the potential uses of the framework to developing adaptation strategies;
- To provide ways to help decision-makers to identify community, industry or sectoral risks from climate variability and change;
- To promote discussion among decision-makers on approaches that could be used to reduce risk

# Risk Management Guideline for Adaptation Decision-Making



# Step One: Initiation

- Identify risk management team
- Identify resources
- Assign responsibility, authority, and resources
- Identify the hazards, the stakeholders and initiate consultation process

## Key Outputs:

- ✓ Risks defined
- ✓ Project team established
- ✓ ToR approved

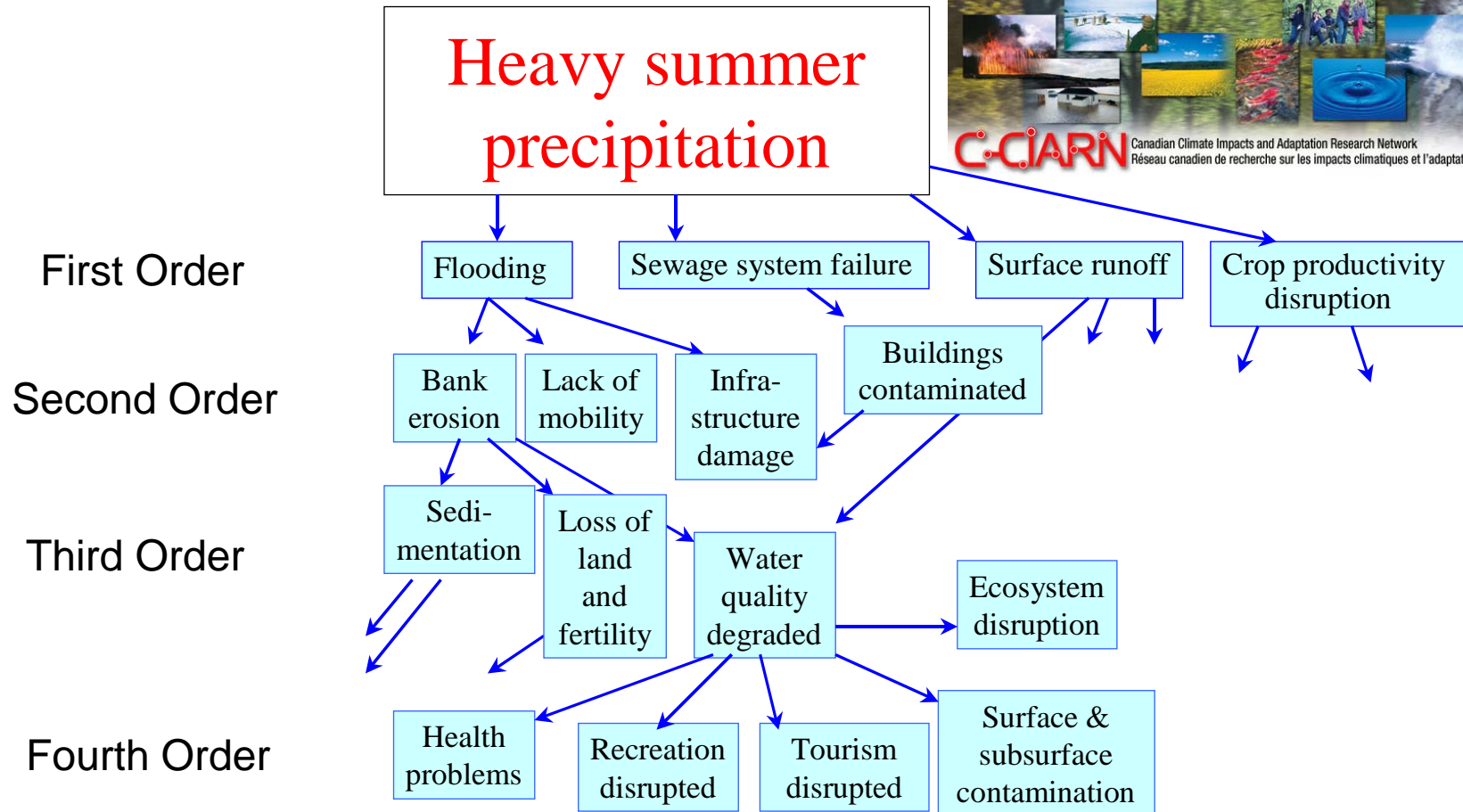
# Step Two: Preliminary Analysis

- Define scope of the decision(s)
- Begin to develop risk scenarios and the impact tree
- Begin stakeholder analysis, key interviews
- Outline risk communication plan

## Key Outputs:

- ✓ Hazards identified
- ✓ Baseline established and/or plan to collect baseline data
- ✓ Risk scenarios developed

# Step One and Two – Identifying Extremes and Hazards



# Step Three: Risk Estimation

- Define method for estimating frequency and consequences
- Estimate frequency of risk scenarios
- Estimate consequences of risk scenarios
- Refine stakeholder analysis through dialogue

## Key Outputs:

- ✓ Estimate of frequency and severity of risk scenarios
- ✓ Estimate of expected value of loss

# Step Four: Risk Evaluation

- Direct and indirect costs of the impacts
- Analyse risk perceptions and risk acceptability
- Compare risk ratings

## Key Outputs:

- ✓ Risk ratings are available, with priorities
- ✓ Unacceptable risks identified
- ✓ Dialogue with stakeholders re: unacceptability of risk

# Step Three and Four – Risk Estimation and Evaluation

IMPACTS →							
<b>SEVERITY OF IMPACT</b>	Economic (1 = low, 5 = high)						
	Social (1 = low, 5 = high)						
	Environment (1 = low, 5 = high)						
	Severity Total	=					
<b>PROBABILITY OF IMPACT (1 = low, 5 = high)</b>		x					
<b>PRIORITIZED RISK / RISK SCORE</b>		=					

# Step Five: Risk Controls and Adaptations

- Identify risk control mechanisms
- Evaluate risk control options for feasibility, cost and stakeholder acceptance
- Develop implementation plan
- Develop risk communication plan

## Key Outputs:

- ✓ Risk control mechanisms
- ✓ Implementation plan
- ✓ Awareness of residual risk

# Step Six – Implementation and Monitoring

- Develop and implement adaptation plan
- Monitor and evaluate the effectiveness and costs of responses
- Revisit old decisions in light of new information

Key Outputs:

- ✓ Comprehensive implementation plan
- ✓ Factors affecting implementation

# Session Reflections and Lessons

- Need to have good facilitation
- Participants need to make some assumptions in order to move on
- Lack of information and/or data is not an acceptable reason to quit
- Climate change was not mentioned when identifying risk control mechanisms
- Climate is the driver
- Adaptations are often best practices and may be happening right now
- Communication every step of the way!