

**International Association for Impact Assessment
(IAIA) Special Symposium on
Climate Change and Impact Assessment
1818 H Street NW (World Bank Building)
Washington DC**

10:45 (Concurrent Session 3B) - 2010 11 16

Practical Measures for Adapting Infrastructure to Climate Impacts

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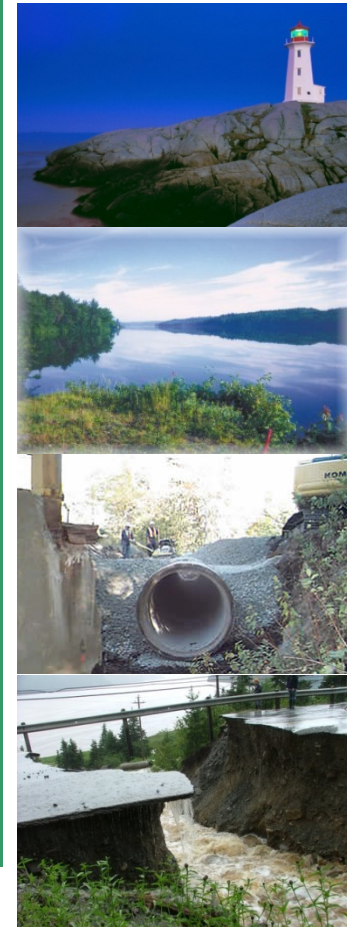
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Premise

Where **climate** has influenced infrastructure design, development, operations, and management decision making -

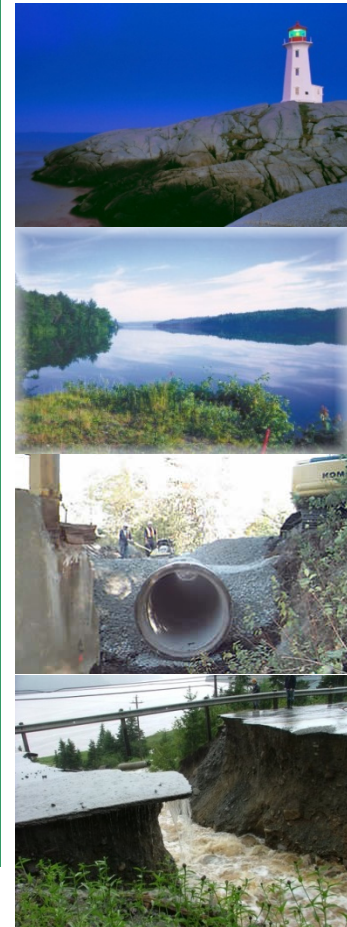
perceived changes in future climate impacts, can impact or compromise the various infrastructure - climate - performance criteria relationships.



Presentation Overview of Practical Measures for Adaptation From the various Perspectives of:

- ◆ The Top Down
- ◆ The Bottom Up
- ◆ The Owner, Shareholder,
Partnering Financial Institution
- ◆ The Decision Making Communities
- ◆ The Manager Operators

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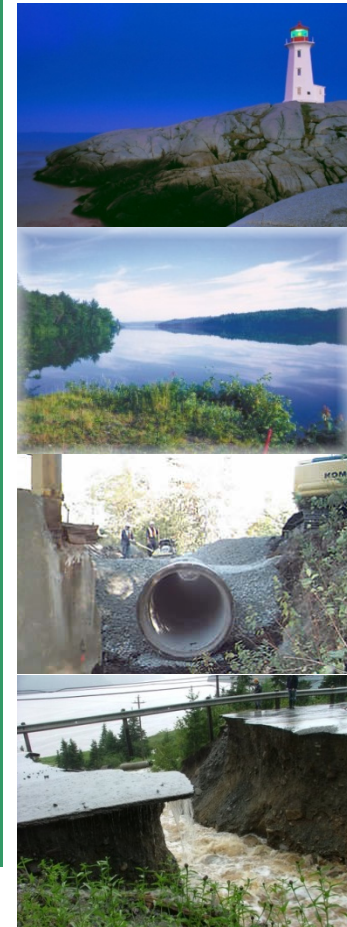


Practical Measures From the Perspective of ◆ The Top Down

On a common regional level,
efforts to present accessible technical opinions on future climate impacts, in formats* that are useful to regional infrastructure decision makers,
reduce the barriers to, and transaction costs of, adaptation.

** Building Code values (wind, rain, snow);
Flood Maps; Heat Units; and Intensity
Duration Frequency Precipitation Curves*

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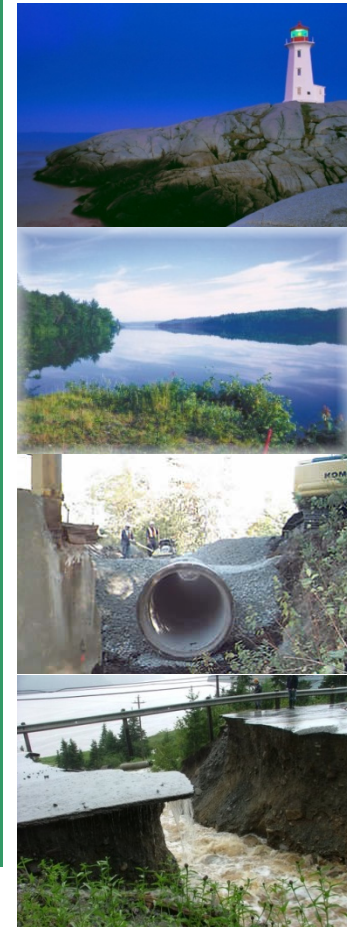
◆ The Top Down
(Example from East Coast of Canada)

2008: Placentia area, Newfoundland
Replacing Transportation Infrastructure
after the 2007 Tropical Storm Chantal

(see photo at bottom right of slide)

Development of public sector supported
science and project examples (Intensity
Duration Frequency Precipitation Curves)

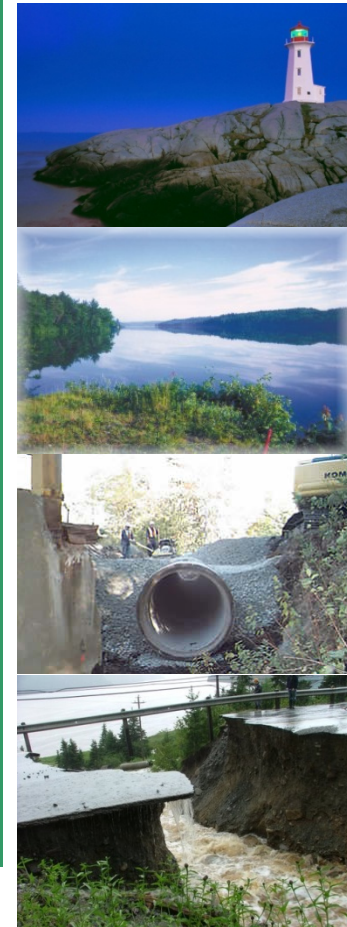
**During the 2010 Hurricane Igor, the
recently replaced Placentia
infrastructure performed well.**



Practical Measures From the Perspective of ◆ The Bottom Up

On a site specific infrastructure level, prioritizing the evaluations of, and responses to the many and varied infrastructure - performance – climate relationships of interest.

- limited evaluation resources
- Likelihood, magnitude, significance on achieving performance goals

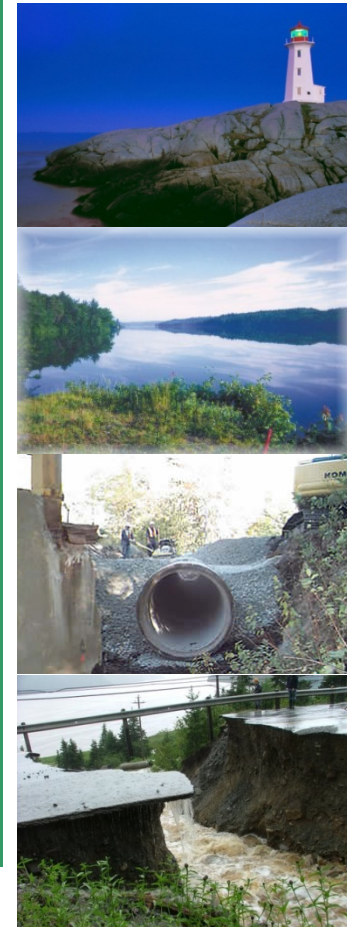


Practical Measures from the perspective of

◆ The Bottom Up

Calculating potential vulnerabilities - where **current and future loads**, compared with **current and future capacities**, for the desired performance criteria.

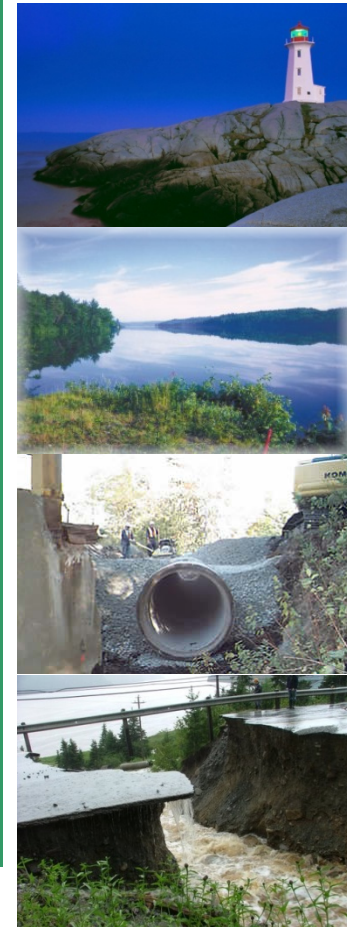
For a 1:100 year event in 2050, is the current coastal sea wall / breakwater elevation sufficient?



Practical Measures from the perspective of ◆ The Bottom Up

Calculating related adaptive capacities.

For a change in sea level plus a 1:100 year event in 2050, is the existing vertical elevation range for a floating dock sufficient? (Small Craft Harbour Group – Fisheries and Oceans Canada)

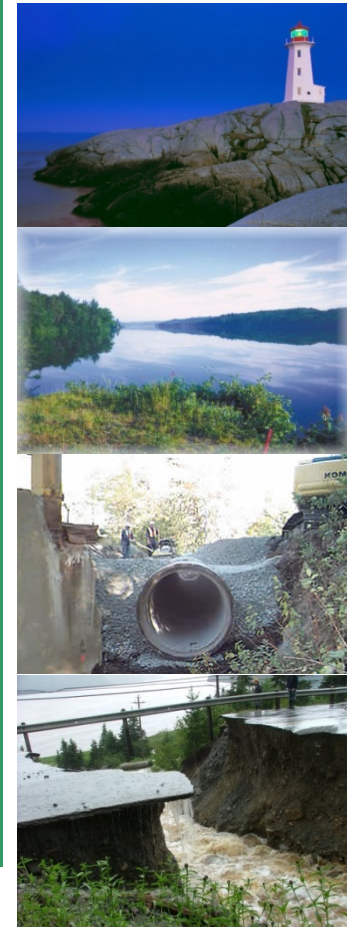


Practical Measures from the perspective of

◆ The Bottom Up

The performance of better inspected infrastructure can be more confidently and accurately anticipated, with respect to climate impacts.

- Storm water culvert infrastructure below a certain diameter, had not been inspected for over 10 years.
(NB Transportation, Canada)

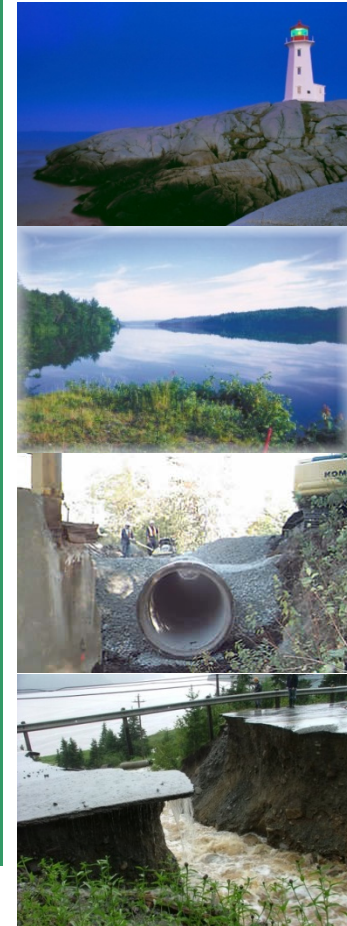


Practical Measures from the perspective of
◆ **The Owner, Shareholder, and Partnering**
Financial Institution:

A directed **management mandate to account for** reasonably anticipated climate conditions over the life cycle of the infrastructure investment, **reduces** the uncertainties or threats to otherwise achieving the various desired performance goals - technical, social, and financial.

(Staff responds. Project teams form.)

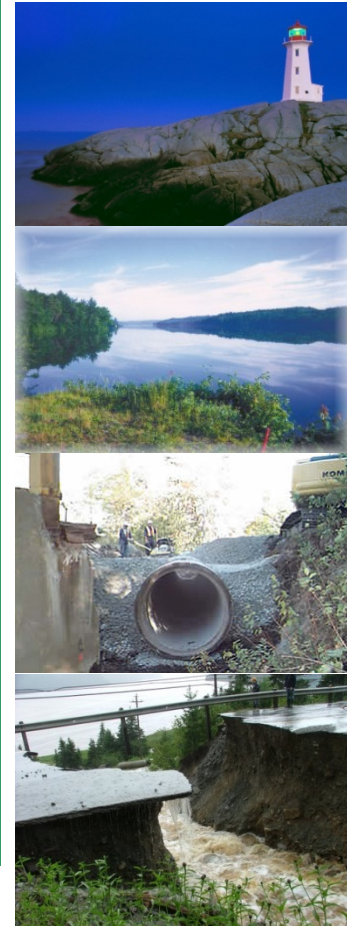
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Practical Measures from the perspective of ◆ The Owner, Shareholder, and Partnering Financial Institution (Example)

Washington DC financial institution, before long term investment decision, for a mining project with tailings pond, sought to include climate change considerations, with respect to the 100 year lifecycle technical design, and environmental assessment documents.

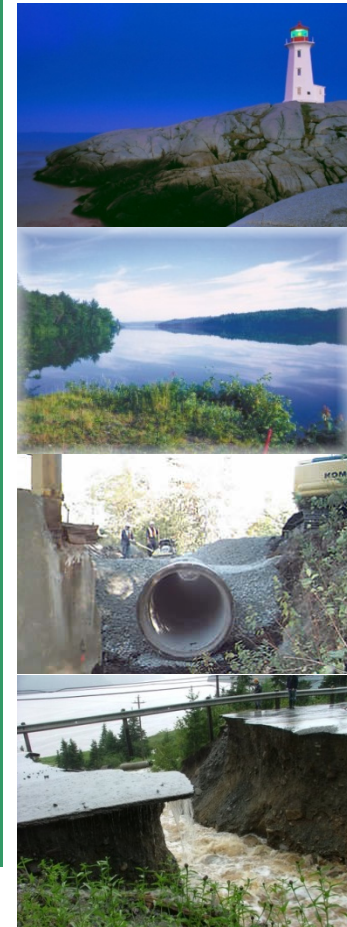
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Practical Measures from the perspective of
◆ **The Decision Making Communities**
(Applied Science, Accounting, Asset Mgmt.)

The development and broad accessibility of improved codes, standards, protocols, and similar documents - that account for, or embed consideration of changing climate impacts –
reduces the barriers and transaction costs for making such considerations, and **improves consistency** in quality applications.

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Practical Measures from the perspective of

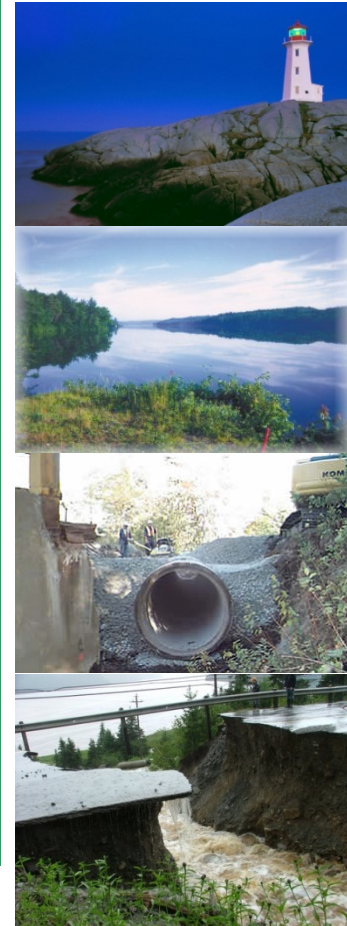
◆ The Decision Making Communities

(Applied Science, Accounting, Asset Mgmt.)

Examples used in Canada:

1. (PIEVC.ca) Public Infrastructure Engineering Vulnerability Committee
2. Government of Canada supported RAC's - Regional Adaptation Collaboratives
3. Considering incorporation of adaptation into Canadian municipal use of "Optimal management of physical assets" (Publicly Available Specification – PAS 55 UK)

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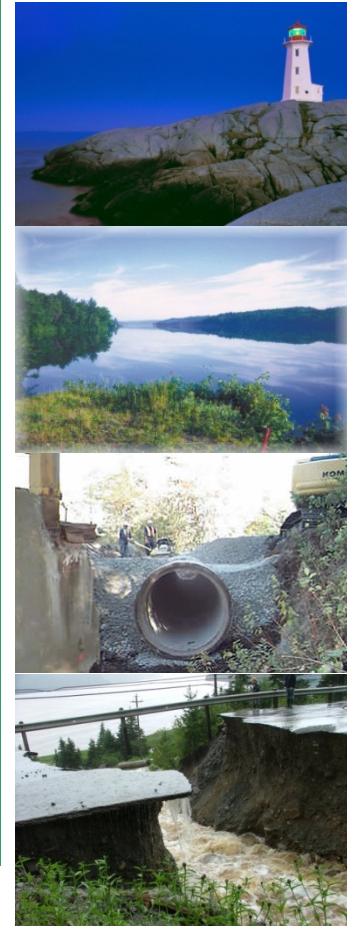


Practical Measures from the perspective of ◆ The Manager Operators to improve resource availability & corp. memory during lifecycle

Update, maintain and preserve
broadly accessible:

1. – design, development,
operations and management
information
2. - affordable, publicly available
climate based information.

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Thank You for this opportunity

For further discussions, please contact:

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