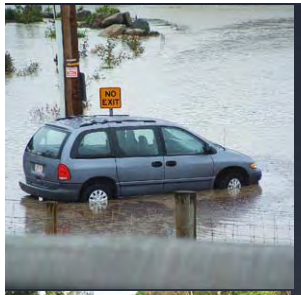
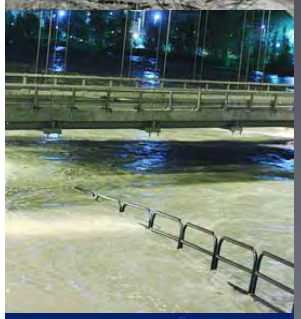


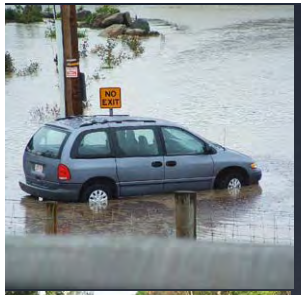



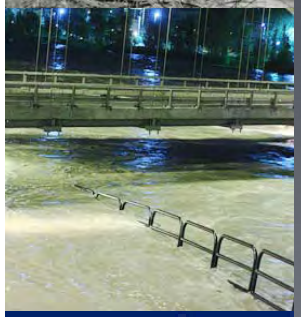
Capacity Building for Adaptation:
Fostering an Enabling Environment
Assessing Infrastructure Vulnerability to Climate Change

Durban Forum on Capacity-Building – 2nd Meeting
UNFCCC SB 38
Bonn, Germany
June 4, 2013

Darrel Danyluk, FEC, P.Eng. and David Lapp, FEC, P. Eng.
WFEO Committee on Engineering and the Environment
Engineers Canada

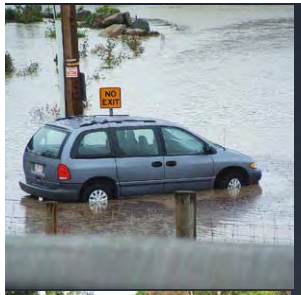
Canada PIEVC CVIIP engineerscanada ingénieurscanada



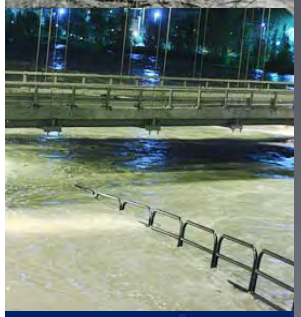


World Federation of Engineering Organizations (WFEO)

- International non-government organization for the world engineering profession
- National engineering organizations from over 90 countries as well as international organizations e.g. Unión Panamericana de Asociaciones de Ingeniería (UPADI)
- More than 15 million engineers working worldwide
- Nine standing committees including Engineering and the Environment, Energy, Disaster Risk Management, Capacity Building
- Active participant in UNFCCC and UN-CSD(Rio + 20) and other UN entities







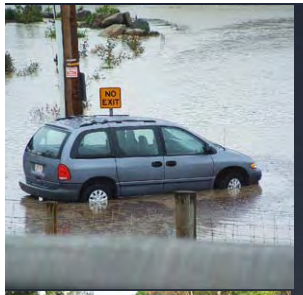
Fostering an Enabling Environment WFEO's Perspective on Capacity Building

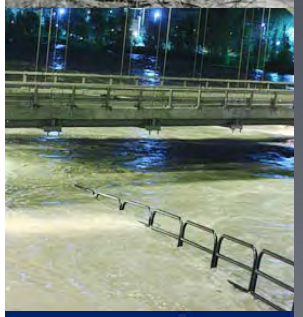
There is a strong correlation between:

- critical mass of educated and skilled engineering and science graduates and economic and social development.

That stronger efforts are required to develop and build:

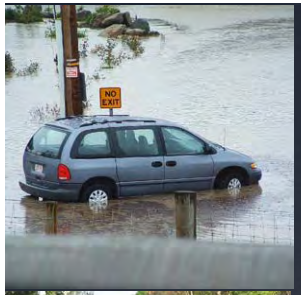
- engineering and scientific capacity and
- strengthening informed decision-making capacity in developing nations

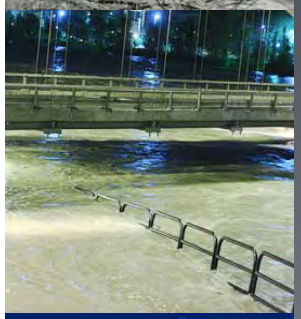


WFEO's Perspective (con't)

- "That the building of human, institutional, and infrastructure capacity to help societies develop secure, stable, and sustainable economies, governments, and other institutions can be achieved by
- Mentoring, training, educating,, and most importantly, instilling the motivation and inspiration of people to improve their lives." (on physical projects, with the infusion of financial and other resources)
- This will create the environment for the improving quality of life and the eradication of poverty



Six Principles for Capacity Building

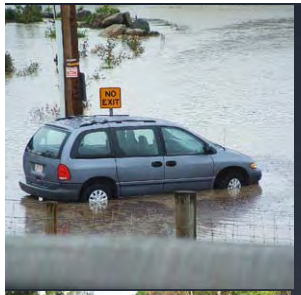
These revolve around:

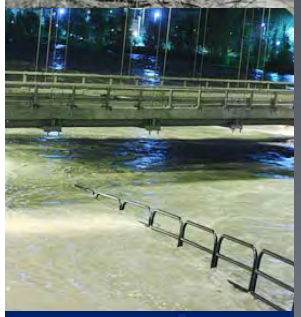
- Individual needs
- Institutional strengthening
- Technical Standards and enforcement
- Decision makers (understanding their role)
- Funding access and conformance
- Other Resources e.g WFEO Capacity Building Guidebook

WFEO-CEE Nairobi Work Program Action Pledge

Adaptation of Sustainable Civil Infrastructure to Climate Change Impacts

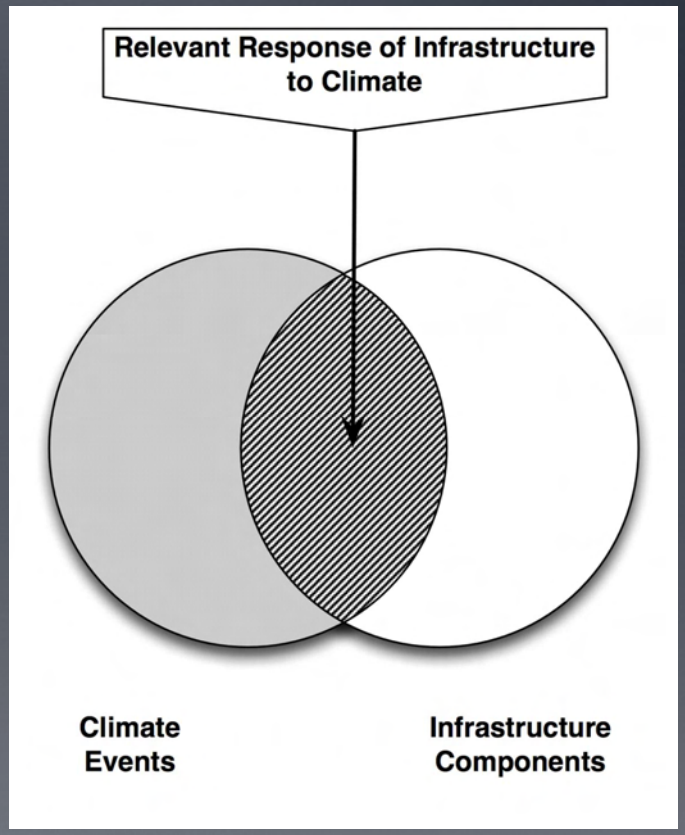
- To develop and implement engineering tools, policies and practices for risk assessment and adaptation of existing and new civil infrastructure to climate change
- To build knowledge, experience and appropriate techniques to enhance the technical capacity of engineers to adapt civil infrastructure to climate change, particularly within developing and least developed countries

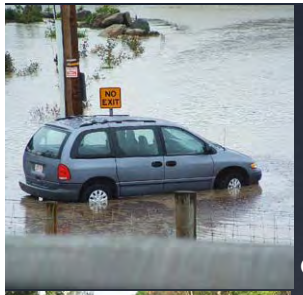


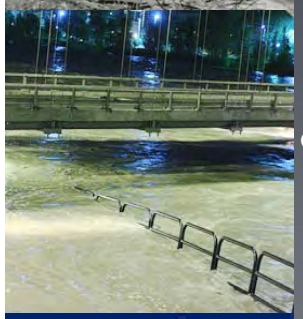



PIEVC Engineering Protocol

- A tool developed by Engineers Canada using risk science and vulnerability assessment
- Used by senior engineering practitioners working with climate scientists and other professionals
- Requires contributions from those with local knowledge and operations experience
- Focused on the principles of vulnerability and resiliency
- Applied to many infrastructure systems in Canada, 2 international examples (Costa Rica and Honduras)

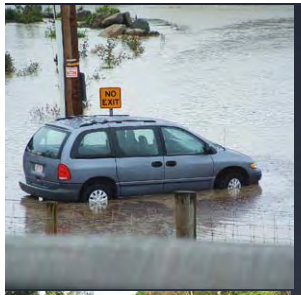


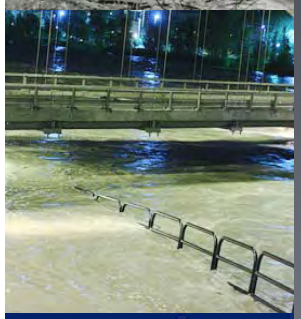




Capacity Building Assessment Levels

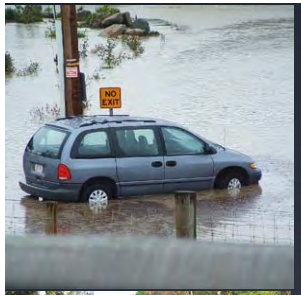
- Level 1 – Exposure to the issues, principles, results of projects
- Level 2 – Awareness and demonstrated learning
- Level 3 – Demonstrated application or engagement in a project
- Level 4 – Application beyond the initial project
- Level 5 – Independent application without external advice or intervention
- **Capacity Built at a Project Level**

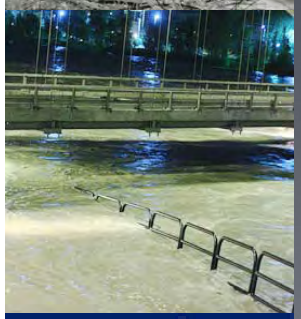


WFEO-CEE Capacity-Building Activities and Projects in Central and South America

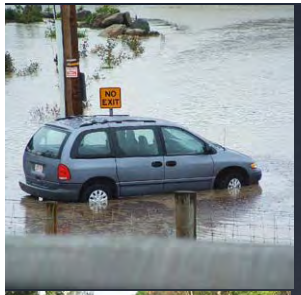
1. **PIEVC Introductory Training Workshops**
   - Brazil, Costa Rica, Guatemala, Honduras and Panama
   - Principles of risk assessment, climate information – sources and methods, previous assessments, small group exercises
2. **"Learn by Doing" Case Studies of Public Infrastructures**
   - Costa Rica – Limon Sewage Treatment Plant Assessment
   - Honduras – Highway Bridge Assessment

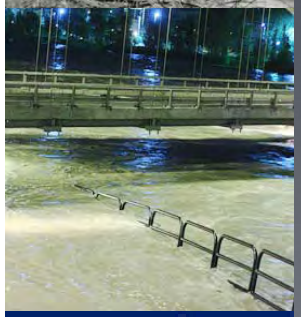




Costa Rica Limon Infrastructure Case Study April 2010 to March 2011

- The City of Limon sewage system was selected by Costa Rica as the representative and priority infrastructure
- Limon is located on the Caribbean Sea side of Costa Rica
  - Capital city and main hub of the Limon province
  - Total Metro population =105,000



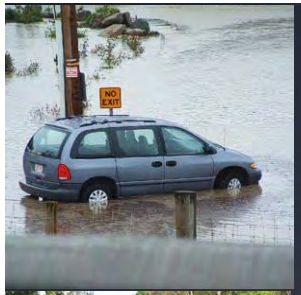


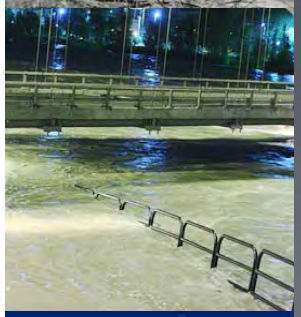
Costa Rica Participating Organizations

CFIA (Colegio de Ingenieros y de Arquitectos de Costa Rica

AyA (Instituto Costarricense de Acueductos y Alcantarillados

IMN (Instituto Meteorologico Nacional)



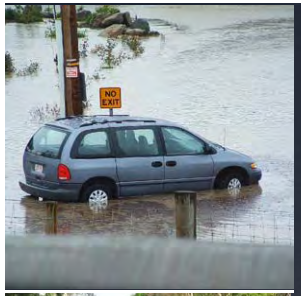
Capacity Building Support Strategy and Mechanisms

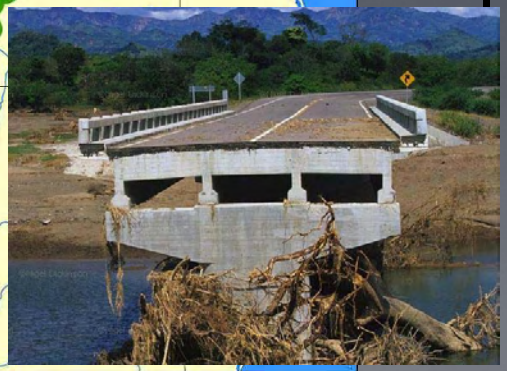
- Costa Rica team did the work and report
- Canada's role - advice, consultation and mentoring
- Protocol Documentation (Spanish and English) and Canadian case studies
- Canadian engineering expertise – bilingual
- Canadian climate expertise and availability of local climate data
- Periodic joint workshops – Canadian and Costa Rican Project Teams
- Review of interim materials and final reports

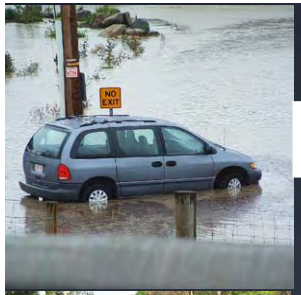
Costa Rica Project Outcomes

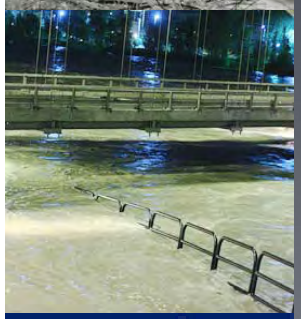
- AyA is implementing the recommendations and has determined to do similar assessments for water infrastructure in Costa Rica
- CFIA Project Manager – Protocol trainer and technical adviser to the Honduras project
- Opening of a climate change office to promote and deliver the Protocol in Costa Rica and Central American countries
- Discussions with other government agencies to use the Protocol and training of personnel

Assessment of Climate Risk and Construction/Procurement Practices Highway Bridge Infrastructure in Honduras
From Cancun to Now







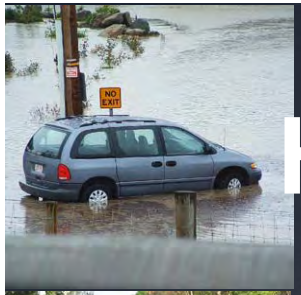
Honduras Project Objectives (1)

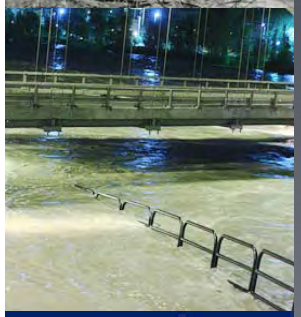
- Capacity building:
  - Analysis of vulnerabilities and risk assessment of infrastructure due to climate change applying the PIEVC protocol (``Learn by Doing``)
  - Development of recommendations for adaptation solutions
  - Transfer of knowledge through team work (Canada, Costa Rica and Honduras)
  - Development and delivery of university level educational materials with local university (UPI)

Canada

engineerscanada ingénieurscanada

CICH



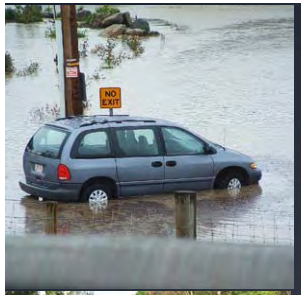
Honduras Project Objectives (2)

- Risk assessment and adaptation recommendations for bridges in Honduras:
  - Four risk assessments of bridges on major transportation routes in distinct climate zones
  - Availability of climate data from several sources
- Comparative analysis of procurement and construction processes
- Honduras team to do the work and reports

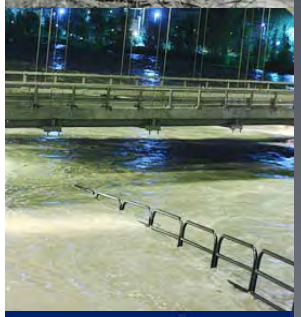
Canada

engineerscanada ingénieurscanada

CICH

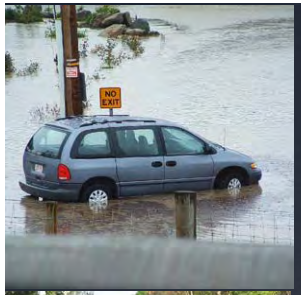


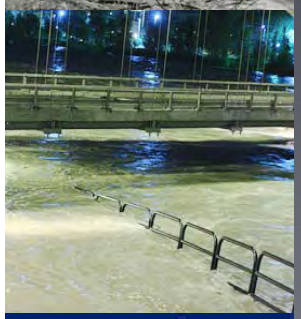




Noted Challenges

- No previous interactions between groups
- Language and translation
- Communication and culture
- Business practices
- Project management
- Recruitment, team building and teamwork
- Contracting and administration
- Government profile

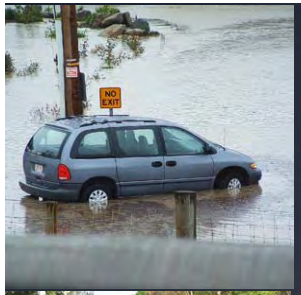


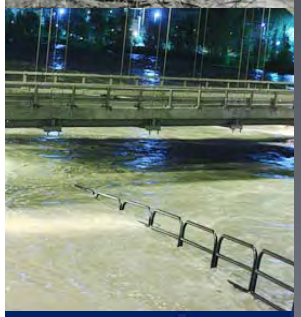



Honduras Lasting Legacy – University Educational Materials

Infrastructure Vulnerability Assessment

1. Lessons (English and Spanish)
   a. Asset Management
   b. Climate Change
   c. Risk management
   d. PIEVC Protocol
   e. Case Studies (Honduras, Canada, Costa Rica)
2. Website (Spanish) to be hosted by CICH





Questions?

For more information on WFE O Capacity –Building Guidebook

www.wfeo.net

Costa Rica and Honduras Infrastructure Vulnerability Assessments

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