PIEVC Protocol & Program: Background, Status, New Directions

IKI Brownbag Lunch – 25.08.2022

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CLIMATE RISK INSTITUTE

Institute for Catastrophic Loss Reduction

Building resilient communities

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

In association with:

ONTARIO FIRST NATIONS TECHNICAL SERVICES CORPORATION

PIEVC Protocol & Program have a rich pedigree

- **Development** began in **2005** – **Engineers Canada and Canadian Federal Government** formed the ***Public Infrastructure Engineering Vulnerability Committee*** (PIEVC)
- **Nation-wide network** / Committee: Cross section of infrastructure and climate experts, federal, provincial, municipal gov't, utilities, infrastructure owners, academics
- **Developed the *PIEVC Protocol* to assist engineers to** factor climate change impacts into plans for design, operation, maintenance and adaptation of public infrastructure
- **Piloted the Protocol over** seven (7) years

Early international linkages:

Engineers Canada → WFEO
- Costa Rica, Honduras

→ GIZ-Climate Services for Infrastructure Investment: Brazil, Costa Rica, Vietnam, Nile Basin Initiative (NBI) funded by German Gov. (IKI)

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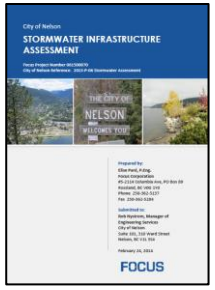
The Protocol enables a methodical approach to climate & infrastructure risk assessment…

PIEVC CVIIP

Led by professional teams: Engineers, Planners, Asset Managers, Climate Scientists, Risk Managers, Owners, Operators

Multi-stakeholder: Civil society, elected officials, sectoral representatives also involved

ISO 31000 and 14091 aligned



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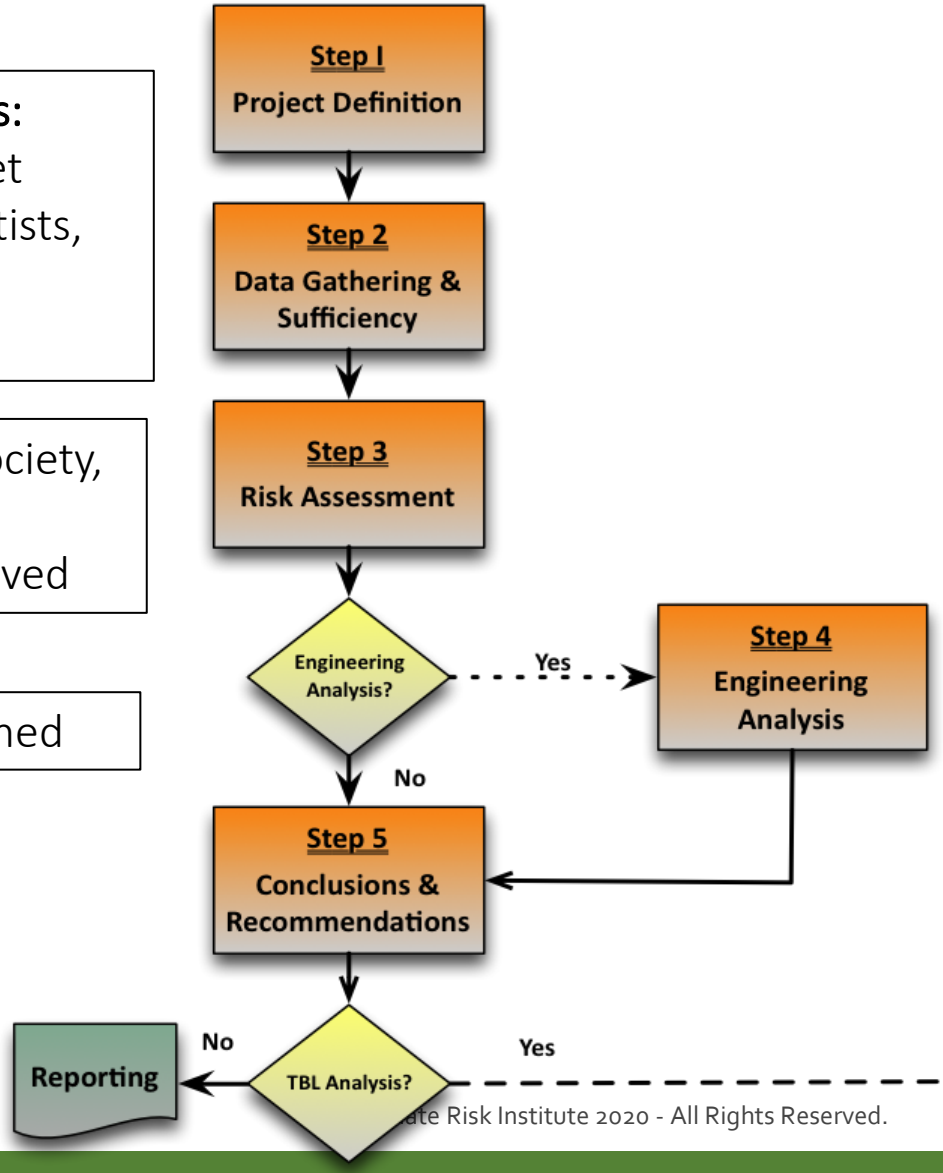

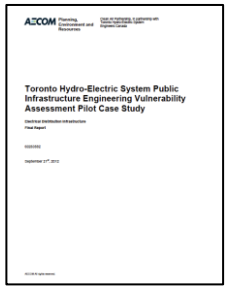

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There have been many Canadian applications of the Protocol, and numbers are increasing…

Infrastructure category	2008 to March 2020	March 2020 to present
Buildings (all types, inc. commercial)	23	11
Water, wastewater, stormwater	22	9
Transportation (highways, canals, bridges, rail, etc.)	12	5
Urban transit systems	1	5
Coastal infrastructures and ports (inc. search and rescue stations)	13	11
Airports (inc. associated infrastructure)	7	5
Utilities (inc. power distribution, wind, solar energy)	5	3
Indigenous/First Nations	8	1
Other (inc. screening, portfolio)	1	9
Total	**92**	**59**

The above represents a fraction of actual applications

~90 assessment reports available via www.pievc.ca

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International applications of the Protocol are also growing in number

Project	Year	Type of infrastructure assessed
City of Limon, Costa Rica	2010-2011	Stormwater and wastewater
Road Bridges, Honduras	2013-2014	Four road bridges
Guanacaste Province, Costa Rica	2017-2021	Regional water supply (16 water agencies)
La Guardia Bridge, Guanacaste Province, Costa Rica	2017-2019	Road bridge
Itajai Port, Brazil	2018-2020	Port facilities
Electrosul Hydro Authority, Brazil	2018-2020	Transmission lines
Nile Basin	2018-2020	Hydro-electric and water control dams
Cai Lon-Cai Be Sluice Gate, Vietnam	2018-2022	PIEVC assessment of the planned Cai Lon-Cai Be Sluice Gate (largest sluice gate in Vietnam)
Impacts and risks of climate change to Brazilian coastal public ports	2021	PIEVC Portfolio Screening of 21 coastal ports
Cai Lon-Cai Be Sluice Gate, Vietnam	2021	PIEVC update of Cai Lon-Cai Be (post construction), including ex-post cost-benefit analysis regarding two adaptation options based on PIEVC assessment results
Sluice gates in Kien Giang Province, Mekong Delta, Vietnam	2021	PIEVC Portfolio Screening of 84 small and medium sized sluice gates in Kien Giang Province, Mekong Delta, Vietnam
Assessment of 3 new ports, Brazil	ongoing	Coastal ports (3 ports)
Metalong Dam and related infrastructure, Kingdom of Lesotho	ongoing	PIEVC assessment of major dam, related infrastructure, and services to downstream communities, with a disaster risk management and policy lens

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The Protocol has been mainstreamed into policy, standards, regulations

****British Columbia (BC) Ministry of Transportation, BC Engineering Regulator**

- Professional practice guidelines – highways and climate change vulnerability

BC Government

- Integration of PIEVC into buildings standard (draft)

****Infrastructure Canada**

- Climate Lens

Canadian Councils of Ministers of the Environment

- Best practices for vulnerability assessment

****City of Calgary**

- Standardized/local method for assessing asset vulnerability

****CSA S900.1:18**

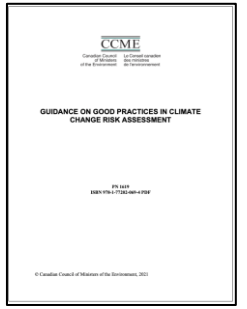
- Climate Change adaptation for Wastewater Treatment Plants

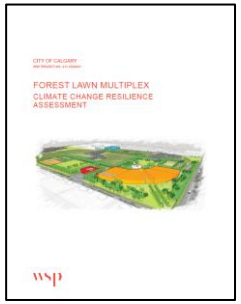
Province of Ontario, MECP

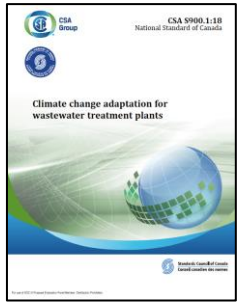
- Ontario's Low Impact Development Stormwater Management Guidance Manual (Draft)

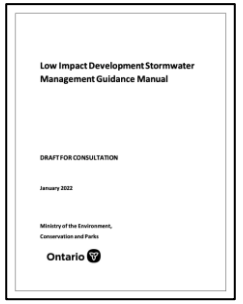
****Ontario First Nations Technical Services Corporation**

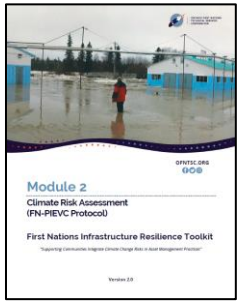
- Module 2 of First Nations Infrastructure Resilience Toolkit (FN-IRT)









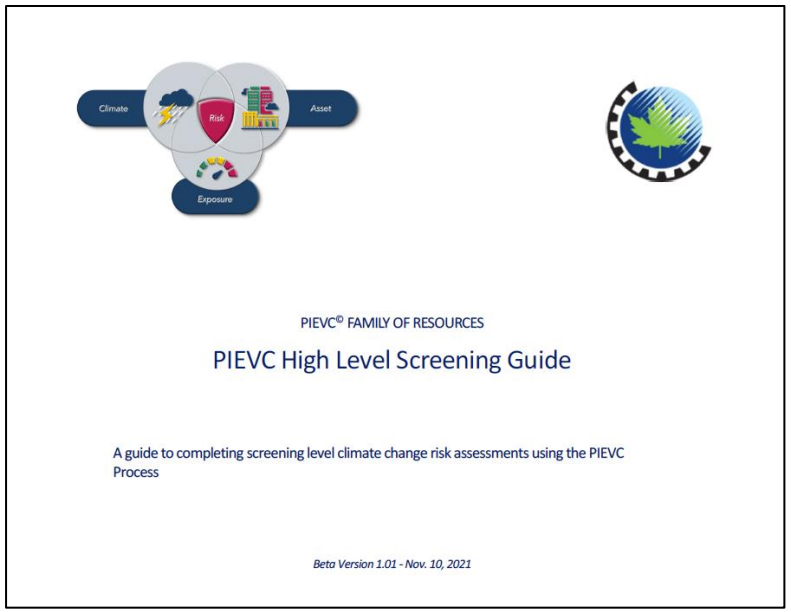


Development of the High-Level Screening Guide has expanded use of the PIEVC method

- PIEVC Process w/ simpler, shorter presentation
- Response to demand for more expedited assessments
- Response Infrastructure Canada's Climate Lens resiliency assessment requirements

>200 registered users

Available via www.pievc.ca



Category	Contributors
Municipality	FCM, CoE, Cowichan Valley RD
Federal	NRCan, TBS, ECCC, PSPC, SCC, NRC
Consulting	AE, Nodelcorp, Stantec, Wood, WSP, AECOM
Climate services	Ouranos, CCCS
Int'l	WFEO
Indigenous/FN	CIRNAC, OFNTSC
PIEVC Alliance	CRI, ICLR, GIZ

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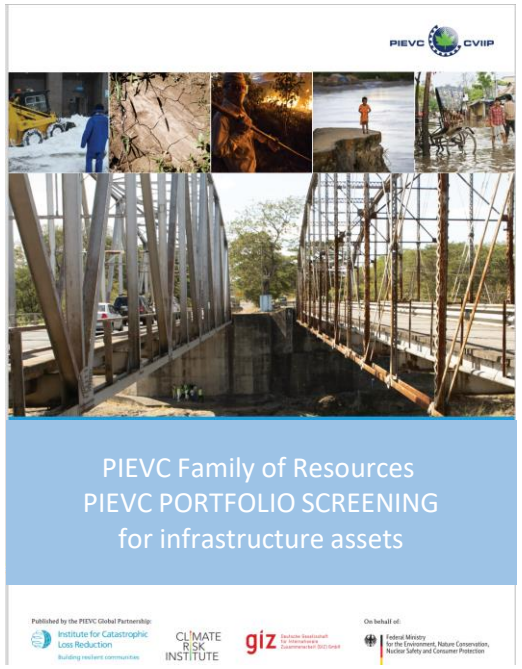
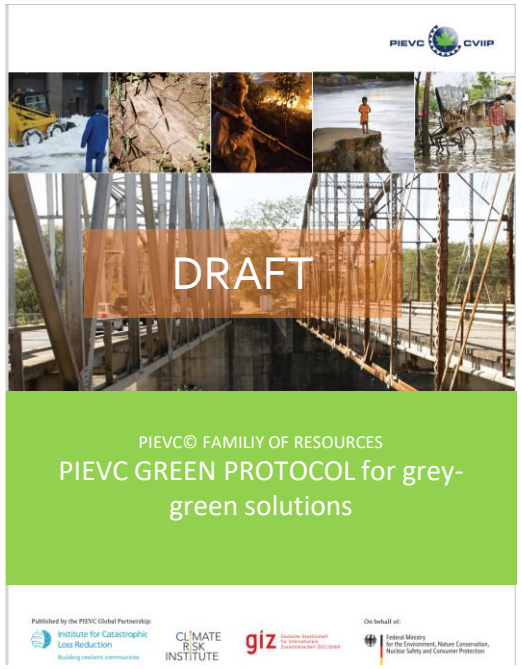
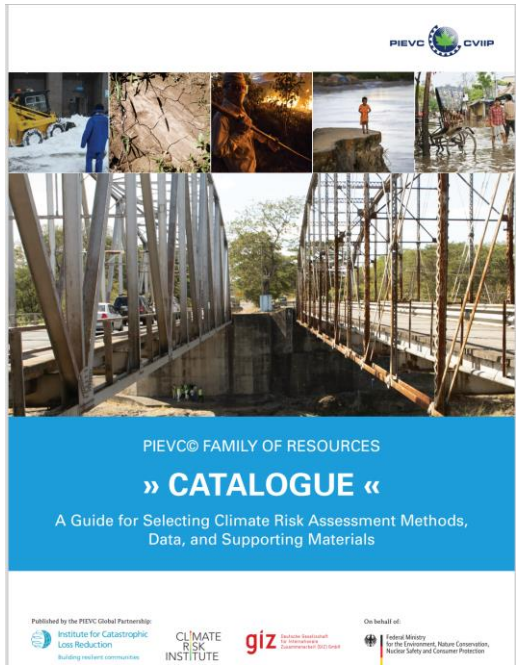
The PIEVC Program is expanding its range of PRODUCTS…



PIEVC Portfolio Screening Manual



PIEVC Green



PIEVC Family of Resources Catalogue

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The PIEVC Program is expanding its range of SERVICES…

TRAINING

- Climate Change and Infrastructure Risk Assessment: the PIEVC Protocol
- Asset Management & Climate Resiliency
- Climate Law for Infrastructure Practitioners
- Engineering Risk Management
- Applied Climate Science for Infrastructure Practitioners
- Climate Smart Policy and Procurement

+

- Individual course quizzes
- Final exam
- Demonstration of Experience

IRP Credential

Infrastructure Resilience Professional (IRP) Training and Credentialling Program

And…

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The Global PIEVC PRACTITIONERS' Network

- The PIEVC Practitioners' Network will bring practitioners together to showcase best Canadian and international practice
- Identify topics and provide support for peer-to-peer learning fora
- Identify training needs and highlight upcoming learning opportunities

PIEVC CVIIP

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YOU ARE INVITED!! 2022 - 2023 WEBINAR SERIES & GLOBAL FORUM

Date	Topic
August 25, 2022	PIEVC Program: Background, Status and New Directions
September 22, 2022	From Assessment to Implementation of Adaptation Actions
October 20, 2022	Institutionalizing Climate Change and Infrastructure Vulnerability and Risk Assessment (CCVRA): PIEVC in Adaptation Plans, Professional Practice, and other Mechanisms
November 17, 2022	Climate services for CCVRA: Lessons learned and new tools supporting steps 1 and 2 of the PIEVC Protocol
December 15, 2022	Large Portfolio Analyses using PIEVC Process
January 19, 2023	Integration of PIEVC into Asset Management Toolkits PIEVC High Level Screening Guide
February 16, 2023	PIEVC GREEN
March 16, 2023	PIEVC: WHERE TO FROM HERE
April 17 – 21, 2023	Join us for the GLOBAL FORUM in Vancouver, BC

Check our website for updates on speakers: www.climateriskinstitute.ca

The PIEVC Alliance stewards the PIEVC Program with guidance from an International Advisory Committee…

PIEVC Program Alliance (March 2020):

GIZ, ICLR, CRI

- **Key Objectives:**
  - Provide free access to the Protocol and full PIEVC family of resources for public infrastructure applications;
  - Collect and publish assessment reports;
  - Oversee continuous improvement of PIEVC resources;
  - Advance capacity building;
  - Maintain and grow GLOBAL reach

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THE END

Climate Risk Institute

- Not-for-profit, academically-affiliated
- Advance practice and deliver services related to climate change risk assessment, adaptation planning, and resiliency
- Run programs and projects to mobilize knowledge, improve capacity, and advance climate resiliency
- 20 prior years as Ontario Centre for Climate Impacts and Adaptation Resources

OCCIAR

Training for Engineers, Planners, Asset Managers

Vulnerability and Risk Assessment

Adaptation Planning

Policy Evaluation

Education and Outreach

Visit for more information about the IRP Credentialling process

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