WELCOME TO THE ULI COASTAL FORUM

Toronto | May 17, 2023

SPRING MEETING

Joanna Eyquem

Managing Director of Climate Resilient Infrastructure, Intact Centre on Climate Adaptation

Nathalie Beauvais

Resiliency Lead, Architecture & Planning, HDR, Inc.

Moderator: Jack Smith
Partner, Nelson Mullins Riley & Scarborough LLP

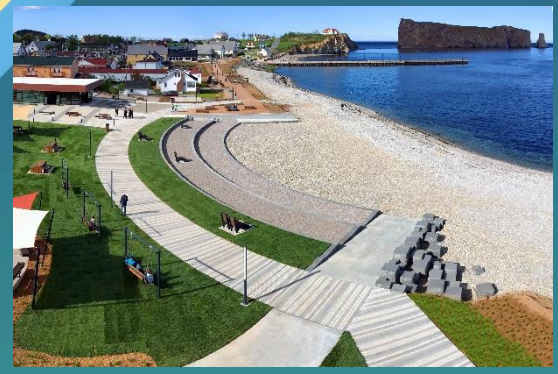
Nature-based Solutions and Other Green Development in Underserved Coastal Areas

ULI SPRING MEETING

The Role and Value of Nature-based Solutions

Joanna Eyquem PGeo. ENV SP. CWEM. CEnv.
Managing Director, Climate Resilient Infrastructure
Intact Centre on Climate Adaptation



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ULI SPRING MEETING

INTACT CENTRE ON CLIMATE ADAPTATION

UNIVERSITY OF WATERLOO

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Outline

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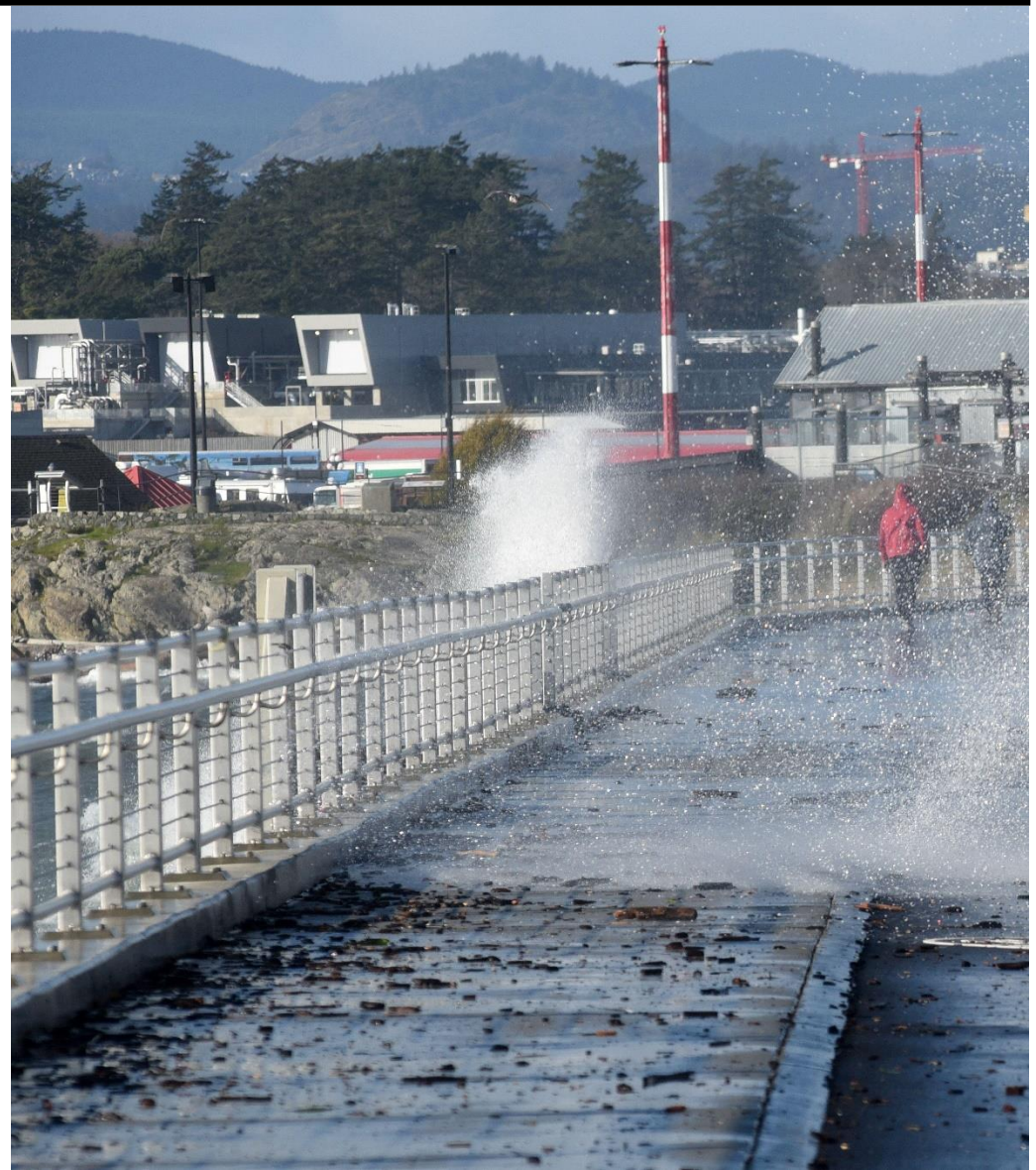
- What are nature-based solutions?
- Nature-based solutions for coastal resilience
- Valuing nature-based solutions
- Examples in Canada



Defining Nature-based Solutions

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IUCN

IUCN Global Standard for Nature-based Solutions

*"actions to **protect, sustainably manage, and restore** natural or modified ecosystems, that address **societal challenges** effectively and adaptively, simultaneously providing human well-being and biodiversity benefits."*

NbS for Different Adaptation Approaches

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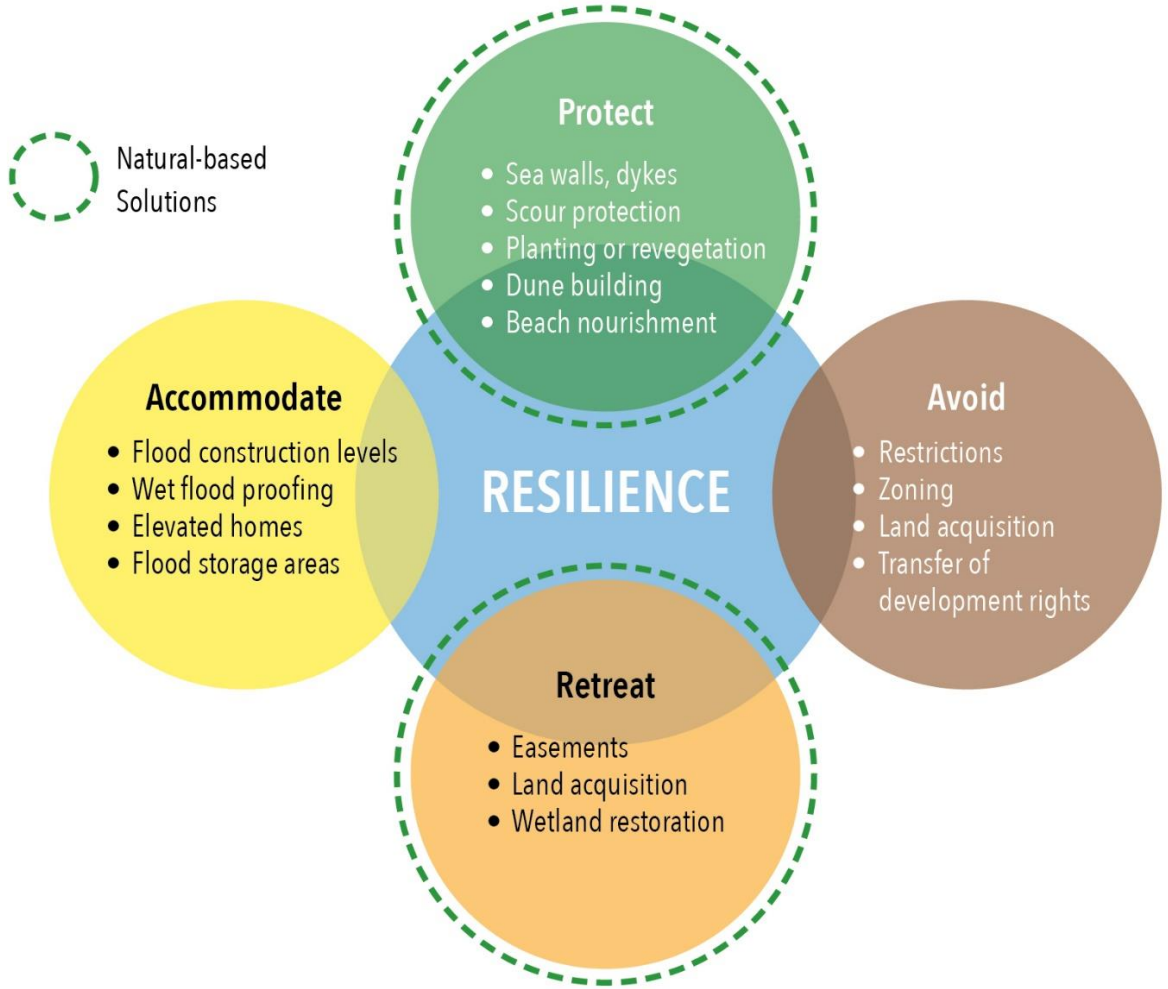

Nature can help “protect” and provided multiple other benefits when people and nature work together…..

Sea2City FALSE CREEK

https://www.intactcentreclimateadaptation.ca/rising-seas-and-shifting-sands-combining-natural-and-grey-infrastructure-to-protect-canadas-eastern-and-western-coastal-communities/

Guidance: Natural Infrastructure for Adaptation

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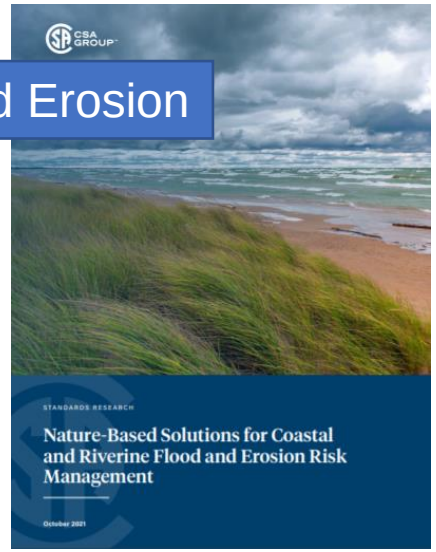
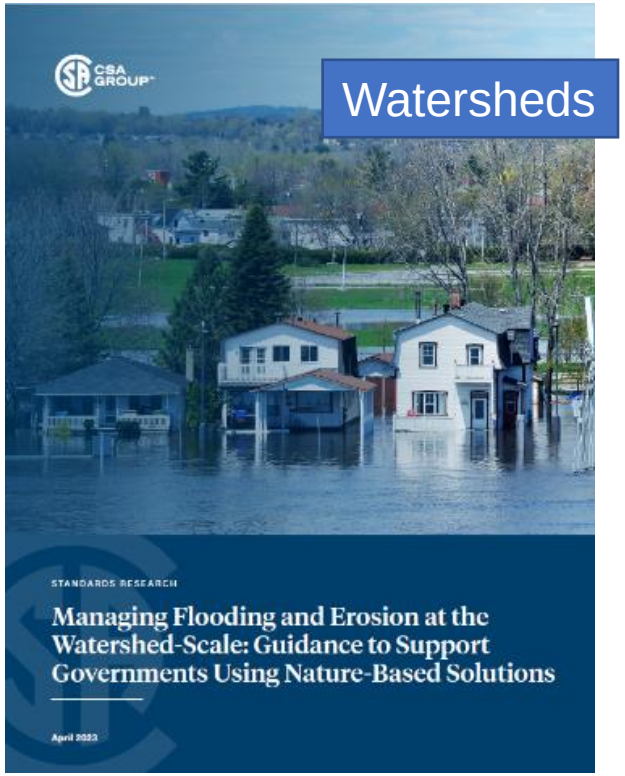
Flood and Erosion

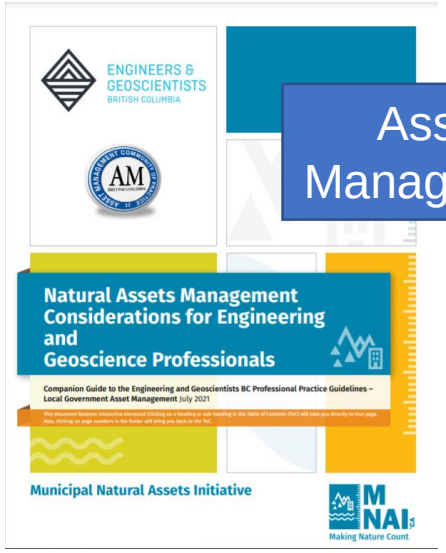


Coasts

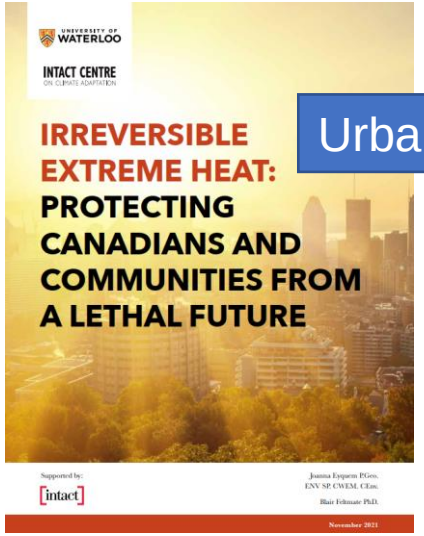
Watersheds



Asset Management



Urban Heat



Hot Off the Press!

Focus for standards development

Coastal Infrastructure Solutions

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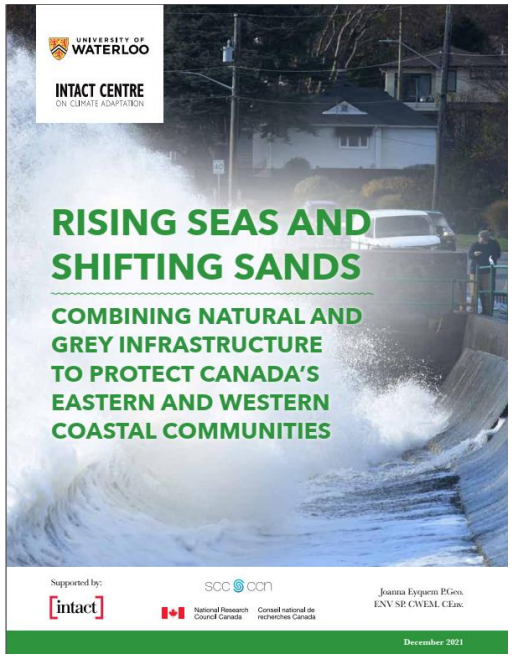

Grey Infrastructure	Underutilized Nature-Based Solutions	
	Predominantly sediment-based	**Predominantly vegetation-based**
		
• Seawalls • Detached / Nearshore Breakwaters • Attached Breakwaters / Headlands • Submerged Breakwaters / Reefs • Permeable Revetments* • Impermeable Revetments* / Retaining Walls • Groynes • Storm Surge Barriers / Tidal Sluices • Sea Dikes / Embankments / Levees	• Dynamic Revetment* / Cobble Berm • Submerged Sills / Perched Beach • Beach Nourishment • Island Restoration or Enhancement	• Dune Restoration or Stabilization • Cliff Stabilization / Revegetation • Salt Marsh and Coastal Wetland Restoration • Submerged Aquatic Vegetation • Bioengineering - Coir Rolls (made of coconut fibre) • Bioengineering - Natural Fibre Blankets

* Revetments are sloped coastal treatments used to protect the coastline.

NbS Provide Multiple Co-Benefits!

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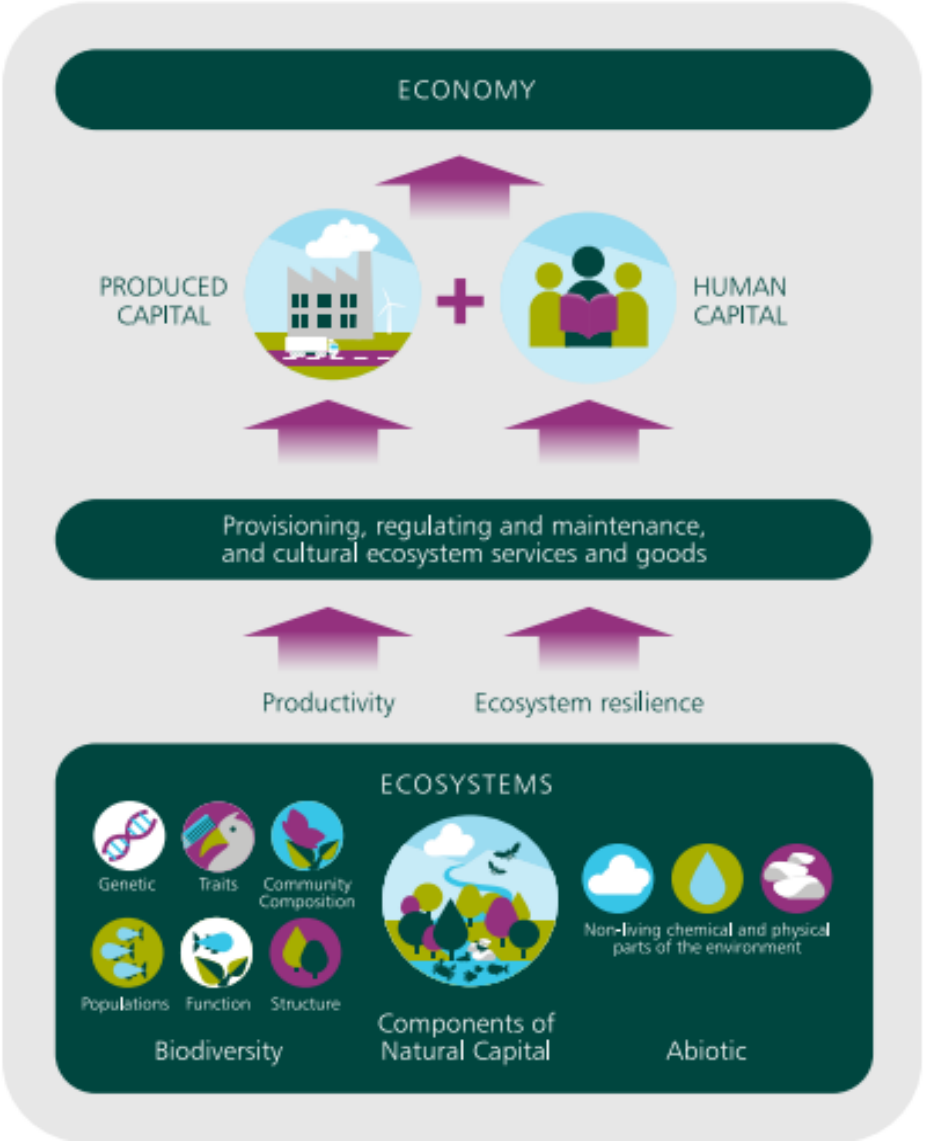
Nature-based Solutions provide

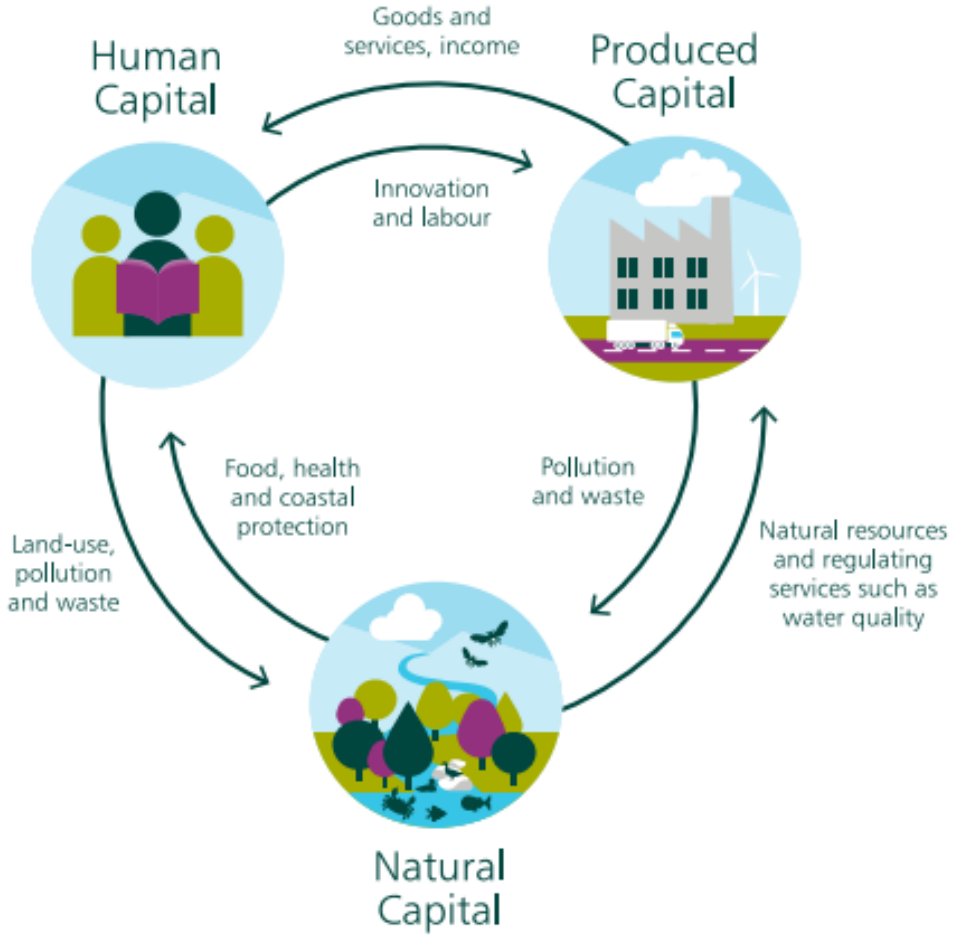
« ecosystem goods and services »

- **Provisioning**
  - Fish and shellfish
- **Regulation and support**
  - Flooding and erosion
  - Temperature control
  - Air and water quality
  - Carbon storage and sequestration
  - Biodiversity and habitats
- **Cultural**
  - Recreation opportunities
  - Aesthetic value

These services are not all offered by « grey » infrastructure

What is the Economy?





Source: HM Treasury (2021) The Economics of Biodiversity: The Dasgupta Review https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review

Range of « Economic Benefits » Considered in England

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Eligible Flood and Coastal Erosion Management benefits considered in OM1

- Residential properties Commercial properties
- Transport (road, rail, air, ports)
- Utilities (water, gas, electricity, waste)
- Health*
- Temporary accommodation
- Emergency services
- Flood risk asset repair
- Agriculture
- Recreation and leisure facilities
- **Environment****
- Built heritage
- Education
- Tourism
- Recovery, repair and clean-up impacts

* - including social and psychological impacts of flooding and public health - including damage to hospitals and health centres - and fatalities - including distress

** - all natural capital, including wildlife and heritage

Example: Percé, Quebec (Ouranos, 2016)

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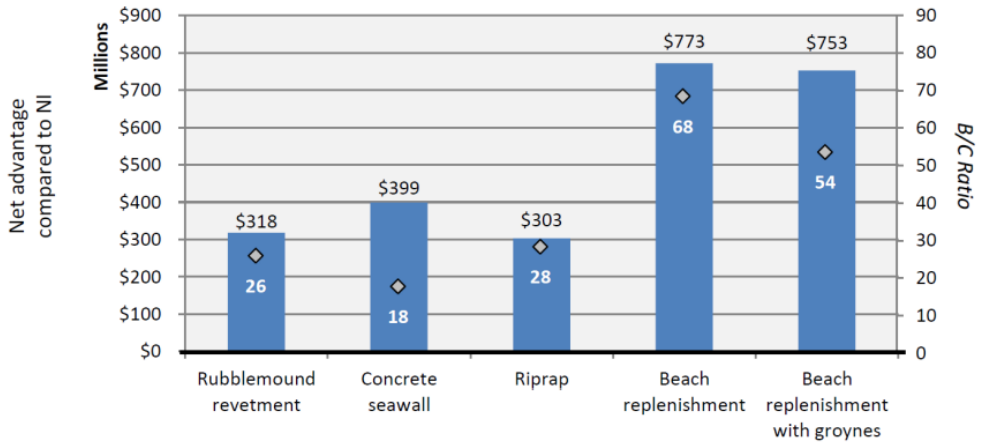
Five alternatives assessed for Anse du Sud (heart of Percé):



CBA compared to non-intervention - Beach nourishment most beneficial option over 50-year period considered.

Benefit-cost ratio: 68:1
Large benefits from tourism industry

Source: Circé, M., et al. 2016, Ouranos
https://www.ouranos.ca/wp-content/uploads/Synthesis-report-ACA-Quebec-final.pdf

Type of Impact	Negative Impacts	Positive Impacts
Related to erosion	• Loss of land • Complete or partial loss of residential or commercial buildings • Loss or damage to public infrastructure	
Related to flooding	• Damages to land • Damages to residential or commercial buildings • Damages to public infrastructure • Emergency evacuation • Debris clean-up • Traffic congestion or detour	
Economic	• Reduced land value • Loss of goods and commercial revenues • Loss of tourism revenues	• Gain in tourism revenues
Environmental	• Loss of natural habitats • Loss of fishing spawning grounds	• Improvement in fish spawning grounds
Social	• Loss of sea view • Loss of sea access • Decline in the coast's recreational use • Reduced quality of life (anxiety, insecurity, etc.) • Deterioration in the landscape • Deterioration in historical and cultural heritage	• Improvement in the coast's recreational use • Improvement in quality of life (security) • Improvement in the landscape

River Don Mouth – A Large-Scale Canadian Example

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Aerial Photo March 29, Site April 14

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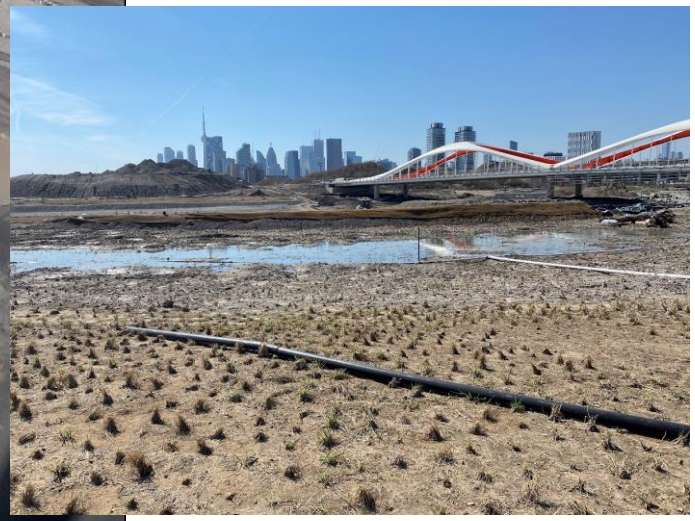

« What does this work do for our city? »

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The Port Lands Flood Protection Project will improve quality of life, bring nature back to an underused industrial site and better protect our neighbourhoods from extreme weather conditions. Some of the reasons for doing this work include:

More waterfront for everyone. This work creates a stronger connection between land and lake so that anyone who visits the Port Lands can enjoy a vast stretch of waterfront.

More nature and greenspace. The creation of the new river mouth will connect the Port Lands to a 195-hectare network of parks nestled within the ravine system that runs through Corktown Common past the Brick Works to Pottery Road.

Protection from the affects of climate change. Extreme weather events are on the rise and this work will protect 240 hectares of land within the southeastern downtown from flooding.

Improving the natural environment. We are cleaning contaminated soil and building new parks, wetlands and marshes. Our work on the river will also create a healthier and more natural outlet for the Don River and a new home for fish, birds and other animals.

More jobs and economic growth. This project will contribute over $4 billion to the Canadian economy.

A brighter future. When this project is complete, the Port Lands will finally become a place where our city can grow and evolve to better meet the changing needs of the people who live here.

https://portlandsto.ca/why-this-matters/

Mainstreaming recognition of the value of nature's services to people….

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https://www.theglobeandmail.com/business/article-is-it-time-to-make-natural-capital-an-asset-class/

Media Coverage

- **Globe and Mail (front cover of Report on Business)**, Oct 6 - Accounting body proposes rule changes to put nature on the balance sheet
- **Financial Post (via Globe Newswire),** Oct 5, Nature in the balance: but still not on the balance sheet
- **CBC What on Earth,** Oct 30, Putting a price on nature (25min podcast with partner case studies)
- **La Presse,** Oct 5, *La nature, un « actif financier » pour les villes ?*
- **Canadian Underwriter,** Oct 17 **-** How insurers benefit from a green balance sheet
- **Le Devoir**, Dec 3: La nature, un «actif financier» comme un autre?

Key Messages

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1. Nature-based solutions can provide climate resilience and a host of other benefits to people.

2. Colonial cultures do not routinely value nature or its services – but we are working on it!

3. Canada is playing catch-up, and real-estate and urban planners can help.

joanna.eyquem@uwaterloo.ca

https://www.intactcentreclimateadaptation.ca