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# Climate Resilience at Ports

Association of Canadian Port Authorities

Key Drivers - Climate Adaptation - Recovery Measures

# About our Panel

- What's driving climate resilience considerations for Port Authorities?
- How are ports responding to climate risks and what are the challenges?
- Are ports prepared for climate mitigation response and recovery?

## Agenda:

— Introductions

— Panel Presentations

Importance of resilience

Risk response

Recovery measures

— Questions

— Key Takeaways

# Multi-disciplinary Panel

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Dr Mutombo's experience in infrastructure development spans over 18 years from both the public and private sectors across the African continent. He is currently employed as a Principal Engineer by Transnet National Port Authority in South Africa. In this position, he is involved with the establishment of a Research and Development unit within Transnet National Port Authority.

#### Qualifications:

PhD in Maritime Affairs specialising in Port and environmental management - *World Maritime University, Sweden*  
MBA (*University of South Africa*)  
Bachelor degree Civil Engineering (*University of Johannesburg*)

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As Director of Emergency Solutions International (ESI), Mark leads ESI associates in conducting risk assessments, training, emergency plan reviews, exercise scenario development, digital simulation, exercise facilitation and evaluation as well as compiling final After Action Review documentation and recommendations.

#### Qualifications:

Leadership in Crisis Program, Harvard University  
Incident Command, Dalhousie University and Tactical Programs, Texas A&M University, U.S., National Fire Academy  
Bachelor degree in Business, University of New Brunswick

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As a Partner in the PwC Sustainability and Climate Change Practice with more than 25 years of experience, Janice has led numerous projects on climate change strategies, including governance and policy development, risks identification and mitigation, and low carbon transition strategies within a broad range of industrial and institutional settings.

#### Qualifications:

Masters of Resource and Environmental Studies, Dalhousie University  
Bachelors in Earth Science and Political Science, Laurentian University

# What is climate change?

## Climate Change

A change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. ***Climate change may be due to natural internal processes or external forces, or to persistent anthropogenic changes in the composition of the atmosphere or in land use.*** IPCC)

- Longer time horizon (decades or longer)
- Persistent unusual events that used to be rare are more frequent

## Climate variability

Climate variability refers to variations in the mean state and other statistics of the climate on all temporal and spatial scales beyond that of individual weather events.

- Shorter time horizon (month, season or year)
- Not persistent change

## Example of climate change impacts?

- Rising average and extreme temperatures and thawing permafrost
- More intense precipitation events
- Increasing wind speeds
- Fluctuating average river flows
- Changes to relative sea level
- Progressive loss of sea ice cover

# Key drivers for climate considerations at ports...



## **More studies on climate change impact**

Increasing studies and some real life climate events are driving the need for a proactive response for climate change



## **Diverse Stakeholder Interests**

The complex web of port stakeholders are driving the need for a collaborative multi-stakeholder approach to climate adaptation



## **Government Policies and Investments**

Changing government policy to promote climate resilience and ensure its consideration in all infrastructure investments

# Studies on Climate Change Impacting Canadian Ports



## Western Ports

- Rising sea levels in Fraser Lowland, southern Vancouver Island and the north coast increasing coastal erosion
- Storm surge flooding
- More precipitation in winter and less in the summer

## Arctic Ports

- Declining sea-ice concentrations – earlier ice break up and later freeze up
- Permafrost warming and thawing
- Coastal erosion
- Changing weather patterns impacting waves and wind intensity

## Eastern Ports

- Storm surge flooding
- Warming of air and water temperatures
- Increased precipitation
- Sea level rise with significant variability increasing coastal erosion

# Mixed Stakeholder Pressure for a Climate Response...



## Port Authorities

Important opportunities for ports to share practices and collaborate on climate adaptation standards



## Canadian Municipalities

Investing in innovative municipal infrastructure projects, including the Climate Innovation Project



## Port Tenants

Terminal operators may have mixed expectations on standards for their designs based on latest industry data.



## Communities

Vulnerable communities within the port harbor region are seeking greater involvement on climate risk and adaptation planning.



## Transportation Companies

Already rail freight, passenger rail, road and air transportation companies are developing climate resilience strategies and need better integration.



## Federal and Provincial Governments

Government of Canada's latest Pan-Canadian Framework on Clean Growth and Climate Change is driving climate resilience considerations

# Government Policies and Investments

Government of Canada Paris Agreement Pledge of 30% GHG reduction by 2030 based on 2005, which is part of the Pan-Canadian Framework on Clean Growth and Climate Change

The \$180 billion Investing in Canada Infrastructure plan includes a focus on infrastructure that enhances resilience to climate impacts



## **Disaster Mitigation and Adaption Fund**

- Supports large scale infrastructure projects with a minimum cost of \$20 million



## **National Trade Corridors Fund**

- Supports investments that enable the transportation system withstand the effects of climate change and capable of supporting new technologies and innovation



## **Innovation in addressing Climate Change**

- Supports innovative approaches to enhance resilience to the impacts of changing climate

# Questions



## Key Takeaways

- Have you considered climate change considerations into port organizational planning, policies and designs?
- Have you conducted a climate risk and vulnerability assessment to inform investments and operational decisions and have you engaged with a broad range of stakeholders?
- Do you know how well adapted your port is to climate change, including structural, operational and maintenance practices, technology and data analytics capabilities, and recovery response plan?
- Have you explored tapping into the funding options with your stakeholders to access possible climate adaptation and resilience financing?