



Future Implications of Extreme Weather Events

Municipal Adaptation Barriers and Gaps




**4 of the 10 most expensive extreme weather events in Canada in last 10 years in Alberta
[2013, 2016, 2020, 2021]**


Estimated Damage costs \$6 Billion



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- **Extreme seasonal weather events will increasingly impact many aspects of municipal operations and municipal finance at different spatial scales**



Extreme temperatures, wildfire, flooding, drought and super cell wind and hail events affects municipal land use, water supply, infrastructure performance, maintenance and insurance costs, and asset management

The background of the slide is a close-up, blurred photograph of green grass, likely a lawn or field, with the blades of grass creating a sense of motion and depth. The colors range from light green to a darker, more saturated green.

Important to enable municipal decision-makers to address and incorporate this risk in land use, infrastructure, and financial planning and management

- extreme seasonal variability in temperature
- Increasing intensity and frequency of seasonal precipitation
super cell hailstorms and wind events
- drought conditions and wildfires



Vulnerability determines Risk

Types of Vulnerability:

- Physical
- Structural
- Economic
- Social
- Institutional

Institutional Vulnerability [Risk] refers to the capacity of municipalities to plan for and manage the operational and financial implications and impacts.





The types of risk municipalities are likely to face are connected to their key responsibilities:

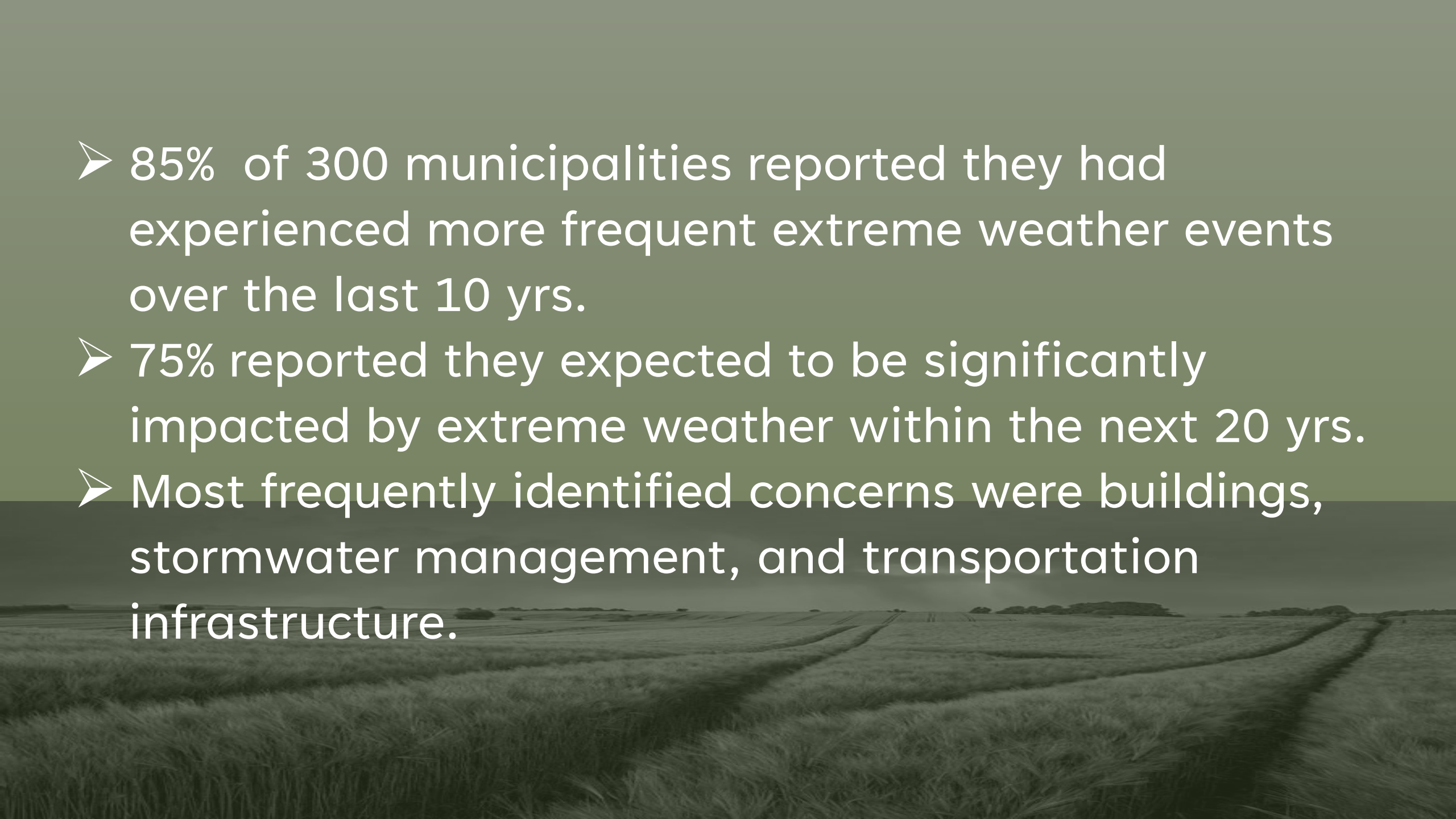
- **Land use planning**
- **Infrastructure**
- **Public health and safety**

An aerial photograph of a rural landscape. A winding road or path cuts through a vast field of tall, green grass. In the distance, there are some trees and a small structure. The sky is a pale, overcast blue. The overall scene is peaceful and rural.

The task is how best to integrate the need to reduce vulnerability to risk with other local development objectives, operations, and financial administration.



2 recent surveys involved a cross section of rural and urban Alberta municipalities and identified some consistent issues

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- 85% of 300 municipalities reported they had experienced more frequent extreme weather events over the last 10 yrs.
 - 75% reported they expected to be significantly impacted by extreme weather within the next 20 yrs.
 - Most frequently identified concerns were buildings, stormwater management, and transportation infrastructure.

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- An aerial photograph of a rural landscape. A winding road or path cuts through a vast field of tall, green grass. In the distance, there are some trees and a small structure. The sky is a pale, overcast blue. The overall scene is peaceful and rural.
- **70% of larger communities reported they were preparing for increasing frequency of extreme weather...**
 - **But, less than 30% of smaller municipalities reported they were preparing**

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- **15% stated they had completed a climate risk and vulnerability assessment.**
 - **9% stated they had completed a climate adaptation plan/strategy**

60% of respondents identified the following barriers:

- **Limited staff time**
- **Limited staff skills**
- **Other issues are more pressing**
- **Resistance from specific community interests**
- **Lack of support from leadership/senior staff**

50% of respondents stated they lacked information specific to their location:

- **Extreme weather trend projections**
- **Assessment of economic impacts**
- **Assessment of infrastructure impacts**

75% of respondents identified funding as a barrier

**CIP surveyed 1,457 Planners nationally
[268 Alberta] on perceptions of how
extreme weather frequency would affect
municipal planning**

- **85% ranked competing priorities (e.g. financial viability) as a major barrier**
- **72% ranked lack of political support**
- **70% identified lack of relevant information**



- **Three highest rated concerns for the next 10 years:**
 - **extreme rainfall/snowfall**
 - **flooding**
 - **extreme temperature**



Only 17% of CIP Planners indicated they had access to the necessary tools and information needed to incorporate extreme weather risk into their work



2 Current Research Deliverables

- **Identification of the specific ways climate change risks affect municipal responsibilities and operations.**
- **Identification of options to assist smaller municipalities conduct more effective assessment and management of extreme weather risks.**

Thank You!



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CALGARY

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Survey References:

1. **Preparing for Climate Change in the Prairie Provinces: Regional Survey Outcomes. 2022. Prairies Regional Adaptation Collaborative (PRAC)**
2. **Canadian Institute of Planners, Perspectives of Climate Change: A Report on the Benchmarking Survey of Canadian Professional Planners. 2019**