

### Climate Risk Assessment and Adaptation Considerations

Dr. Mary-ellen Tyler’s paper is the fourth part of the [Future of Municipal Government \(FOMG\)](#) project. The study summarizes high level climate change research in Alberta. This describes the risks facing municipalities, why municipalities should prepare for extreme weather—and how they can adapt to changing weather patterns. The goal is to inform planning efforts and maximize municipal resiliency.

### Key Findings

Three major risks to municipalities were identified: infrastructure, water and governance capacity.

- 1. Infrastructure:** Risk assessment for infrastructure is complicated, involving variable factors such as age, lifecycle stage, condition, and infrastructure deficit. Forecasted performance decreases and the risk of failure increases when established operating conditions are disrupted by unexpected environmental changes.
- 2. Water:** Greater variability in weather means increased risk to future water supplies—already under pressure in the Bow, Milk, Oldman, and Battle River basins. Droughts and floods are expected to increase. Greater extremes place additional stress and risk on water infrastructure. Water risks are related to current and future infrastructure design standards, lifecycle maintenance, upgrading and renewal costs.
- 3. Governance Capacity:** Municipalities generally have the capacity to deliver legislated responsibilities, but face added stress in responding to increased extreme weather. With more extreme weather events, risk of effective response decreases without investment in more capacity. Local governments must identify local types and levels of risk be it financial, infrastructure and climate risks. These must be integrated into planning and management responsibilities. Smaller communities in particular need access to expertise and funding.

### Member Engagement

- The webinar on April 20, 2023 with the paper’s author, Dr. Tyler, was an opportunity to discuss the paper’s finding with members.
- 121 representatives of municipalities of all types and sizes attended the webinar.
- Participants were particularly interested in green infrastructure solutions.
- Climate risk management through emergency services also resonated with attendees. For example, managing a severe heat wave as an emergency.

**Table 4. Extreme Weather Impacts on Urban and Rural Municipalities**

Built Environment	Natural Environment	Social Environment
Damage to Infrastructure	Shifts and changes in plant and animal habitats and species	Disruption to economic activities
Damage to Buildings and Property	Degradation of Ecosystem Services	Increase in climate related health problems
Disruption to energy Transmission and Telecommunications	Decline in quantity and quality of freshwater resources	Decline in quantity and quality of freshwater resources
Increased Maintenance Costs	Loss of Soil Nutrients and increase in pollutants	Loss of cultural and traditional practices

Source: Adapted from Municipal Climate Services Collaborative (2020).



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# Future of Municipal Government

## What We Learned Report

### Eight Strategies for Adaptation

**1. Access to Climate Adaptation Research and Decision Support (CARDS)**—Proactive outreach from universities to municipalities to assist with risk assessment, land use planning and infrastructure design standards.

**2. Emergency management**—Greater integration between emergency management planning, long term climate risk assessment and adaptation, municipal land use, and infrastructure can reinforce these critical areas.

**3. Intermunicipal Collaborative Frameworks**—ICFs have the potential to facilitate collaboration on climate risk assessments, adaptation, and emergency management.

**4. Natural Asset Management**—It is important to evolve traditional asset management to recognize the value of the landscape to absorb the impacts of extreme weather. Land use planning can take advantage of natural features to promote resilient neighbourhoods adapted to climate risk.

**5. The Municipal Climate Change Action Centre (ABmunis, RMA, Gov't of Alberta)**—The Action Centre provides funding and expertise for adaptation projects. The Action Centre is in a strong position to facilitate government climate adaptation programs and intergovernmental funding support for infrastructure and nature-based solutions.

**6. Infrastructure**—Extreme weather leads to unpredictable infrastructure performance. New, innovative, design standards are necessary to strengthen infrastructure to deal with extreme events.

**7. Insurance**—ABmunis and RMA offer insurance and risk services, but additional risk-sharing partnerships for new national and regional infrastructure standards would be beneficial.

**8. Broadband Capacity**—Digital infrastructure is critical to enable municipalities to access specialized digital information and decision support for climate risk assessment, planning and management.

### Future Direction

1. The theme of collaboration, as an essential element of municipal governance, emerged through the Future of Municipal Government Project.
2. ABmunis gathered municipalities and stakeholders at the 2023 Summer Municipal Leaders Caucus series in Diamond Valley, Delburne, Wembley, St. Paul and Spruce Grove. Attendees discussed recommendations on future municipal collaboration informed by the Future of Municipal Government project. This feedback will be incorporated into a final report to be shared with the Government of Alberta.
3. The ABmunis Sustainability & Environment Committee is tasked with considering whether and how to advance the strategies for adaptation identified in Dr. Tyler's report.
4. There are opportunities to build on the work of the Municipal Climate Change Action Centre to collaborate with the Government of Alberta, the Rural Municipalities of Alberta (RMA), academic institutions, and related organizations to coordinate climate adaptation support for municipalities.
5. Existing ABmunis initiatives such as our asset management courses, broadband advocacy, water policy development, and emergency management supports, are aligned with the recommended adaptation strategies. These are opportunities to expand and strengthen them as useful supports for municipalities.
6. Further updates of recommendations on collaboration and climate risk assessment and adaptation will be provided through the FOMG webpage and the Weekly newsletter.



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