

Image Source: Roger Rempel

Improving Climate Resilience Considerations Manitoba's Approach to Development Approvals

ClimateWest 2026 Forum
May 12, 2026
Winnipeg

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Today's Discussion

- 1. Climate Resilience in the EA approval process matters.**
- 2. Manitoba's *Environment Act* Licensing: Where Climate Fits**
- 3. Aligning with Provincial Climate and Sustainability Priorities**
- 4. Current EA Gaps and Need for New Guidance**
- 5. New Guidance for Climate Resilience, GHG Estimation in Development**
- 6. Benefits for Proponents and Manitobans**



Image Source: Roger Rempel



**Climate Resilience Matters in
Development Approvals**

Image Source: Reuters

The Need for Climate Resilience

- In Manitoba, we now experience:
 - more frequent and more severe extreme weather
 - annual provincial disaster costs now in hundreds of millions of dollars, **climate change accelerates this trend.**
 - **damages to assets** in infrastructure, housing, agriculture, with **costly direct/indirect health and community/business impacts.**

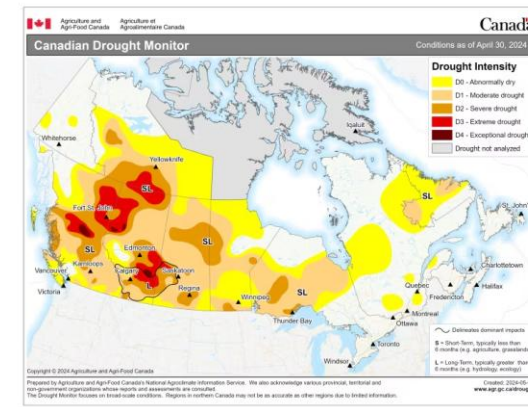
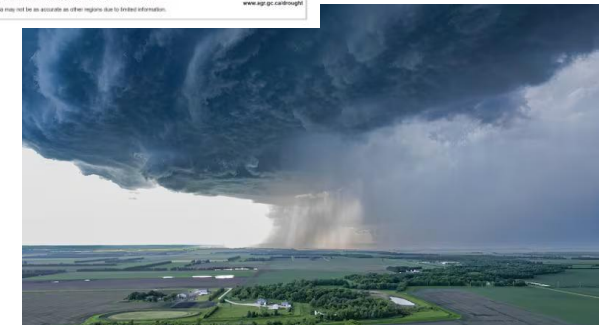


Image Sources:
Environment Canada, CBC



Climate change is operating environment change.

The Payoffs with Climate Resilience

- Embedding climate resilience in licensing reduces long-term costs and protects Manitobans from climate impacts.
- Integrating climate resilience at design is the least expensive time to make that investment.
- Overall, US\$1 invested in adaptation is expected to yield over \$10.50 in benefits over a 10-year period – *World Resources Institute*
- ***Triple Benefit – 3 resilience dividends: Health, Community, Environment***

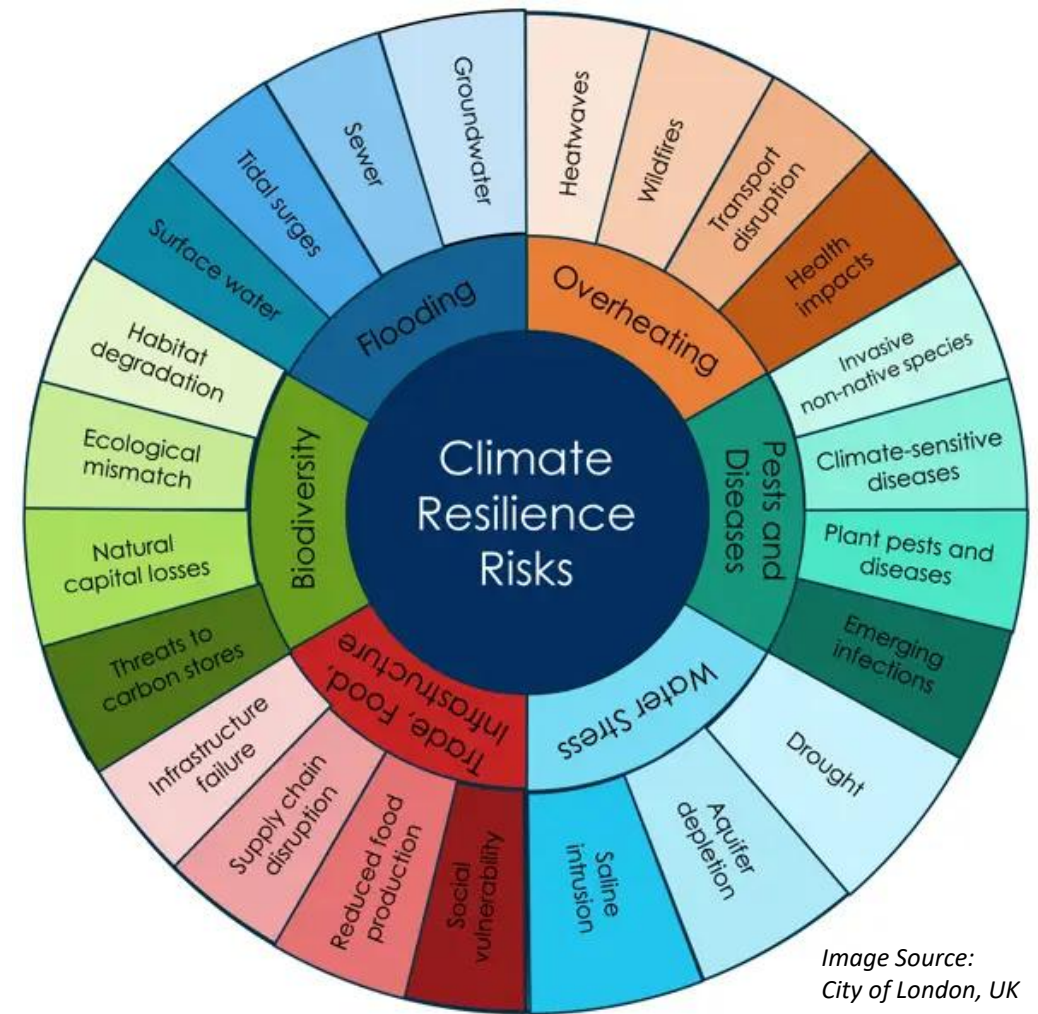


Image Source:
City of London, UK

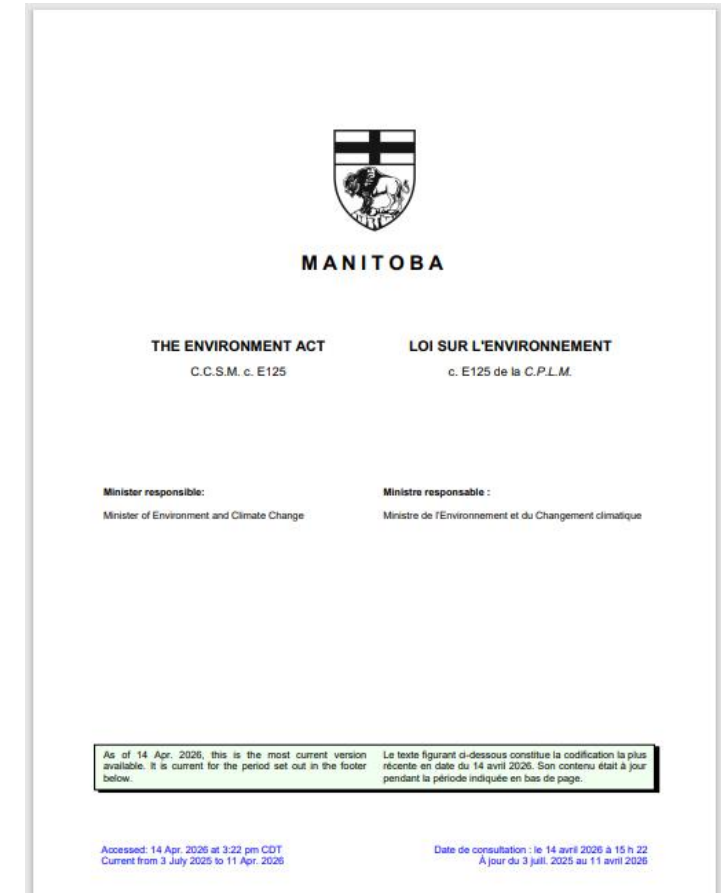


**Where Climate Fits in
Environment Act Licensing**

Image Source: Roger Rempel

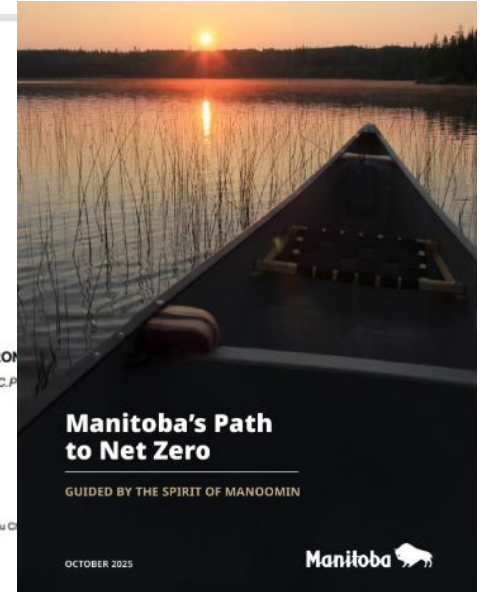
Manitoba Environment Act Licensing Process: Where Climate Fits

- Manitoba's ***Environment Act*** expressly includes climate change considerations:
 - Existing legislation provides **authority** for the Environmental Approvals Branch to include **climate resiliency**:
 - Climate driven hazards are **foreseeable environmental effects and adverse effects** under ***the Act***.
 - ***The Act's*** **purpose clause** explicitly focuses on protection of the environment for “**this and future generations**,” thus requiring a **forward-looking risk perspective**.
 - The **Director** also has **powers** to require **additional information** needed to assess environmental effects.



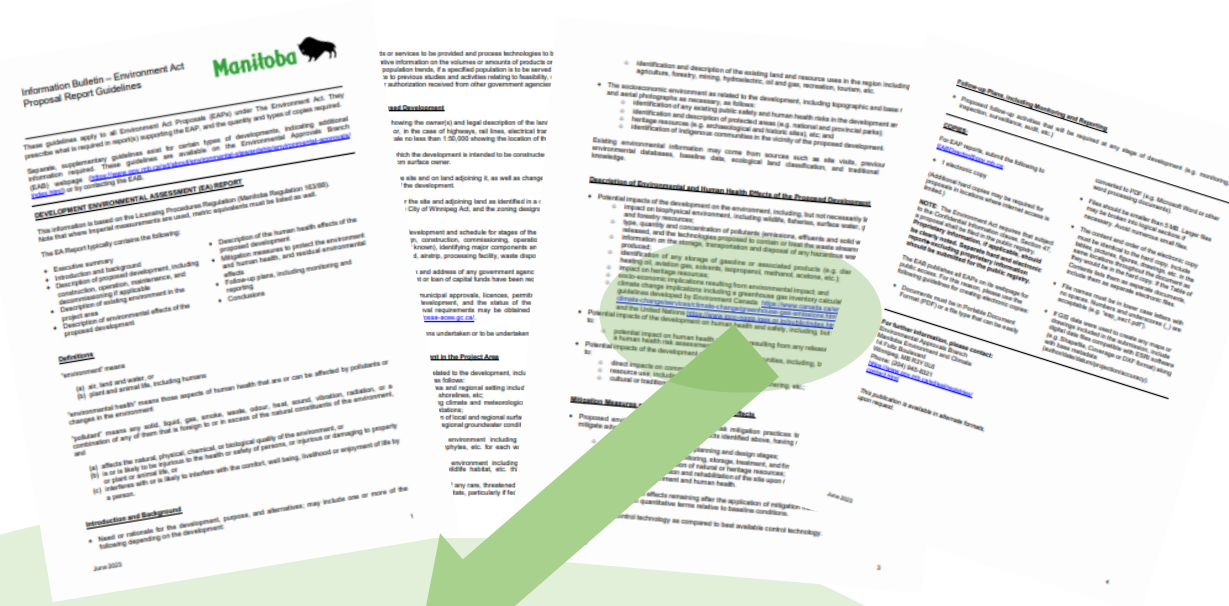
Manitoba Environment Act Licensing Process: Where Climate Fits...

- ***The Act*** provides for environmental assessment of projects “**likely to have significant effects on the environment**”
- **Implication:** Climate change alters baseline environmental conditions. These **changes directly affect the nature and magnitude of environmental effects.**
- Evaluating a project without accounting for future hazards would result in an **incomplete assessment and unaddressed risk.**



Manitoba Environment Act Licensing Process: Where Climate Fits...

- EAP Guidelines last revised June 2023.
- Guidance is consistent with objectives of Manitoba's new Path to Net-Zero Strategy (Oct '25)
- Meanwhile, Manitoba's licensing process already contains *climate-relevant elements*.



“Climate change implications including a greenhouse gas inventory calculated according to guidelines developed by Environment Canada ... and the United Nations.”

Manitoba

Western Manitoba municipality mopping up after downpour floods crops, roads, basements

Ethelbert declares state of emergency, plans road resurfacing, after 107 mm of rain



[Santiago Arias Orozco](#) · CBC News ·

Posted: Sep 17, 2025 7:45 PM CDT | Last Updated: September 17, 2025

Image Sources: Hail in Wpg: S. Chuckry Sudfield, SHDI Event in Ethelbert : Jessa McNabb



Environment and Climate Change Canada says about 107 millimetres of rain fell on the Municipality of Ethelbert throughout Monday and into Tuesday morning. (Submitted by Jessa McNabb/Inter-Mountain Watershed District)

Aligning Provincial Climate and Sustainability Priorities

Aligning EA Needs with Provincial Climate and Sustainability Priorities

- **Enhancing GHG management** aligns EA practice with **Manitoba's commitment to achieve net-zero emissions by 2050:**
 - **Key to MB's Path to Net-Zero Strategy.**
 - **Path to Net-Zero Strategy emphasizes government leadership, strengthened climate legislation and major sector-wide emission reductions.**
 - **Addressing climate at the licensing stage**

FIGURE 1: LIFECYCLE STAGES
Data source: BS EN 15978:2011



Graphic Source: New Buildings Institute

Aligning EA Needs with Climate and Sustainability Priorities for Manitoba

Aligning EA Needs with Provincial Climate and Sustainability Priorities...

- **Stronger consideration of climate resilience is required** to reflect Manitoba's policy direction: *building a resilient, low-carbon economy*.
- **Consistent with MB's Path to Net-Zero Strategy's focus:**
 1. Supporting communities
 2. Modernising climate targets and,
 3. Reporting and integrating climate change into provincial decision-making.

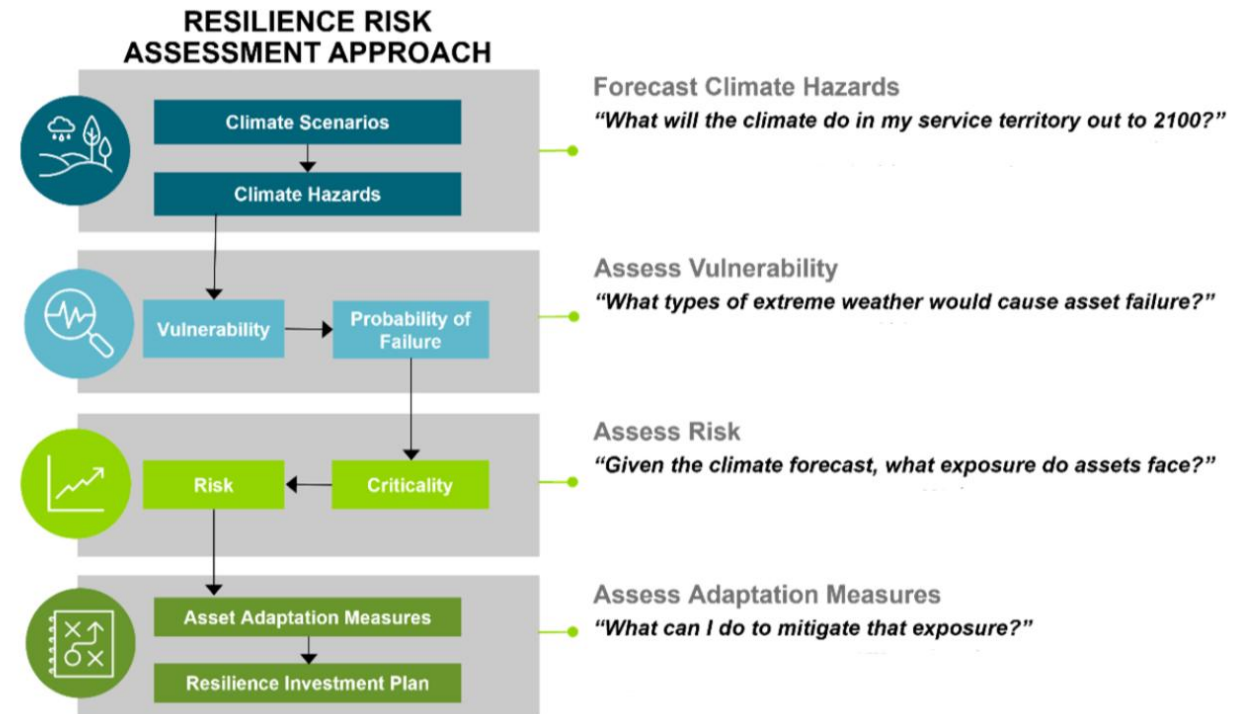
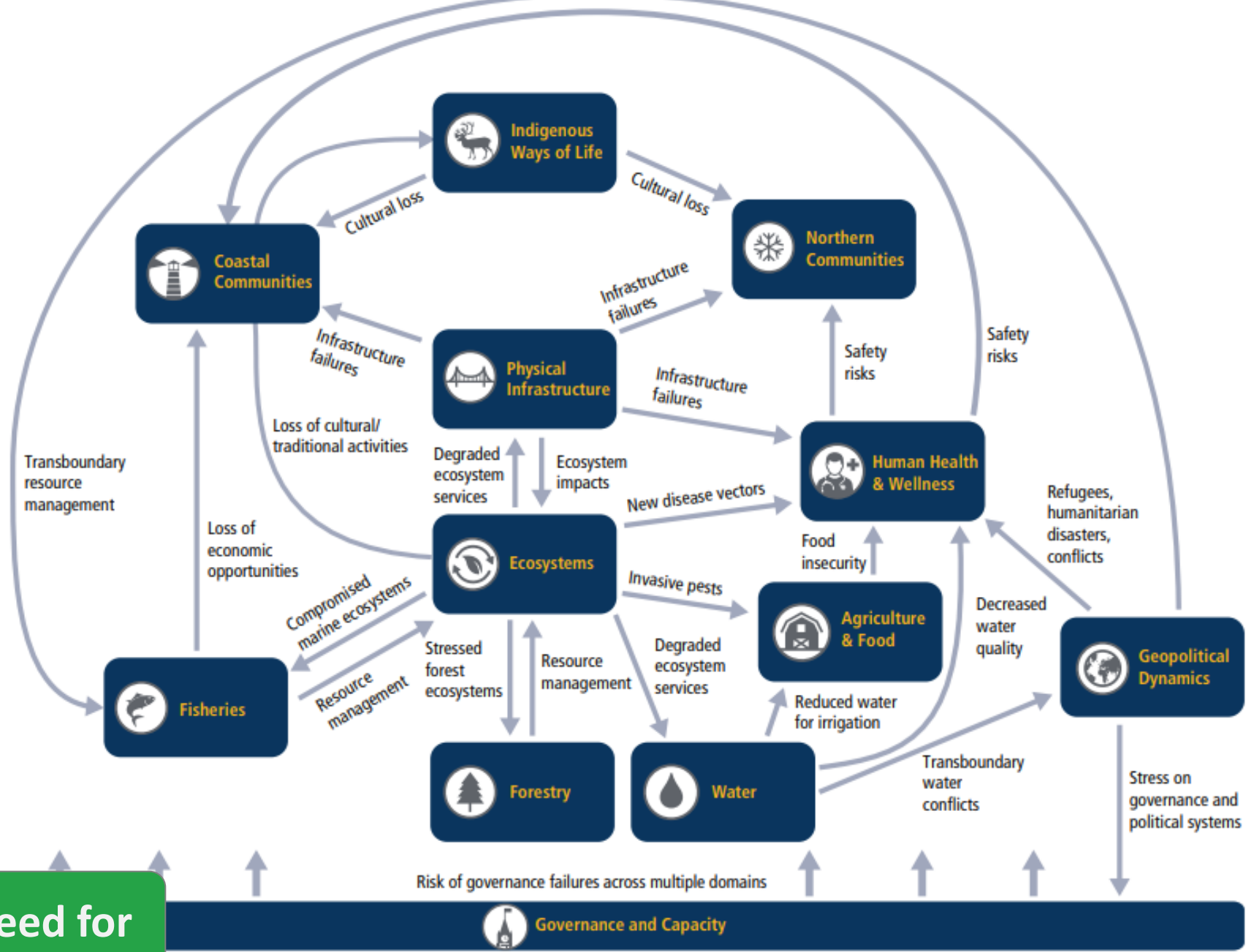


Image Source: Adapted from Guidehouse

Key: Will the development cope with anticipated climate changes during its intended service life?



Graphic: Council of Canadian Academies

Current EA Gaps and the Need for Guidance

Often, reasons offered for lack of climate resilience integration in environmental assessment fall short of Best Practice.

| Reason for Not Considering Climate Resilience: | Why this falls short: | Best Practice Approach: |
|--|--|---|
| “We followed current codes” | Codes often assume historical climate | Review adequacy, design beyond code as appropriate |
| “We used historical data” | Past ≠ Future Climate | Use forward-looking projections and uncertainty analysis |
| “We added a safety factor” | Not a substitute for risk assessment | Structured climate risk and scenario analysis |
| “We discussed climate qualitatively” | No documentation or quantification | Documented, transparent climate-informed decisions |
| “Uncertainty is too high to act now” | Misuse of <i>uncertainty</i> | Precautionary, proactive resilience measures |

Current EA Gaps and the Need for Guidance

Future climate projections, when included, are often referenced at a high level, with limited integration into project-specific engineering or operational planning.

- Future climate projections often not integrated, with limited consideration of **emerging** environment.
- Where future climate was integrated, **connecting future climate to specific engineering or operational considerations** is often missing.
- **Missing linkages** between the projected future climate and the vulnerability of specific project components

Climate Atlas Report Region: BERENS RIVER

RCP 8.5: High Carbon climate future
GHG emissions continue to increase at current rates

| Variable | Period | Mean | 1976-2005 | | | 2021-2050 | | | 2051-2080 | | |
|---------------------------|--------|--------|-----------|---------|---------|-----------|---------|--------|-----------|--|--|
| | | | Low | Mean | High | Low | Mean | High | | | |
| Precipitation (mm) | annual | 400 | 367 | 475 | 589 | 375 | 487 | 612 | | | |
| Precipitation (mm) | spring | 93 | 49 | 90 | 138 | 55 | 97 | 148 | | | |
| Precipitation (mm) | summer | 175 | 109 | 176 | 251 | 100 | 174 | 262 | | | |
| Precipitation (mm) | fall | 127 | 85 | 136 | 198 | 86 | 127 | 197 | | | |
| Precipitation (mm) | winter | 97 | 46 | 73 | 100 | 51 | 80 | 112 | | | |
| Mean Temperature (°C) | annual | 9.3 | 1.2 | 2.8 | 4.3 | 3.3 | 5.2 | 7.3 | | | |
| Mean Temperature (°C) | spring | -0.4 | -1.3 | 1.7 | 4.8 | 0.7 | 3.8 | 7.2 | | | |
| Mean Temperature (°C) | summer | 16.7 | 17.2 | 18.8 | 20.4 | 18.8 | 21 | 23 | | | |
| Mean Temperature (°C) | fall | -1 | 3.1 | 5.3 | 7.2 | 5.4 | 7.5 | 8.7 | | | |
| Mean Temperature (°C) | winter | -18 | -18.2 | -15.1 | -11.8 | -15.5 | -11.9 | -8.2 | | | |
| Tropical Nights | annual | 1 | 0 | 5 | 11 | 4 | 16 | 33 | | | |
| Very hot days (>30°C) | annual | 2 | 1 | 7 | 16 | 4 | 20 | 38 | | | |
| Very cool days (<5°C) | annual | 23 | 3 | 11 | 22 | 0 | 3 | 9 | | | |
| Date of Last Spring Frost | annual | May 20 | April 20 | May 13 | May 25 | April 19 | May 5 | May 19 | | | |
| Date of First Fall Frost | annual | Oct. 1 | Sept. 23 | Oct. 12 | Oct. 29 | Oct. 3 | Oct. 23 | Nov. 4 | | | |
| Frost-Free Season (Days) | annual | 138 | 127 | 148 | 168 | 143 | 165 | 187 | | | |

Heat warning covers portions of north, northwestern Manitoba

Environment Canada has issued heat warnings for The Pas, Norway House and the surroundings area north to the Manitoba-Nunavut border Friday that could last three days.

Temperatures in the range of 30 C are expected, with overnight lows near 16 C, according to the federal agency.

Affected areas include:

- Berens River, Little Grand Rapids, Boonville, Arkell
- Bisset, Victoria Beach, Nopiming Provincial Park, Pine Falls
- Brochet
- The Pines, Cranberry Portage, Snow Lake
- Lynn Lake, and Grand, Pukotagan
- Norway House, Cross Lake, Wabowden
- Taboule Lake
- The Pas, Winkler, Morden, Chamberlain Provincial Park
- Thompson, Nelson House, Salt Lake

Video: Manitoba under extreme heat warning (cbc.ca)



Source: Climate Atlas of Canada

Will your asset/development/operation cope under emerging climate?

Current EAP Gaps and the Need for Guidance

- ***Currently, GHG Treatment in EA Proposal Submissions***
 - **GHG emissions are often characterised as inherent to the project, with limited assessment of avoidance or reduction options, often with no reduction plan at all.**
 - **Standard construction site practices (equipment maintenance, carpooling ‘where feasible’, idling policies) commonly advanced as GHG management “commitments”.**
 - **These measures are typically presented without a defined, measurable or project-specific GHG management strategy.**

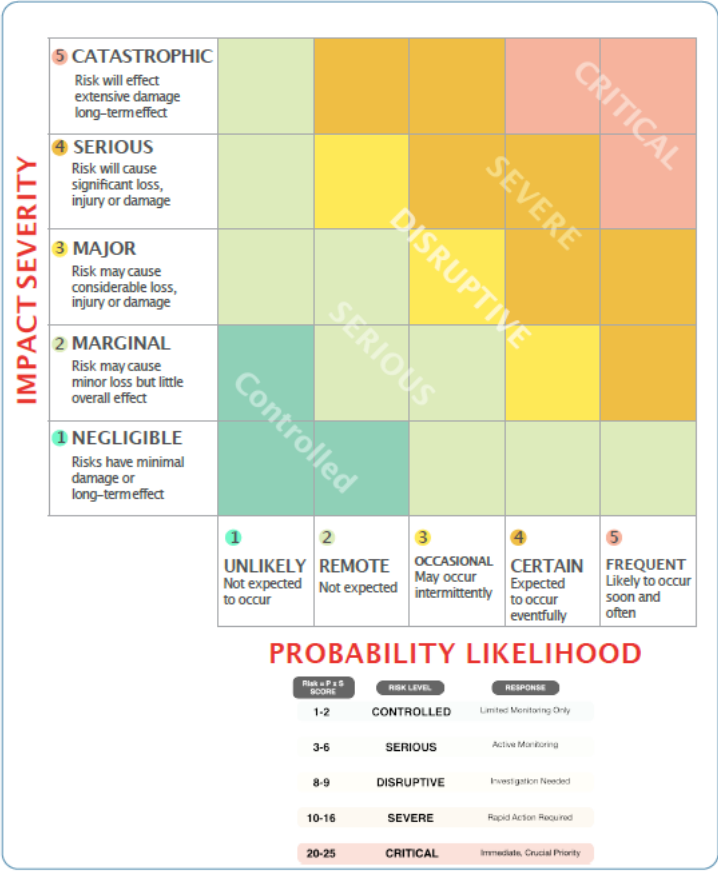


Image: Live Science

| HAZARDS | HOW CLIMATE CHANGE CAN INFLUENCE THIS HAZARD IN MANITOBA | LIKELIHOOD SCORE | PLACE CHECKM BESIDE HA RELEVANT |
|-------------------------------------|---|--------------------------|---------------------------------|
| Extreme Heat (Heatwaves) | In general, increases in average temperature are likely to increase the number of hot days and nights, and the duration of heatwaves. | <input type="checkbox"/> | <input type="checkbox"/> |
| Wildfire Events | Increased average temperatures, combined with dry conditions, electrical storms and high winds increase the potential for wildfire events. | <input type="checkbox"/> | <input type="checkbox"/> |
| Extreme Precipitation | For every 1degree of temperature increase in the atmosphere, that atmosphere can hold 7% more water, leading to potential for increases in short duration, high intensity rainfall events. | <input type="checkbox"/> | <input type="checkbox"/> |
| Extreme Snowfall | Warmer temperatures can cause a reduction in the amount of precipitation that falls as snow. At the same time, the potential for large, heavy, wet snowfall events has increased for some regions. | <input type="checkbox"/> | <input type="checkbox"/> |
| Freezing Rain Events | Increases in average winter temperatures have resulted in increases of winter precipitation falling as rain and more rain on snow events. | <input type="checkbox"/> | <input type="checkbox"/> |
| High Wind Events | Changes in winds are not easy to model for climate change. Ranges of extreme winds are expected to increase as the potential for increased extreme weather activity grows with a warming climate. Winds can cause damages to forests, power lines, and buildings. Wind can also increase the spread of wildfires. | <input type="checkbox"/> | <input type="checkbox"/> |
| Fog Events | Fog events create visibility concerns for transportation by motor vehicle, boat and aircraft. Prolonged fog events can disrupt modes of transportation and cause delays due to transportation safety concerns | <input type="checkbox"/> | <input type="checkbox"/> |
| Drought Events | In Manitoba, climate change means there is potential for increased periods of drought. At the same time, short duration high intensity rainfall events are expected to increase. This creates the potential for drought and localized flooding in the same year. | <input type="checkbox"/> | <input type="checkbox"/> |
| Changes in Seasonal Patterns | Climate change, particularly increases in average temperature can affect the timing of seasons. This is expected to result in shorter winter seasons and an extension of the annual "shoulder" seasons in autumn and spring. | <input type="checkbox"/> | <input type="checkbox"/> |

New Climate Resilience Guidance in Current Development

| Climate Hazard | Likelihood Score | Impact Severity | | Impact Areas | | | | Comments |
|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------------|-------------------|---------------|---------------------|----------|
| | | Minor | Significant | Staff/Customer Health & Safety | Business Premises | Supply Chains | Business Continuity | |
| Extreme Heat (Heatwaves) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | |
| Wildfire Events | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | |
| Extreme Precipitation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | |
| Extreme Snowfall | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | |
| Freezing Rain Events | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | |
| High Wind Events | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | |
| Fog Event | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | |
| Drought Events | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | |
| Changes i Seasonal Patterns | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | |
| Other | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | |
| Other | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | |



IMPACT SEVERITY

- 5 **CATASTROPHIC**
Risk will effect extensive damage long-term effect
- 4 **SERIOUS**
Risk will cause significant loss, injury or damage
- 3 **MAJOR**
Risk may cause considerable loss, injury or damage
- 2 **MARGINAL**
Risk may cause minor loss but little overall effect
- 1 **NEGLECTIBLE**

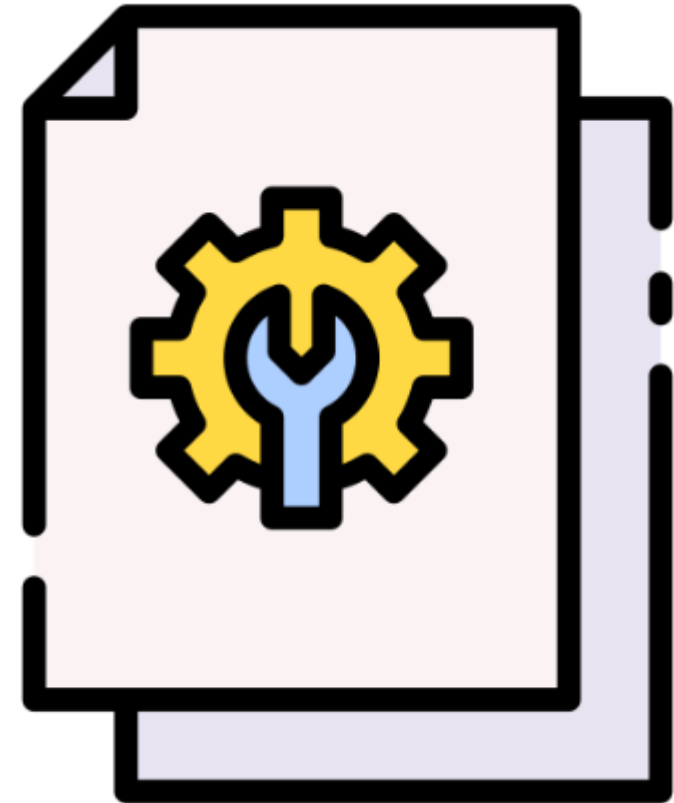
a practical guide for SMEs

ISO 31000
Risk management

Supporting Guidance in Development to Support EAs

Help to Guide EAP submissions is coming:

1. **GHG Estimation and Reporting Guidance and Tools**
 - Best practice GHG estimation guidance
 - Emission factors, tools.
2. **Climate Resilience Screening-Level Guidance**
 - Based on ISO 31000 (Risk Management Guidelines)

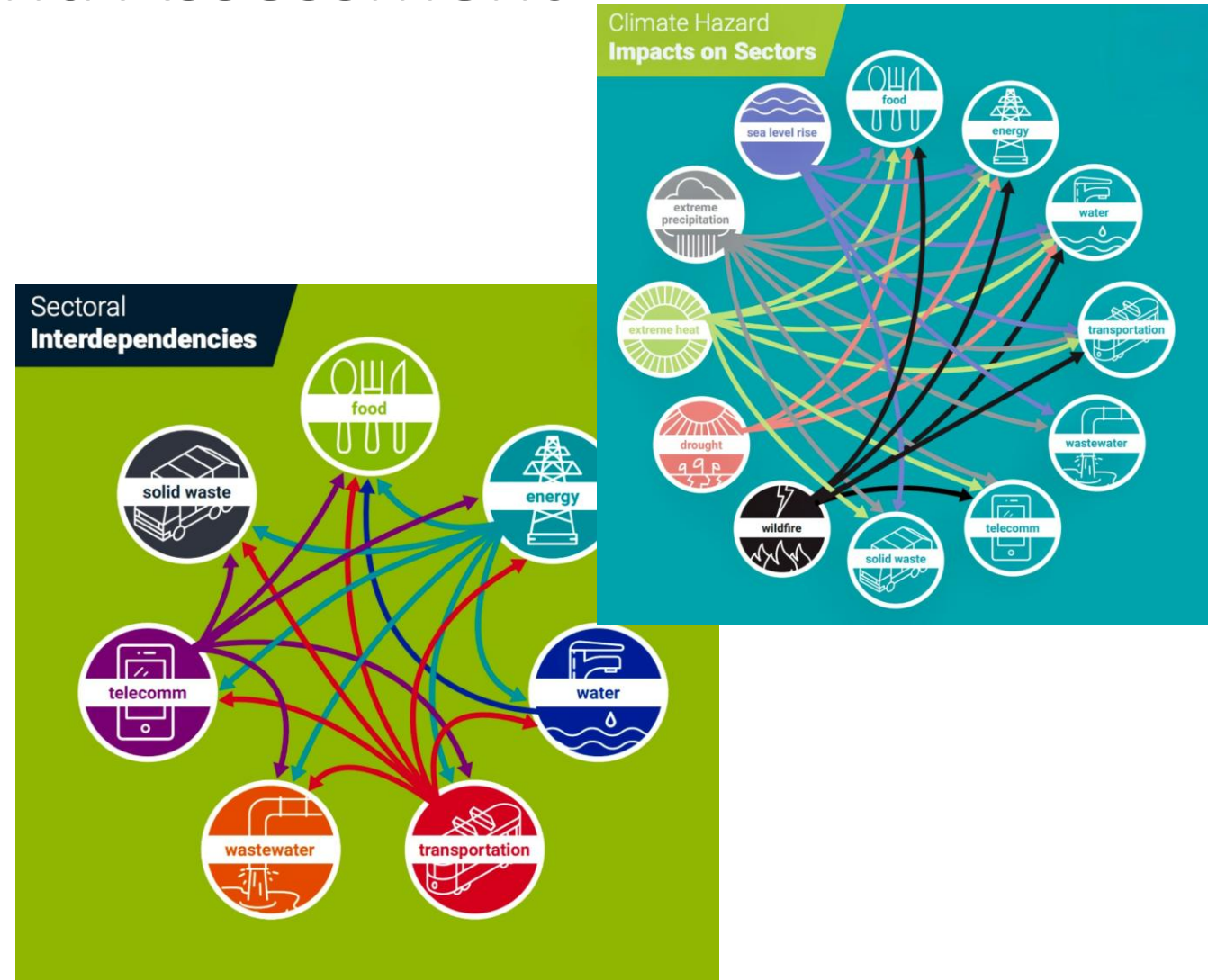




Benefits for Proponents and Manitobans

Reducing Risks and Unlocking Benefits Through Climate-Aligned Planning and Assessment

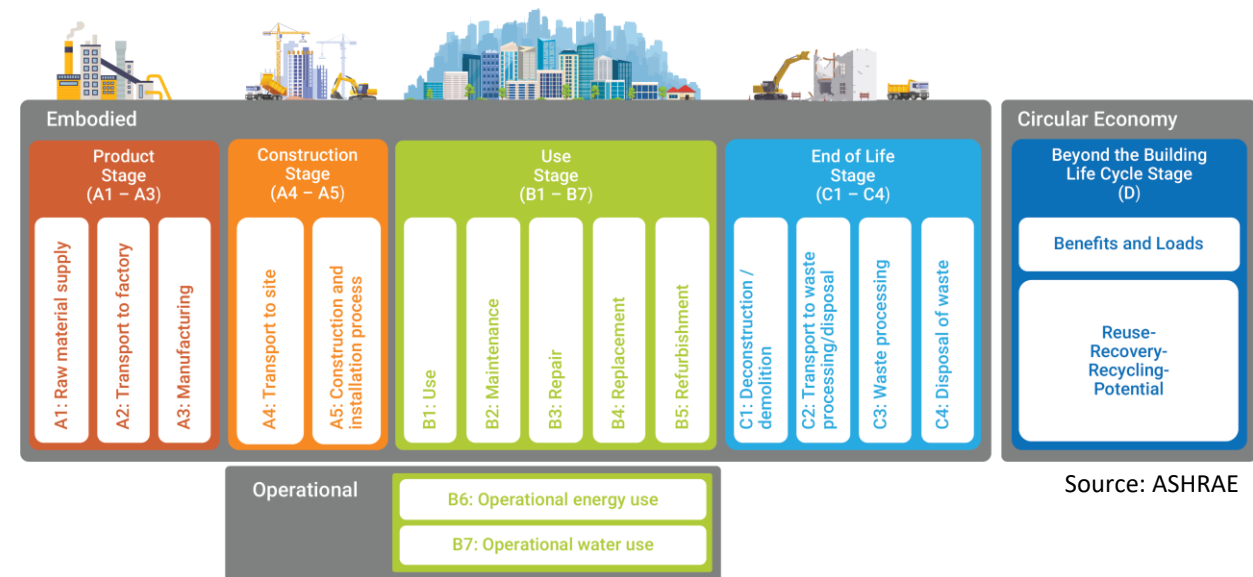
- Integration of Future Climate to manage project risks yields:
 - Designs integrating conditions reflecting Manitoba's evolving climate.
 - Designs addressing increasing long-term vulnerability, maintenance costs and potential service disruptions.



Reducing Risks and Unlocking Benefits Through Climate-Aligned Planning and Assessment...

- **Integration of GHG Management for Low Carbon Economy:**

- **Aligns with Manitoba's Path to Net-Zero Strategy**
- **Provides opportunities to lower lifecycle costs**
- **Improves efficiency**
- **Supports Manitoba's transition to a resilient, low-carbon economy.**



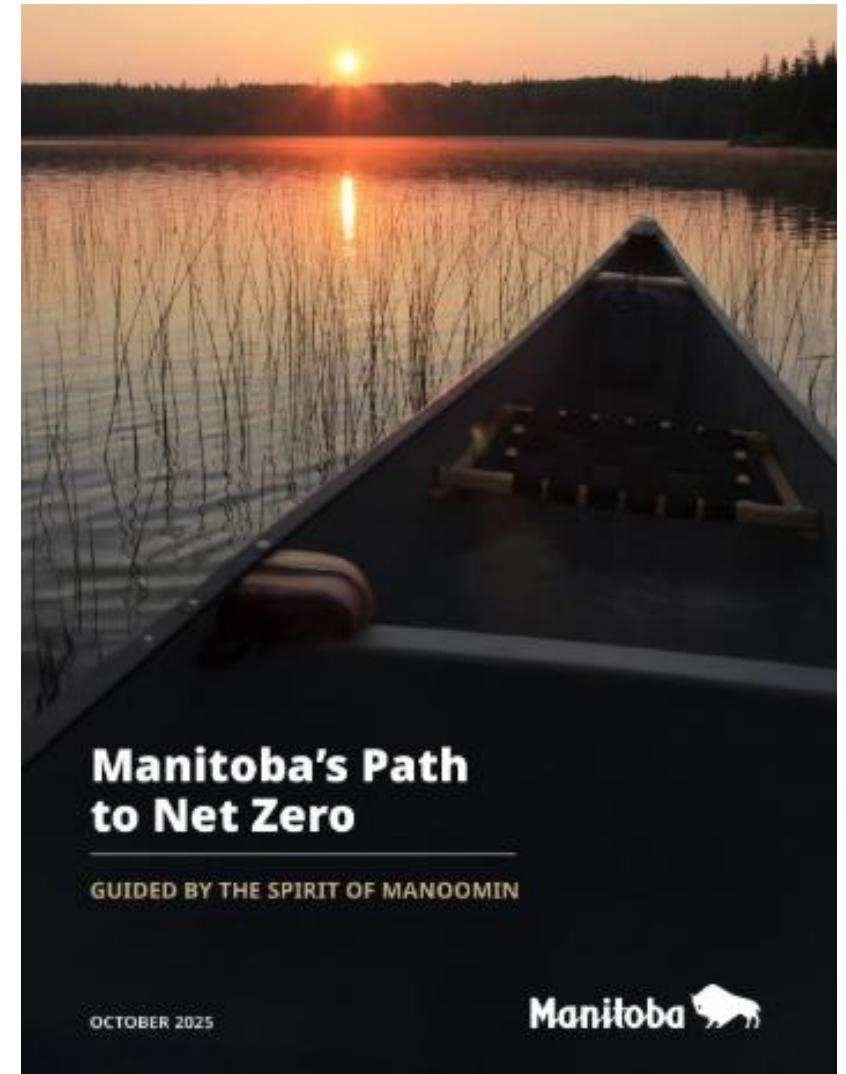
Source: ASHRAE



Path Forward and Engagement Opportunities

Next Steps....

- **Release of GHG and Climate Resilience Integration Guidance**
 - **Guidance review within Govt.**
 - **Engaging with project professional sectors (architecture, engineering, planners)**
- **Have thoughts on climate resilience? We'd like to hear from you!**



Thank You



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