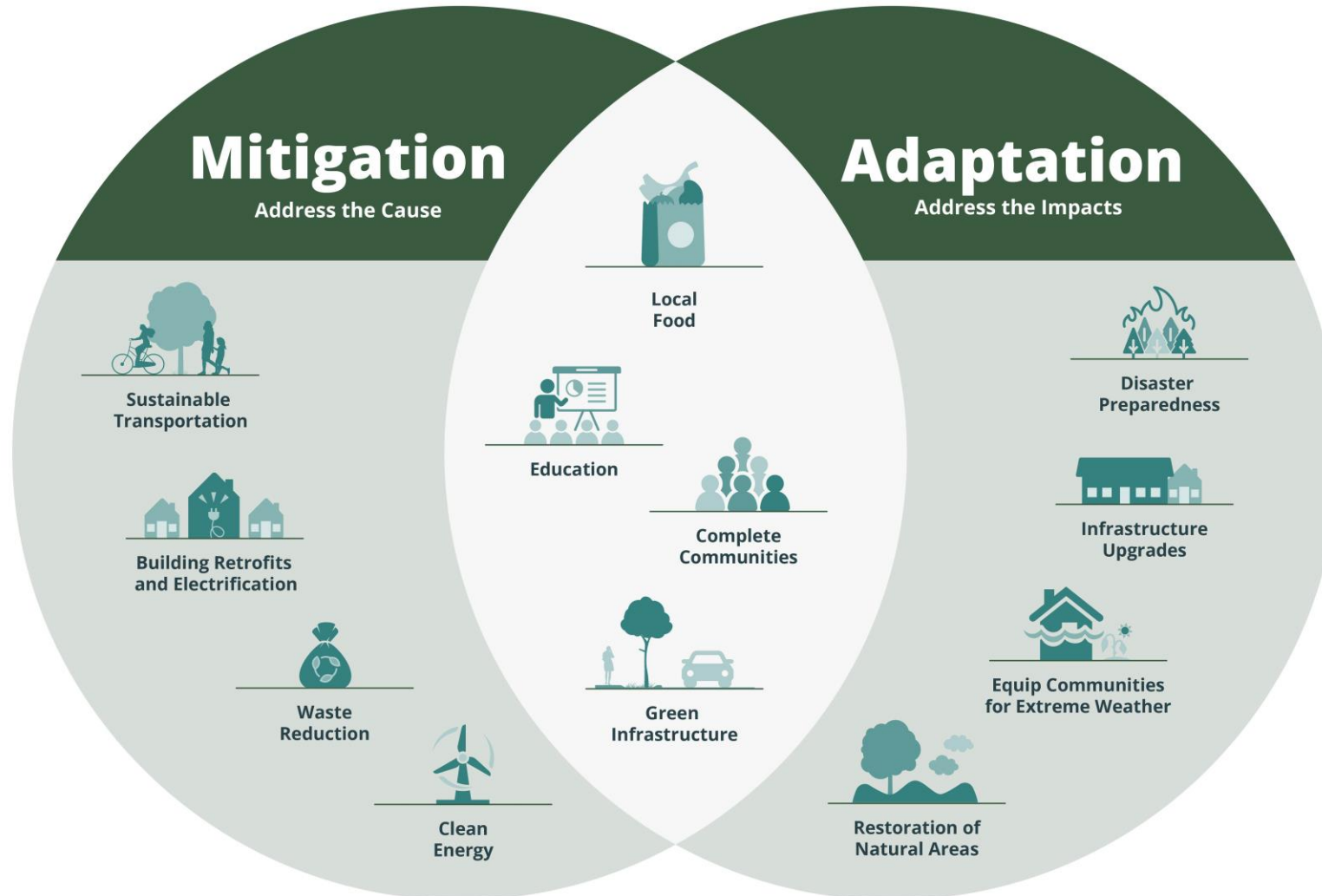




# Adapting to a Changing Climate

Prepare Today, Prosper Tomorrow

# Climate Adaptation and Climate Mitigation



Source: Modified from Canadian Geographic

# Climate Adaptation vs. Disaster Mitigation

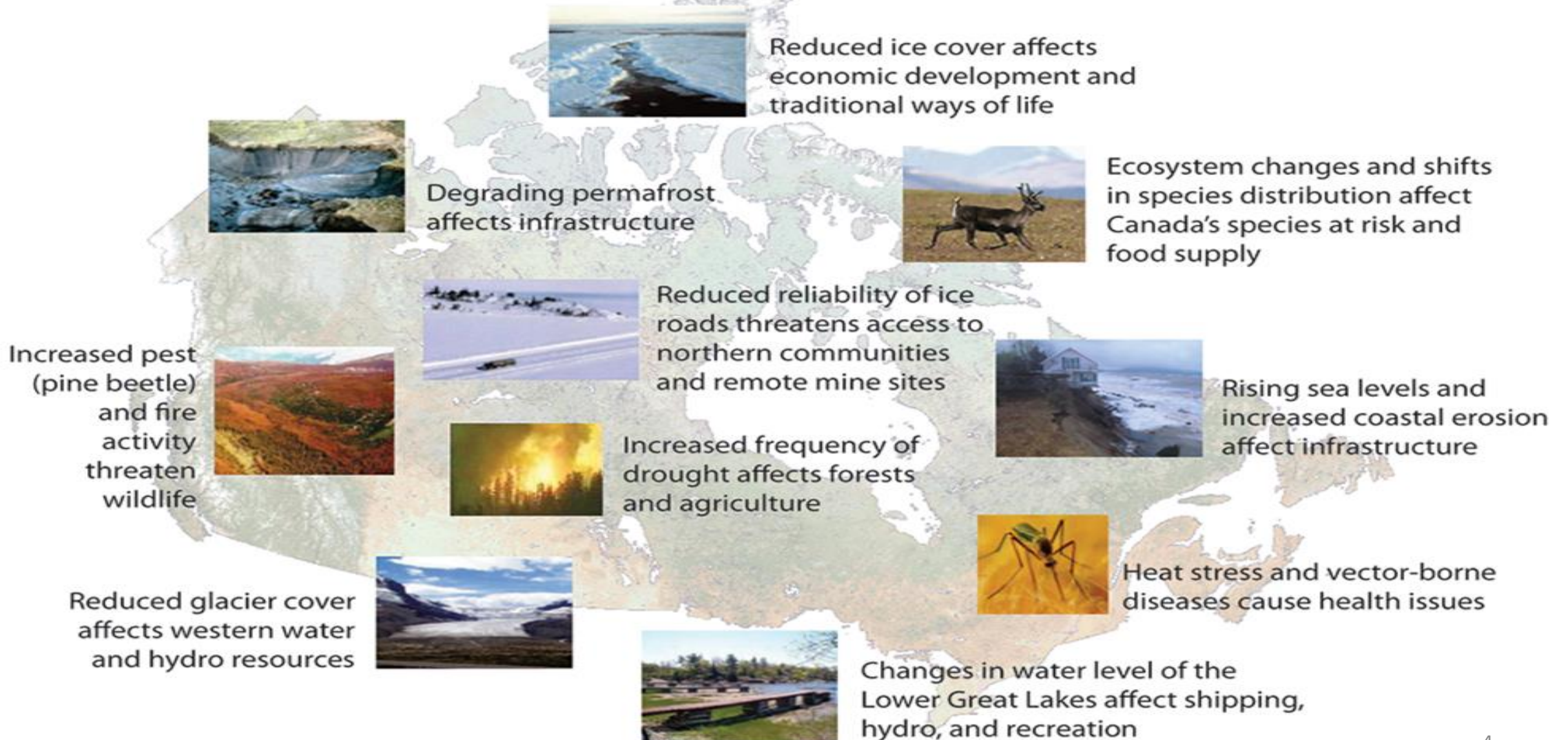
Are we talking about the same thing? **Yes**

- Being proactive to avoid hazards/impacts caused by climate
- Resiliency is achieved by adapting to a changing climate or mitigating potential threats
- Understanding vulnerability and risk improves planning and decision making





# Climate Risks from Coast to Coast





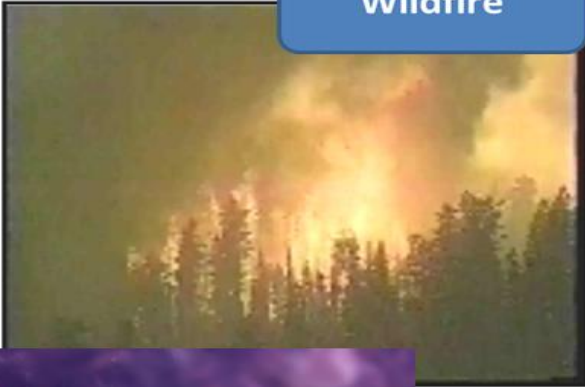
# Climate Change Impacts on Manitoba

**Flooding**  
Extreme rainfall  
Rapid snowmelt

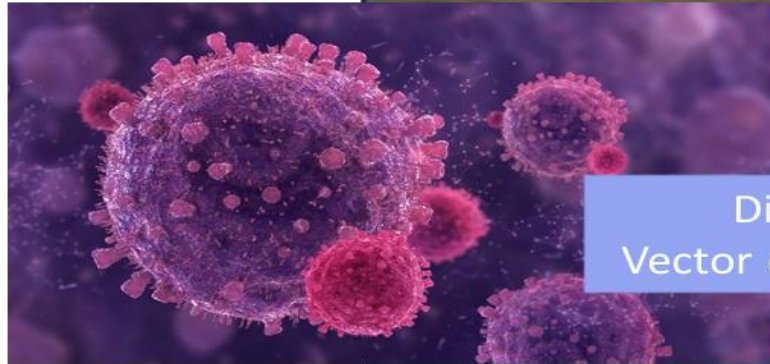


**Drought**

**Wildfire**



**Wind Events**



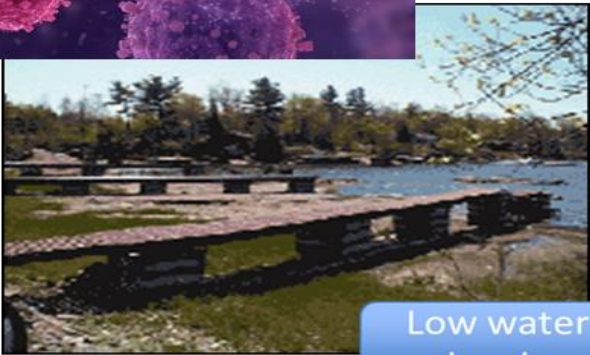
**Disease  
Vector or Zoonotic**



**Winter roads and  
northern infrastructure**



**Invasive  
species**



**Low water  
levels**

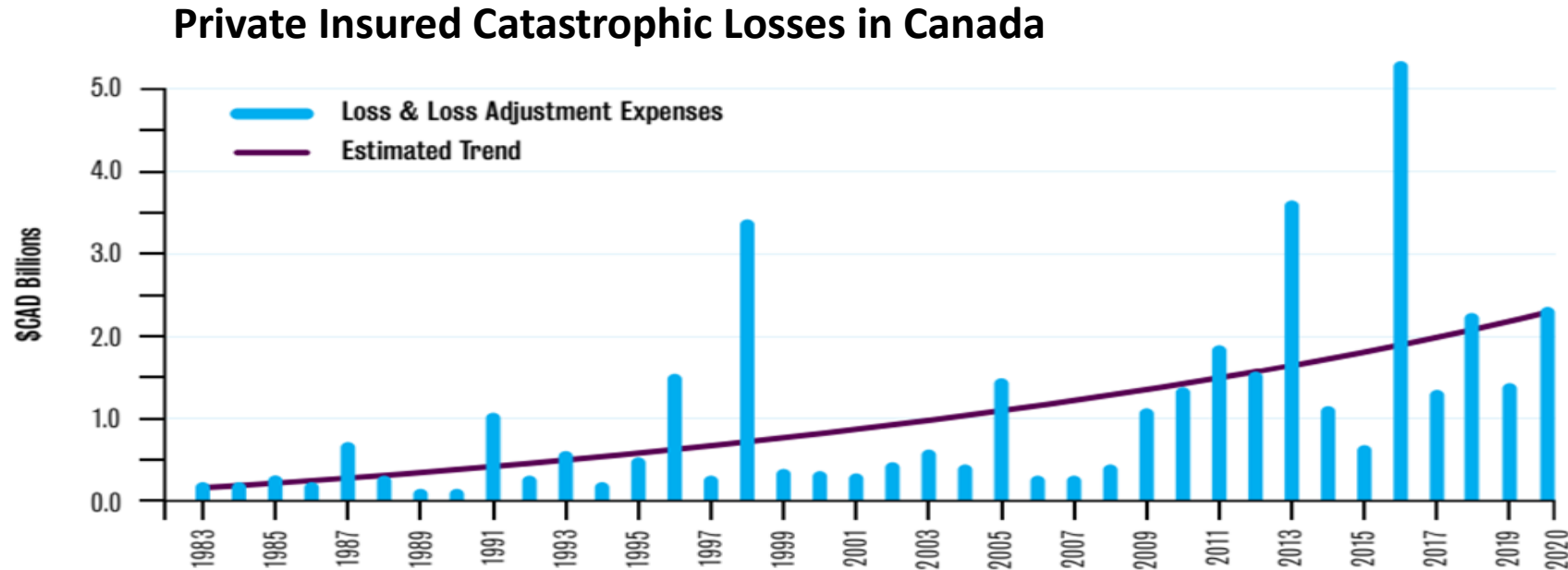
- Extended Growing and Recreational Seasons
- Heat Stress on People and Animals
- Mental Health and Eco-Anxiety

# Climate Change Impacts on Manitoba

- Damage or loss of infrastructure and Crown lands
- Increase in compensation or unplanned program costs
- Increase in staff time, overtime, WCB claims
- Increase in employee burnout and fatigue
- Loss of access to recreational sites
- Reduction in water quality and/or contamination
- Increase in firefighting costs
- Loss of social service sites and community spaces
- Increase in use of community buildings for safe havens from heat, smoke or extreme cold
- Increase in demand for inspections



# The Costs of Climate Change

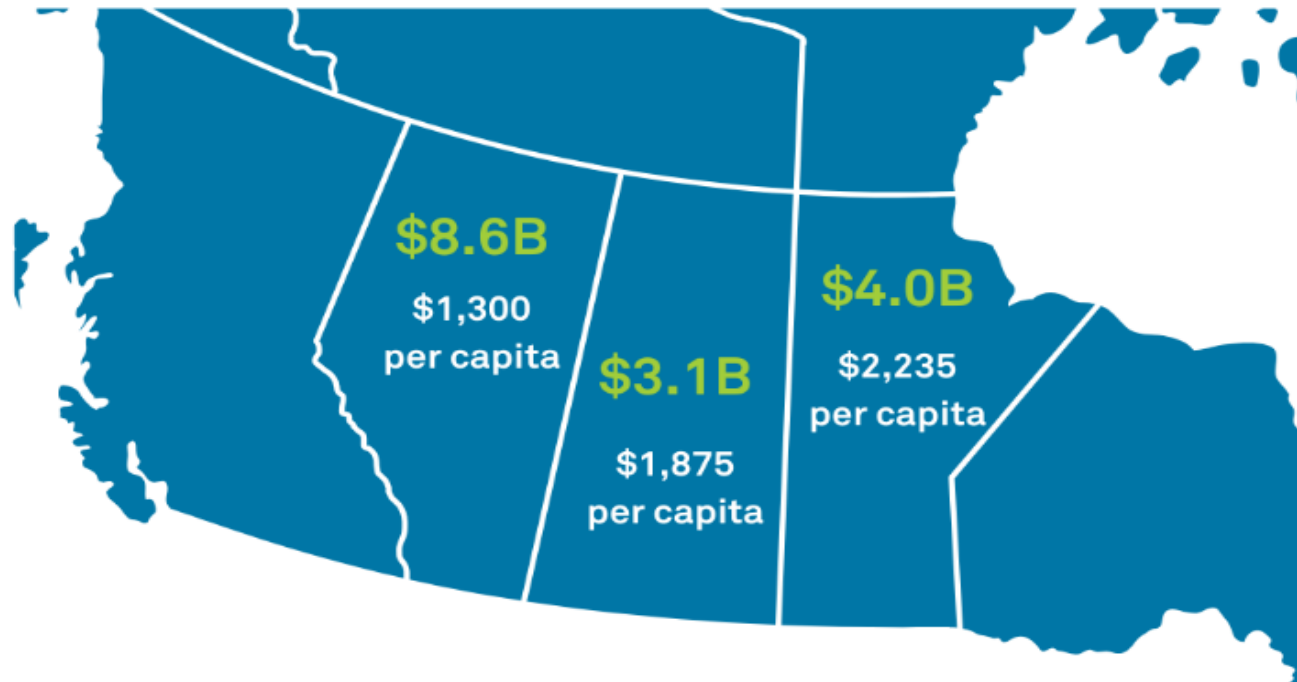


- Average Annual Payouts: **\$405M** (1983-2008) to over **\$1B** (2009 to 2020)
- In 2023, the cost of severe weather in insured damage was **\$3.1B**, the fourth worst year for insured losses in Canada



# The Costs of Climate Change

## Projected total annual costs across the Prairie provinces (2050s)



**= \$15.7B**

economic losses attributable to climate change across all three provinces, based on a high emissions scenario

Read the full report: [climatewest.ca/publications](https://climatewest.ca/publications)



# Financial Sector Risks

## Bank of Canada Financial System Review

- Includes physical risks (e.g. extreme weather) and transition risks (e.g. sudden policy moves)

## Financial Institutions

- Assessing credit risk for commercial lenders (e.g. Moody's)
- Ratings of business, governments now include climate analytics e.g. preparedness, vulnerability, stability
- Innovative financial tools (e.g. catastrophe or green bonds instead of traditional insurance)



# Agility of Businesses and Governments

## Confidence in Taking Action to Prevent Future Catastrophe

- Pandemic demonstrated industries and sectors are willing to reinvent themselves

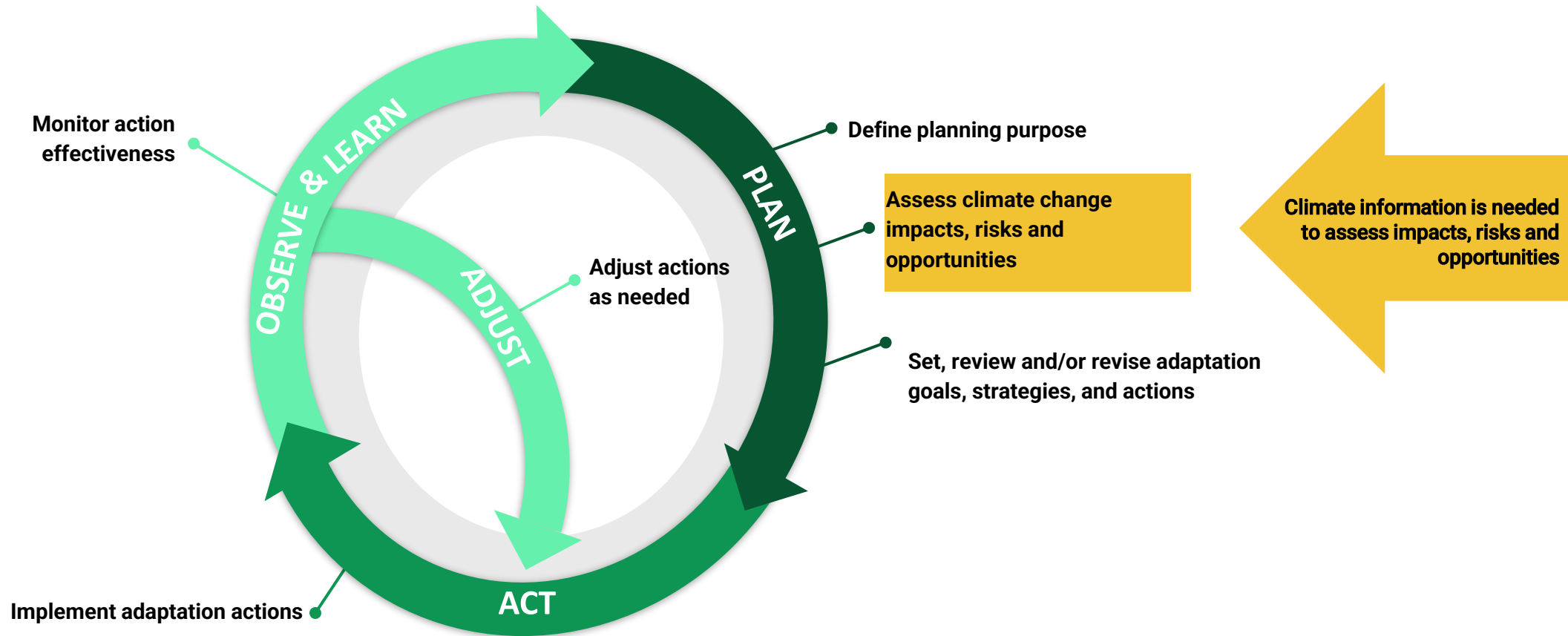
## The Business Case for Early Action

- Agility and ability to take action when opportunities arise
- **Lowest cost bid is no longer the most economical**  
Building to minimum standards will cost more due to scope and frequency of repairs (e.g. infrastructure)
- Return on Investment is 1:4 (at minimum, conservative)



# Climate Data Informs Adaptation Measures

## Climate change adaptation process





# Vulnerability and Risk Assessment

Climate and Vulnerability Risk Assessment (CVRA) or Hazard and Risk and Vulnerability Assessment (HRVA) can be combined. They should be a part of your financial Vulnerability and Risk Assessment (VRA) as organizations.

## Best practices:

- Use available climate data and information to help you understand and manage emerging risks and opportunities
- Establish a baseline for well-coordinated action
- Identify decision and reporting tools
- Be the drivers of your own policy and programming – set priorities at the local level
- Be agile and transformative

# Vulnerability and Risk Assessment

		Consequences				
		1	2	3	4	5
Likelihood	5	Disturbance	Turmoil	Horror	Panic	Hysteria
	4	Order	Turbulence	Agitation	Frenzy	Terror
	3	Peace	Harmony	Confusion	Pandemonium	Madness
	2	Security	Tranquillity	False Security	Chaos	Trepidation
	1	Serenity	Calm	Ataraxia	Entropy	Disarray

# Climate Forecast Cards

## Data for VRAs

- Prepared for all municipalities by Environment & Climate
- It is the basic data needed to start a VRA
- Provides 3 Carbon (GHG) Scenarios low to high
- Two Timeframes 2021-2050 & 2051-2080
- Provides a narrative on how climate will change weather in severity and frequency and seasons
- This is our first edition
- Please provide feedback on what information you would like added in future or what is not very straight forward.

**Selkirk Climate Atlas**  
City of Selkirk  
Selkirk  
MANITOBA

**Selkirk and Climate Change**  
The climate determines almost everything about how we design, build, and live in our communities. As the climate changes, the safety and prosperity of our cities is put at risk. Climate change is a challenge that requires us to work together, locally, nationally, and globally. With technical know-how, political will, targeted investments, and collective commitment, we can mitigate the severity of climate change and build resilience to its hazards/impacts.

**Climate Change and Health**  
High temperatures can be hazardous, especially for the elderly, the chronically ill, and those without air conditioning. High and prolonged heat can also impact air quality, facilitate the spread of harmful diseases, inhibit outdoor activities, and cause stress and anxiety. We can adapt with measures such as shaded areas, green roofs, and supports for those who need help during heat waves.

**Climate Change and Extreme Weather**  
A warmer climate may increase the chance of more extreme weather, including high winds, flash floods, hail, lightning, tornadoes, drought, and wildfires. Communities must improve their planning and engineering, emergency preparedness, and water management to build resilience.

**Climate Change and Infrastructure**  
Climate change may threaten the integrity of infrastructure such as roads, bridges, water supply, and telecommunications, most of which has not been built to withstand current and future extremes. Emergency preparedness, planning, and construction practices for retrofits and new development that take the new climate reality into account can increase our adaptive capacity. Acting now will reduce economic risk and save on the rapidly increasing long-term damages and costs associated with climate change.

**High-Carbon Climate Change Projections\***

Change	Recent Past	Low scenario	Mean	High scenario
Typical hottest summer day	33.8 °C	34.9 °C	38.8 °C	42.7 °C
Typical coldest winter day	-36.9 °C	-34.6 °C	-28.9 °C	-23.3 °C
Number of >30 °C days per year	12	21	47	71
Spring precipitation	154 mm	72 mm	133 mm	204 mm
Summer precipitation	227 mm	120 mm	221 mm	343 mm
Number of below-freeze days per year	187	127	149	109
Number of >30 °C nights per year	2	5	21	39

\*See back page for details and source of climate model data.

**Preparing today to foster tomorrow**  
As the climate continues to change, temperature conditions south of us are projected to shift northward. In other words, climates that we generally know to be quite different are heading our way. A climate analogue map is a useful tool to visualize this thermal climate shift.

Answering the question "What places currently have the climate that my community is projected to have in the future?" can help us understand what climate to expect and, by looking to those places for examples, how to prepare for it.

The analogue map below shows the places that currently have the same summer average maximum temperatures that Selkirk is projected to have for several future time periods. As the time periods reach later into the century, the places with matching temperatures are located further and further south.

**"What places currently have the climate that my community is projected to have in the future?"**  
Taking immediate action to prepare for climate change will have long-term benefits. For every dollar that is spent on climate change adaptation measures, it is estimated that \$13-\$15 will be saved in the long run through preventing or reducing the direct and indirect impacts caused by climate change. Building a resilient community starts by taking action today to prepare for tomorrow.

For additional maps and variables, as well as information on how the maps are made, visit the Climate Analogues page on the Climate Atlas of Canada. [www.climateatlas.ca/analogues](http://www.climateatlas.ca/analogues)

**Summer Average Maximum Temperature**

Analogue Years (Average Temp)

- 1991 - 2005 (24.6° C)
- 2006 - 2020 (25.3° C)
- 2021 - 2035 (26.2° C)
- 2036 - 2050 (27.1° C)
- 2051 - 2065 (28.3° C)
- 2066 - 2080 (29.7° C)
- 2081 - 2095 (30.9° C)

These are American stations whose 2006-2020 average summer maximum temperatures are within 0.5°C of the temperatures projected for Selkirk in these 15-year periods.

Climate Change and Manitoba's Communities [climateatlas.ca](http://climateatlas.ca)



# Government Supporting Excellence – Key Resources



MANITOBA CLIMATE  
RESILIENCE TRAINING



Prairie  
Climate Centre

From Risk to Resilience



- ✓ Manitoba Conservation Trust
- ✓ Growing Outcomes in Watersheds (GROW)
- ✓ Conservation and Climate Fund

# Adaptation in Action

## An Integrated and Collaborative Approach

### Connect

- Everyone should understand their roles and responsibilities in adaptation planning and actions
- Coordinate adaptation planning with broader government strategies
- Clarify provincial priorities so that other governments, businesses and the public know what adaptation actions to build on

### Partnerships

- Support staff at all levels to adapt to a changing climate
- Remove barriers between governments and government departments
- Continue to build a broader dialogue to understand how others are affected
- Provide accurate and timely data and information to make everyone a better partner

### Planning

- Understand the local climate and its potential impacts/hazards
- Build flexibility into organizational processes
- Iterative decision making
- Use best practices to manage uncertainty

# Adaptation in Action

## Government Objectives

- Make Manitoba a safe and desirable place to live and invest in under a changing climate
- Invest in an informed public and a skilled work force to provide Manitobans with the training and information to make the best decisions and investments moving forward.
- Capture the substantial work occurring and document for the best uptake and value add by others
- Increase provincial capacity to identify, measure and report on growth in adaptation & resiliency
- Consider legislation, policy and programs that support broader adaptation efforts (maladaptation)





# To Keep in Mind Today

## Addressing climate risks is a collective effort

- Comprehensive solutions are made by working with our neighbours and other levels of government
- Sessions like the one today help facilitate conversations and common points of interest

## A changing climate is Pushing all of us into new decision areas

- HRVAs and CVRAs are an integral part of planning and contributing to your Development Plan

## Good information makes for good decisions

- Manitoba with PCC created municipal forecast cards (Climate Atlas)

## Manitoba is funding tools to help municipalities

- ClimateWest provides prairie centric resources
- IISD is releasing a tool kit to help with risk assessment & adaptation planning
- Training like MCRT across sectors to help build the needed skills and knowledge

## Understanding your risks and priorities sets you up to respond to funding opportunities

- Partnering with Eco West to monitor & report on funding opportunities/resources
- Be the drivers of your own policy and programs

# Thank You

Elaine Fox  
Manager, Climate Adaptation  
Environment and Climate Change  
[Elaine.Fox@gov.mb.ca](mailto:Elaine.Fox@gov.mb.ca)

Alex Bourne  
Senior Policy Advisor  
Environment and Climate Change  
[Alexandra.Bourne@gov.mb.ca](mailto:Alexandra.Bourne@gov.mb.ca)