

Climate Change Business Resilience

Learn the steps you can take to assess, adapt, and mitigate your business in response to our changing climate





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Introduction

BY 2021, LINCOLN CAN EXPECT

91

Extreme hot days each year



Warmer summer temperatures



Milder winter temperatures

44%

More heavy rainfall (>10mm)

Climate Change Science

Climate change is already having an impact on global economies, communities, and built and natural environments. It remains the most significant global threat to quality of life and security – for current and future generations.

Since the Industrial Era, human activity has caused significant global warming, leading to changes such as increases in sea surface temperature, declines in snow and ice cover, and global sea level rise. These gradual shifts in average conditions (temperature, precipitation, and sea level) will be accompanied by changes in the frequency and intensity of extreme weather events.

These observed climatic changes cannot be explained by natural factors such as internal variations within the climate system, but rather, by human influences such as changes in atmospheric greenhouse gases (principally carbon dioxide) and aerosols, and changes to the land surface (deforestation).

Projected changes in climate have the potential to greatly impact the Town of Lincoln's assets, operations, and services.

WHAT IS CLIMATE CHANGE?

A long-term shift in the average and extreme weather conditions of a region. The main cause of current climate change is human activity (burning fossil fuels and conversion of land from forests to agriculture). Across Canada, communities, organizations and all levels of government are working together to take action on climate change.

What is Climate Resilience?

Climate resilience is defined as the capacity to cope with a hazardous event or trend or disturbance. For businesses, it is also reflected in the capacity to respond in ways that maintain essential functions and structures, and the capacity to adapt, learn, and transform¹. It is also imperative that businesses seek out and take advantage of opportunities brought about by climate change, to not only maintain status quo, but thrive. To build climate resilience, the first thing for businesses to do is understand and assess the risks they are facing.

Climate Risks

Understanding the risks to your region will ensure your resilience planning is effective. Ultimately, climate change poses two categories of risk to businesses: **physical risks** and **transition risks**. Weather events, such as flooding and drought, are categorized as physical risks. These are risks that have physical impacts. For example, flood risk threatens the natural and built environment, which leads to costs associated with damages and business disruptions. High winds that occur during windstorms can lead to tree branches falling onto power lines, causing outages. Transition risks are those that derive an economy transitioning to net-zero. For example, as Canada establishes commitments to reducing greenhouse gas emissions, changes in the regulatory environment may place restrictions on businesses².



Therefore, building climate resilience in a business setting involves preparing for climate-related risks and making transformational change that ultimately works to reduce risks and greenhouse gas emissions, in line with Canada's transition to net-zero³.

Some examples of cross-industry risks are:

- Supply chain issues/interruption;
- Changes in stakeholder expectations, and the regulatory environment;
- Damaged infrastructure, property, stock, and equipment;
- Lost revenue from disruptions to business operations;
- Risk to employment security; and
- Mental and physical health impacts.

Agriculture in particular is a key driver of economic growth in Lincoln. Climate change, however, threatens this growth by altering agricultural practices and placing local farms at risk. For example, with a changing climate comes longer growing seasons that will dictate what farmers decide to grow. The short and wet winters will also leave less room for trees to recuperate between growing seasons. Without adequate rest between seasons, tree's struggle to conserve the energy necessary to stay alive during winter months. There are several additional climate-related changes that will impact agriculture and Lincoln's other key sectors. Refer to Tool A for the negative and positive impacts of climate change and the potential risks and opportunities.

BY 2021, LINCOLN CAN EXPECT



More frequent & severe droughts



More extreme weather events



Extended growing seasons



Increased spread of respiratory, waterborne, and insect carried diseases (Lyme disease)

² Bank for International Settlements (2021). *Climate-related risk drivers and their transmission channels*.

³ WBSCD. (2019). *Business climate resilience: Thriving through the transformation*.



Prepare




Assess, Adapt and Mitigate

Preparedness is a critical first step in resilience-building. It is important to take the steps to assess, adapt and mitigate risks to your business so that you can reduce and potentially avoid losses and damages.

Complete the checklists and worksheets in Tool A to evaluate your current preparedness and identify actions to increase preparedness. Consider what actions you can take to not only prepare for the physical risks associated with climate change, but the transition to a net-zero economy. How can you adjust operations and sourcing strategies to address local risks and align with national net-zero targets? The

increasing public and private sector commitments to reducing greenhouse gas emissions indicate an ongoing net-zero transformation. To build resilience and thrive throughout the transformation it is important for your business to understand, anticipate and navigate new risks and opportunities, and integrate climate change into your business model. By integrating climate change into existing policies and practices, and future planning, your business builds its ability to adapt to climate related events and changes. This integration can reduce and even prevent damages and costs associated with risks and contribute to overall climate change mitigation.



 ASSESS	 ADAPT	 MITIGATE
<p>Understand the risks to your business. The nature of your business will influence what risks you are most susceptible to, and what steps you can take to build resilience.</p> <p>Identifying threats and opportunities posed by risks is the first step of preparedness. Gaining this knowledge and understanding of your circumstances will inform your decision-making and thus increase your ability to adapt and mitigate. For example, in Canadian agribusiness, resilience depends on the ability to adapt to climate related shifts that determine growing season, water quality, and weather events.</p>	<p>Are there steps you can take to adapt to the climate risks in your area? Many of the impacts of climate change are locked in for hundreds of years, and therefore adapting to these impacts is necessary. Consider how you can reduce the impact of identified climate-related risks to your businesses.</p> <p>For example, if your business is in an area at risk of flooding, remove important documents from the floors and low-lying areas. If increased frequency and severity of thunderstorms are anticipated, consider purchasing a back-up power source for use in a power failure.</p>	<p>Take the necessary steps to help mitigate climate change. Consider how you can reduce greenhouse gas emissions through your operations and position your products and services to align with future climate changes.</p> <p>When updating facilities, infrastructure, or equipment, do so with climate projections in mind. There is a plethora of affordable, scalable, sustainable options available to businesses. “Green” buildings, for example, tend to be more climate resilient in their design features while offering a host of co-benefits. Green roofs, for example, extend roof life expectancy while improving biodiversity.</p>

Green Infrastructure

Green infrastructure is ideally implemented prior to a climate related event to reduce the impact of said event on your business. Therefore, it is important that your business be educated on green infrastructure and how you can benefit.

Green infrastructure can be defined as the natural vegetative systems and green technologies that provide society with economic, environmental, health, and social benefits⁴. Much of this infrastructure focuses on reducing runoff, filtering pollutants and mitigating flood risk. Additional benefits include providing habitats for local species and food for pollinators and contributing to climate mitigation by absorbing carbon dioxide.

Economic benefits can include, but are not limited to:

- Lower up-front construction costs than 'grey' infrastructure solutions;
- Long-term savings from reduced maintenance costs and an extended lifespan;
- Reduced damage and financial impact of floods;
- Reduced energy costs; and
- Potential for revenue from urban agriculture.

Lead, Educate, and Support

Relationship building is integral to resilience-building. Climate change is experienced at the local level, making it a neighbourhood issue. Ensuring that your community is knowledgeable on climate change and the associated risks contributes to local resilience.

LEAD your community and seek out memberships, certifications, and accreditations in climate resilience. Share your commitments and actions with your community and encourage other businesses to do the same.

EDUCATE and engage staff on the topic. Support internal communications and education on climate change that will contribute to your preparedness, recovery, response, and transformation. Continue to educate yourself and your staff with additional tools and resources that can be found in this toolkit.

SUPPORT local initiatives. Seek out partnerships and promotional opportunities with local groups supporting climate action. Support local businesses looking to follow your lead.



Respond

Make a Plan

Climate projections for Lincoln anticipate an increase in frequency and severity of extreme weather events including windstorms and thunderstorms. These events, in addition to the expected increase in heavy rain events and flooding, signal the importance of having an effective and efficient emergency response plan.

Consider what procedures, systems, materials, and equipment are necessary for operations. Prioritize your businesses needs and use this prioritization to plan for emergencies. Exactly what's needed at your workplace will depend on the nature of your business, its risks, its size and location, and the number of people working there. Develop an emergency response plan that at the minimum includes the following:

- Clear evacuation procedures;
- A procedure to handle injuries;
- Emergency contact details;
- Emergency supplies; and
- Instructions for switching off utilities.

Complete the worksheets and templates in Tool B to kickstart your emergency response plan.

Educate staff on climate related risks Lincoln and your business face and share your plan. Train staff on their individual roles and responsibilities in an

emergency. Once roles are understood, run exercises or drills, and identify areas of improvement. What went well? What didn't? Make the necessary changes to your plan and re-test until you are satisfied with plan efficiency and efficacy. Regularly test and review the plan after you have finalized to account for changes in operations, staff, and risks.

Building resilience is not only about becoming operational again but taking advantage of new opportunities. Being prepared and developing an effective response protocol can help your business do this.

First Steps

When responding to a climate related disaster that resulted in damages or business closure, the recommended first step is to complete the First-Assessment Post-Disaster found in Tool C. This assessment will help you gauge your current circumstances and keep track of what needs to be done. Also found in Tool C is the Preliminary Actions Checklist. This checklist consists of a list of actions that need to be considered immediately.

Determining your financial position is critical moving forward. The Financial Position Checklist found in Tool C provides you with important questions and actions to consider moving forward.



Recover

In the event a climate related emergency leads to business closure, you may consider reopening. During the recovery phase it is important to take the time to pause and assess your current state of mind, in addition to your financial situation. This will help you make more informed decisions about the future. To do so, complete the Reopening Questionnaire found in Tool D.

The Chances of Success Questionnaire in Tool C will help analyze the potential demand for your product or service post-disaster. Recovery may also provide additional opportunities to build resilience. If there are structural damages to your business, issues with suppliers, and/or modifications to your products, it is worth considering how to integrate sustainable practices into your operations. Identify areas for change to operations and sourcing that contribute to the net-zero transformation and increase resilience. There are additional considerations in the recovery phase that are outlined in Tool D.



Additional Resources



National Round Table on the Environment and the Economy (NRT) Business Primer

The NRT is a Canadian organization with a direct mandate from Parliament to engage Canadians in the generation and promotion of sustainable development advice and solutions. The business primer is a report that outlines the tactics and strategies business executives and managers can use to stay competitive in a changing climate. Refer to this report for information on why adapting to climate change is important to stay competitive, and what practical steps and approaches you can take to succeed.



Retooling for Climate Change

Based out of British Columbia, this organization locates adaptation resources for an array of issues including, but not limited to, flood and coastal management, infrastructure, health, and food systems. After identifying the climate risks your business is susceptible to, this is a good resource to refer to, to source out additional information on how to respond.



Canadian Climate Institute Tip of the Iceberg

The Tip of the Iceberg report published by the Canadian Climate Institute details the impact of climate change within Canada with a focus on how weather-related disasters have caused business disruptions and loss. This resource can be used to gain additional information regarding the climate crisis and will be a useful tool when educating staff. The Canadian Climate Institute publishes several relevant reports that can increase your knowledge surrounding climate change.



WDCSB Business Climate Resilience

The central tenant of this report is to provide businesses with the knowledge and steps required to build business climate resilience. A main takeaway from this report is that ambitious mitigation is crucial in reducing long-term climate costs, and the private sector plays an important role in transformation. Read this report to further knowledge and gain insight into how to modify your business strategy to thrive, and not just survive, throughout this transformation.



**Intact Centre on Climate Adaptation
University of Waterloo**

The Intact Centre is a research centre within the University of Waterloo that focuses on identifying and reducing the impacts of extreme weather and climate change. The centre regularly publishes new work on adaptation and reducing climate risk within Canada, with a focus communities and businesses.



Insurance Bureau of Canada (IBC)

The IBC represents Canada's private, home, auto and business insurers and aims to increase public understanding of insurance in these sectors. Through IBC's website you can access an abundance of resources, including studies on financial management of climate risks, and the economic and fiscal impact of climate change and disasters.



Niagara Region Emergency Management Plan

The Niagara Region developed a robust emergency management plan that serves as a framework for responding to risks in the region. This plan includes, but is not limited to, an emergency notification procedure, crisis communication plan, and hazard identification and risk assessment. As a business owner in the Niagara Region, take the time to familiarize yourself and your employees with the management plan.



Small Business Access

This resource is provided by the government of Ontario.

Small Business Access offers support and advice to small businesses on how to obtain funding, find employees, get federal support and much more.



Low Impact Development Best Management Practices Facts Sheets

This resource will provide you with details on design considerations, construction, and planning considerations for LID practices such as exfiltration systems, green roofs, enhanced swales, permeable pavement and more.

Business Tools



Tool A: Preparedness

Climate Related Changes and Associated Impacts

The following Table outlines climate-related changes expected for Lincoln, and the associated negative and positive impacts. This table can be used to plan for changes through identifying risks and opportunities.

Increased CO2 levels	
<p>Positive Impacts and Opportunities</p> <ul style="list-style-type: none"> • Carbon dioxide “fertilization effect” helps plants grow faster and can increase productivity in many crops, given good temperature, water, light and root space conditions • Higher levels of CO2 can also reduce water vapour loss and water use by plants 	<p>Negative Impacts and Risks</p> <ul style="list-style-type: none"> • Increased levels of carbon dioxide may decrease the protein content of many plant species including wheat and clover
Hot spells and heat waves	
<p>Negative Impacts and Risks</p> <ul style="list-style-type: none"> • Hot days reduce photosynthesis and create moisture stress in grapes and other crops • Extremely high temperatures can decrease yields in annual field crops such as wheat and damage tree fruit such as apples • Woodlands become more vulnerable to fire under heat stress 	

Changes in precipitation patterns, especially decreased summer precipitation

Positive Impacts and Opportunities

- Drier summer conditions will reduce the incidence of plant diseases that proliferate in humid weather

Negative Impacts and Risks

- Precipitation in winter will fall increasingly as rain, decreasing the insulation of soils by snow, and increasing run-off and soil erosion
- Increased summer demand for water to irrigate tender fruit and grapes and competition for other water uses in the region
- Damaged or flooded structures

Warmer average temperatures in winter and other seasons

Positive Impacts and Opportunities

- Warmer winters lower feed requirements, increase survival of young animals, and reduce energy costs for livestock producers

Negative Impacts and Risks

- Shorter growing season for cool-weather crops such as lettuce, spinach, potatoes, or broccoli
- Delayed and reduced season for ice wine production and crop losses due to delayed harvests
- Increased cooling requirements and energy costs for operations in summer
- Increased severity and number of plant diseases
- Reduced efficacy of some pesticides (such as pyrethroids) and an increase in pest species may result in higher rates of pesticide use
- Higher rates of evaporation for soils and crops, requiring increased irrigation

**Adapted from Penney, 2012⁵.*

Preparedness Assessment

Complete the following assessment by answering Yes or No in response to the questions in the left columns.

Does your business have the following preparedness in place?	Yes	No
Do you have an emergency response plan for your employees for both large and small-scale disasters containing at least the following:		
Emergency contact information for your employees		
Evacuation, re-entry, or shelter-in-place plan		
Continuity of operations plan (essential personnel, services, equipment; alternate reporting locations; reopening, critical records access)		
Agreements and contracts with suppliers and contractors for critical operations		
Mobile communications ready for use in the event of a disaster (satellite phones, two-way radios, additional cell phone battery packs)		
Internal (employee) communications plan		
Communications plan for media, customers, and the public (pre-determined messages and messaging vehicles)		
Do you have employees who are cross trained in tasks outside of their normal job duties to assist with recovery?		
Do you have Memorandums of Understanding (MOUs) or contacts with services providers in place that you execute during and after disasters (e.g. security, generator, debris removal, and clean up services)?		
Do you have MOUs or contacts in place with local businesses that you can execute during disasters (e.g. rebooking with other local hotels)?		
Do you have at least three months of emergency operating funds?		
Does your business have insurance that adequately covers events, such as flooding, wind, theft, liability, fire, catastrophic loss, and loss of income?		
Have key personnel in your business had first-hand experience with disaster recover during the last 10 years?		

Climate Action Assessment

Does your business currently engage in the climate action item listed in the left column? Check Yes or No.

	Yes	No
Do you currently make efforts to reduce greenhouse gas emissions?		
Are you and your employees aware of the climate-related risks within Lincoln and to your business?		
Have you implemented green infrastructure, or do you plan on doing so soon?		
Do you display energy awareness material throughout your facility?		
Do you consider GHG emissions in procurement and transportation practices?		
Have you implemented sustainable water management in your irrigation systems?		

Marketing Assessment

Does your business have the following plans related to communications procedures and strategies? Check Yes or No.

	Yes	No
Do you have a written marketing plan containing situation/market analysis, goals, strategies tactics and timelines?		
Do you utilize different messaging vehicles to communication to customers and the public?		
Are you a member of a local professional agency?		
Are you a member of a regional or national professional industry association?		
Do you have a diverse customer base?		
Do you offer packages of your products or services with other business or organizations to expand local business opportunities?		

Workforce Assessment

Does your business meet the following criteria with relation to your local workforce? Check Yes or No.

	Yes	No
Do you have enough staff for normal operations under regular working conditions?		
Do you actively recruit new employees (e.g. attend job fairs)?		
Do you have access to an adequately trained workforce?		
Do your employees have reliable transportation to and from work?		
Do you have any employees trained or educated in climate change and sustainability?		
Do you allow your employees to participate in regularly scheduled health and safety training specific to your business?		
Do you provide resources for your employees to expand their understanding of climate change?		

Federal, Provincial, and Local Resources Assessment

Is your business actively engaged with your local government regarding the following plans and procedures it provides? Check Yes or No.

	Yes	No
Do you participate in any post-disaster damage assessments (e.g. polling program, survey) to determine the extent of damage from a disaster and the status of the recovery progress?		
Have you identified the appropriate public or private resources to obtain up-to-date climate information within your municipality?		
Have you coordinated your re-entry or re-opening plan with local officials?		

Resource Access and Knowledge Assessment

Does your business support local resource sustainability efforts? Check Yes or No

	Yes	No
Do you support local efforts on natural resource sustainability (e.g. habitat conservation and restoration, erosion prevention, stormwater management)?		
Do you employ sustainable operations practices (e.g. local sourcing, recycling, and energy efficient or "green" technology)?		
Do you provide "sustainable use" tips to your customers (e.g. re-using towels at lodging businesses, only serving water if requested at restaurants)?		

Climate Risk and Response Worksheet

Use the worksheet to identify risks and assess your businesses susceptibility to each risk. Then brainstorm potential responses and the co-benefits of each response.

Climate Risk	Susceptibility	Response	Co-benefits
<i>Increased heavy rain events</i>	<i>Potential for basement flooding</i>	<i>Increase porous surfaces by installing a rain garden where water will be redirected</i>	<i>Aesthetically pleasing, filters stormwater runoff</i>

Tool B: Emergency Planning

Climate Emergency Response Plan Template

Complete the template to begin development of an emergency response plan.

Emergency Response Plan

Evacuation assembly area:

Instructions for switching off:

Electricity:

Gas:

Water:

Emergency Contacts:

Electricity company:

Water company:

Gas company:

Insurance company:

Property owner/manager:

Suppliers:

Neighbors:

Other:

Essential Emergency Kit:

Locations:

List of items:

Employee Emergency Contact Information

Fill out a template for each employee.

Employee Name: _____

Contact Name: _____ **Relationship:** _____

Contact #: _____ **Email:** _____

Contacted:

Yes

No

Action/Notes: _____

Employee Name: _____

Contact Name: _____ **Relationship:** _____

Contact #: _____ **Email:** _____

Contacted:

Yes

No

Action/Notes: _____

Employee Emergency Contact Information

Fill out a template for each employee.

Employee Name: _____

Contact Name: _____

Relationship: _____

Contact #: _____

Email: _____

Contacted:

Yes

No

Action/Notes: _____

Employee Name: _____

Contact Name: _____

Relationship: _____

Contact #: _____

Email: _____

Contacted:

Yes

No

Action/Notes: _____

Utility Contact Information

Fill out a template for each utility company.

Utility Company: _____

Contact Name: _____

Contact Title: _____

Contact #: _____

Email: _____

Contacted:

Yes

No

Action/Notes:

Utility Company:: _____

Contact Name: _____

Contact Title: _____

Contact #: _____

Email: _____

Contacted:

Yes

No

Action/Notes:

Utility Contact Information

Fill out a template for each utility company.

Utility Company: _____

Contact Name: _____

Contact Title: _____

Contact #: _____

Email: _____

Contacted:

Yes

No

Action/Notes:

Utility Company:: _____

Contact Name: _____

Contact Title: _____

Contact #: _____

Email: _____

Contacted:

Yes

No

Action/Notes:

Additional Stakeholder Contact Information

Fill out a template for each additional stakeholder.

Stakeholder Name: _____ **Relationship:** _____

Contact #: _____ **Email:** _____

Contacted:

Yes

No

Action/Notes: _____

Stakeholder Name: _____ **Relationship:** _____

Contact #: _____ **Email:** _____

Contacted:

Yes

No

Action/Notes: _____

Essential Emergency Kit Items

Collect and store these items in a safe and accessible location within the facility.

- First Aid Kit
- Whistle
- Battery Powered Radio
- Water
- Battery Powered Flashlight
- Cash
- Batteries
- Local Map
- Non-Perishable Food
- Cell Phone with Charger



Tool C: Response

First Assessment Post-Disaster

Complete the checklist following a climate related event that has led to business closure.

	Yes	No	Comments
Is the facility operational?			
Can you reopen without significant repairs?			
Is inventory damaged and needs to be replaced?			
Are supplies damaged and need to be replaced?			
Is equipment damaged and need to be replaced?			
Does the building need to be secured against theft?			
Does the business have a website that is still active?			
Does the website need to be shutdown?			
Should a message be placed on the website telling clients what happened?			
Is money being lost daily? How much?			
Is there access to monies to pay personal bills?			

Financial Position Checklist

Consider the following questions and complete the recommended actions prior to re-opening.

	Yes	No	Comments
Do you have the business financial records?			
Do you have your last 3 years of tax returns?			
Make a list of what your insurance agent says is covered and what will not be covered.			
Determine available cash.			
Do you have a current balance sheet dated right before the disaster?			
Meet with your accountant to create an accurate picture of the business's health.			



Tool D: Recovery

Reopening Questionnaire

Consider the questions in the left column before reopening. Check Yes or No if applicable.

	Yes	No	Comments
What was the condition of the business pre-disaster?			
Were you making the profit you wanted?			
What was your exit plan pre-disaster?			
Have you considered other opportunities?			
Would you rather reopen another business?			
Would you make changes to the existing business if you reopen?			
Are you prepared, personally and financially, for the demands of reopening your business?			
Will you be taking on more debt?			
Should you reopen?			

Chances for Success

Consider the questions in the left column before reopening. Check Yes or No.

	Yes	No	Comments
Is your business vital to the community (e.g., grocery store, gas station)?			
Is your business the type that everyone needs to recover their homes and businesses?			
Have your key customers and/or suppliers been affected by the disaster?			
Have they found other sources so that you will have to "get them back"?			
Does other businesses closing in your area impact your business?			
Has the economic climate of the area changed post-disaster?			
Were you keeping up with the industry?			
Can your business change easily to react to outside forces?			
Can you reopen quickly?			
Will you be the first business to reopen in your area?			
Can you wait to reopen and still be viable when you do?			

Recovery Questionnaire

Consider the questions in the left column before reopening. Check Yes or No.

	Yes	No	Comments
Have you developed recovery objectives?			
Have you established a recovery team with clear responsibilities from the recovery plan?			
Can team members work off-site?			
Have you established requirements for reopening your business? e.g.			
Are you prepared for the cost of executing your recovery plan?			
Do you have adequate resources to bring the business to normal operating levels?			
Can you reduce operating costs?			
Should relocations be an option?			
Do you have financial goals you want to achieve?			
Can you add or remove products/services?			



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