

Climate Change Impacts on the Agriculture & Agri-Food Industry in York Region

March 19th 2025

Overview

York Region is home to some of Canada's most productive agricultural areas, ranking 1st in total farm revenue per acre in the GTA and boasting one of the largest food and beverage processing sectors in Canada.

However, the climate is changing across Canada and York Region, including:

- Increase in annual mean temperature
- Increase in annual average precipitation
- Increase in >30°C days
- Longer growing season
- More extreme weather events

Understanding how climate change will impact agriculture is key to ensuring a sustainable and resilient food system in York Region to support achievement of [Action 10 of the Climate Change Action Plan](#).



Research Question: What are the climate change impacts across the agri-food value chain for York Region? (Input supply, production, storage, processing, transport, packaging, retailers/restaurants).



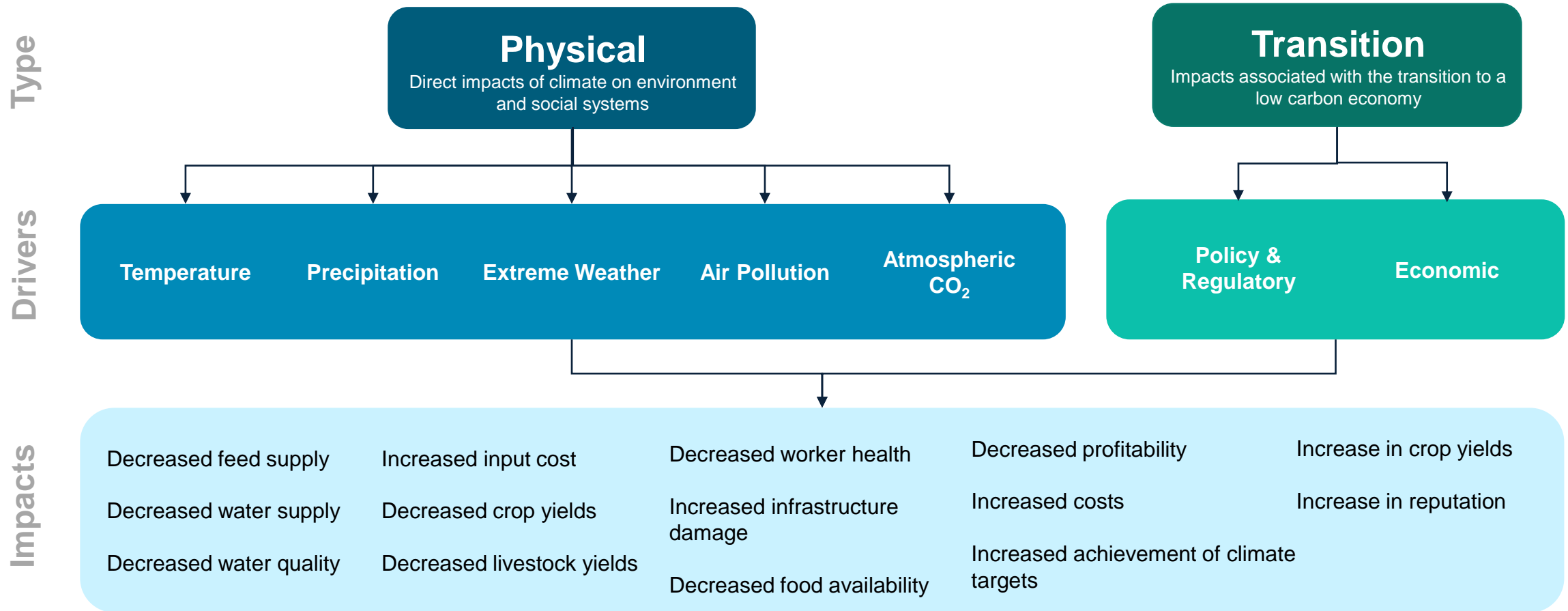
Methodology: Identification of leading research and reports across government, academic and industry sources. Confirm and discuss results with key industry stakeholders*.



Findings: Results of the research study will be displayed across each section of the value chain and recommendations provided to support York Region in building a resilient food system.








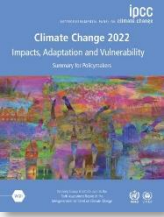




Initial Climate Drivers & Impacts Identified

As a result of the research, initial findings show that impacts to the agri-food value chain can originate from two types of risk, physical and transition. These influence a variety of drivers which can lead to the initial impacts identified below.



Example Literature Sources

Outlined below are the areas of the agriculture and agri-food value chain and example literature categories and types that are in the scope of this study.

Value Chain			Sample Literature Sources				
Value Chain Step	Activities		Government	York Region	Industry	Academic	News
 Input Supply	Seeds, fertilizers, pesticides, machinery, water, animal feed		UN Reports	York Region Agriculture and Agri Food Sector Strategy	Farm Credit Canada	Canadian Journal of Agricultural Economics	CBC
 Primary Producers	Crop cultivation, livestock management, fisheries		Government of Canada (Agriculture & Agri-Food Canada)		Canadian Agri-food Policy Institute		CTV
 Storage & Transport	Storage facilities, cold chain transport		Government of Ontario (& other provincial governments as applicable)	York Region Economic Development Action Plan	Food & Beverage Ontario	Environmental Research Journal	Financial Post (Agriculture Section)
 Food & Beverage Processors	Processing (canning, freezing, drying), quality assurance, water, energy			York Region Climate Change Action Plan	Ontario Federation of Agriculture	Science of the Total Environment Journal	The Western Producer
 Distributors, Wholesalers & Packagers	Logistics, cold-chain, food & beverage packaging, energy				Agricultural Manufacturers of Canada	International Journal of Environmental Research & Public Health	
 Retailers	Supermarkets, farmers markets, e-commerce		Example Reports Please click photos to be directed to link				
 Food Service & Restaurants	Restaurants, catering businesses, cafes/coffee shops, institutional food						
			    				

Agriculture & Agri-Food Climate Impacts

Initial impacts identified across each step of the agri-food value chain from identified literature sources.

Value Chain Step	Transition/ Physical	Drivers	Impacts
Input Supply	Physical	<ul style="list-style-type: none"> Extreme Weather; Precipitation; Temperature 	<ul style="list-style-type: none"> Decreased feed/input supply and increased costs Decreased water supply and water quality Increased input costs
	Transition	<ul style="list-style-type: none"> Policy & Regulatory 	<ul style="list-style-type: none"> Increased input cost from carbon pricing
Primary Producers	Physical	<ul style="list-style-type: none"> Air Pollution (Ground level ozone); Carbon Dioxide; Extreme Weather; Precipitation; Temperature 	<ul style="list-style-type: none"> Decreased crop yields & livestock yields Decreased worker health from pests/temperature Increase in crop yields from longer growing seasons and improved plant productivity
Storage & Transport	Physical	<ul style="list-style-type: none"> Extreme Weather; Temperature 	<ul style="list-style-type: none"> Increased damage to transportation infrastructure Decreased food availability Increased costs to keep food cold & reduce spoilage
	Transition	<ul style="list-style-type: none"> Policy & Regulatory 	<ul style="list-style-type: none"> Increased costs from carbon pricing & fleet electrification
Food & Beverage Processors	Physical	<ul style="list-style-type: none"> Carbon Dioxide; Extreme Weather; Precipitation; Temperature 	<ul style="list-style-type: none"> Decreased nutritional quality of food products from increasing CO2 Decreased food availability Increased processing & manufacturing infrastructure damage Decreased worker health from heat & airborne pollutants
	Transition	<ul style="list-style-type: none"> Policy & Regulatory 	<ul style="list-style-type: none"> Decreased profitability from emissions pricing schemes
Distributors, Wholesalers, Packagers	Physical	<ul style="list-style-type: none"> Extreme Weather 	<ul style="list-style-type: none"> Increased infrastructure damage of distribution channels
	Transition	<ul style="list-style-type: none"> Policy & Regulatory 	<ul style="list-style-type: none"> Additional costs from sustainable packaging laws Increased reputation in packaging & climate
Retailers	Physical	<ul style="list-style-type: none"> Temperature; Extreme Weather 	<ul style="list-style-type: none"> Decreased profitability from increased operational costs (air conditioning, infrastructure damage) Decreased worker health from heat & airborne pollutants
	Transition	<ul style="list-style-type: none"> Policy & Regulatory; Economic 	<ul style="list-style-type: none"> Decreased profitability from emissions pricing & packaging laws Opportunity to increase reputation in packaging & climate
Food Service & Restaurants	Physical	<ul style="list-style-type: none"> Extreme Weather; Temperature 	<ul style="list-style-type: none"> Decreased food availability Decreased profitability from extreme heat & operational costs
	Transition	<ul style="list-style-type: none"> Economic 	<ul style="list-style-type: none"> Decreased profitability from changing consumer preferences & tariffs Increased reputation due to climate action

Mitigation & Adaptation

Initial mitigation and adaptation actions found across each step of the agri-food value chain from a variety of literature sources.

Conducting a **climate scenario analysis** can act as a baseline for long-term planning and support effective implementation of the recommendations below:

Sustainable Agriculture Practices	Supply Chain, Technology & Processing Efficiencies	Innovation & Diversification	Government & Financial Support	Education & Capacity Building
<ul style="list-style-type: none">• Diversification and crop rotation• Cover crops & no-till• Rotational grazing• Integrated pest management• Other nature-based solutions	<ul style="list-style-type: none">• Supply chain management & automation• Diversification of inputs (seeds/fertilizers)• Renewable energy use & improvement in cold chain storage• Water and waste reduction	<ul style="list-style-type: none">• Climate resilient crop varieties• On-farm revenue diversification and agri-tourism• Menu and product diversification• Sustainable and circular food systems	<ul style="list-style-type: none">• Crop and livestock insurance (compensation for crop & livestock losses from extreme weather events)• Government funding & programs (Sustainable Canadian Agricultural Partnership)	<ul style="list-style-type: none">• Resources for agri-food businesses (leveraging existing knowledge)• Modification of diets and promotion of local food sources• Skill-building and educational partnerships (post-secondary and youth engagement)

Recommendations & Next Steps

Initial recommendations from the literature:*

- 1 Consider conducting a **climate scenario analysis**.
- 2 Work with agri-food businesses to implement mitigation adaption measures, including **circular strategies** to reduce climate impacts and address Action 10 of Climate Change Action Plan.
- 3 Provide support to agri-food businesses through **funding and innovation programs** (York Region Entrepreneurship and Innovation Fund).
- 4 Continue providing **awareness and education sessions** to stakeholders across the value chain. Further **build capacity** by leveraging existing knowledge base.
- 5 Continue **post-secondary partnerships** with York University and Seneca to support food and beverage ventures.

Project team next steps:

- ✓ **Integrate feedback** from session into overall report (any additional impacts, mitigation & adaptation strategies).
- ✓ Build off of existing programs and research to identify **York specific** impact and mitigation/adaptation examples.
- ✓ Work with York Region team to identify any **additional impacts** to ensure comprehensive report.

*Initial recommendations will be expanded on pending feedback from York Region and other stakeholders.