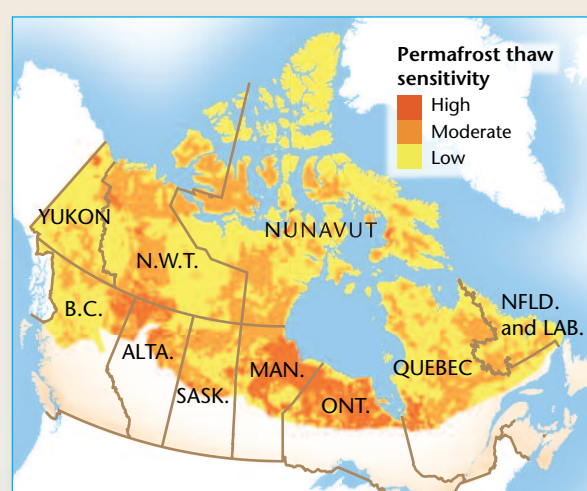


# A Changing Climate

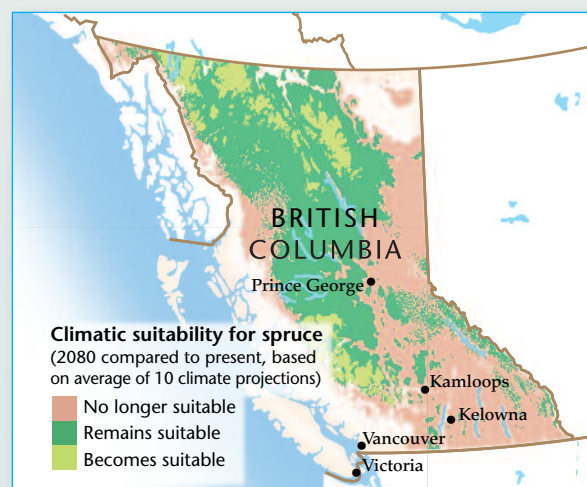
Widespread impacts, some positive, most negative, are expected across Canada as climate change brings increasing temperatures and changing moisture levels



### IMPACTS IN THE NORTH

- Changes in permafrost, sea ice, lake ice and snow cover affect infrastructure.
- New transportation options linked to navigable Arctic waters and expanded port and road networks.
- Biodiversity decreases. Polar bears, beluga and caribou are among the most vulnerable species.
- Challenges to maintaining traditional ways of life in Aboriginal Arctic communities.

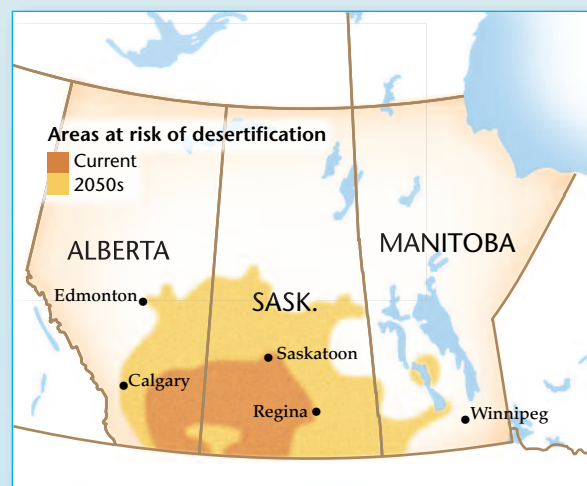
Some northern populations with limited capacity to adapt are particularly vulnerable.



### IMPACTS IN BRITISH COLUMBIA

- Increasing water shortages and competition for water. More frequent and sustained drought.
- Critical facilities, networks and services threatened by extreme weather and natural hazards.
- Forests vulnerable to pest infestations and wildfire.
- Stresses on fisheries increase. Pacific salmon especially vulnerable.

Integrating climate change adaptation into decision-making enhances resilience and reduces long-term costs and impacts.



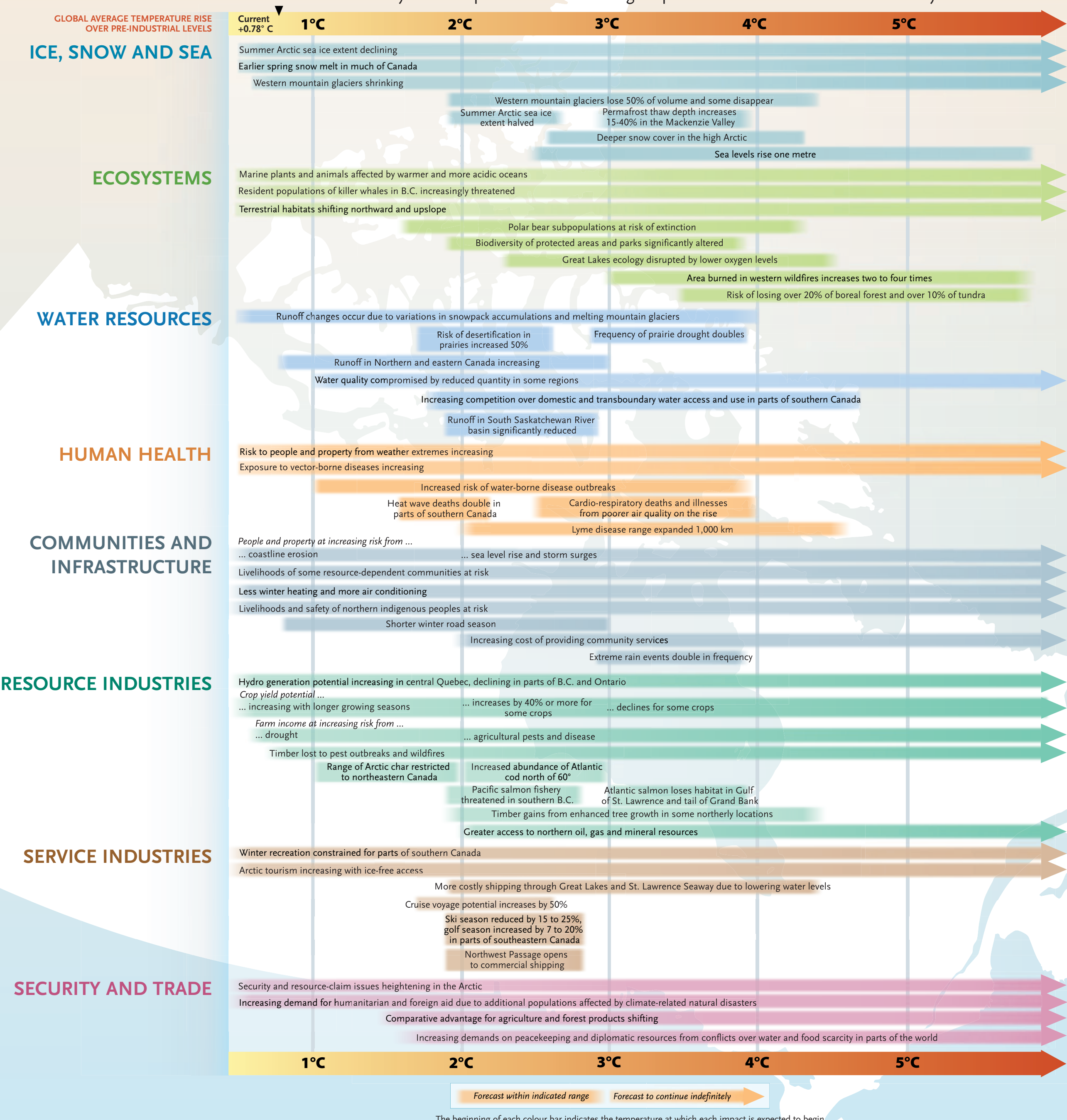
### IMPACTS ON THE PRAIRIES

- Increased water scarcity.
- Drought, wildfire and severe floods more frequent, with economic impacts in the billions of dollars.
- Warmer winters mean more pests and diseases, more difficult access to remote communities via winter roads resulting in challenges for the forestry and energy sectors.
- Ecosystems affected by shifts in fire and insect disturbances, stressed aquatic habitats and introduction of non-native species.

Capacity to adapt varies greatly within the region, with an important role for governance institutions and civil society to turn capacity into action.

# Degrees of Change

A summary of the impacts of climate change expected in Canada over the 21st century



The NRTEE's *Degrees of Change* diagram (above) is a summary of the impacts of climate change expected in Canada over the 21st century. It shows both risks and opportunities for Canada from different levels of global warming above pre-industrial levels. Each category in the diagram is an important part of our country's environment and economy, and only contains climate change impacts that we are confident could occur, as documented in scientific literature. Each regional map takes a climate change impact and illustrates what it

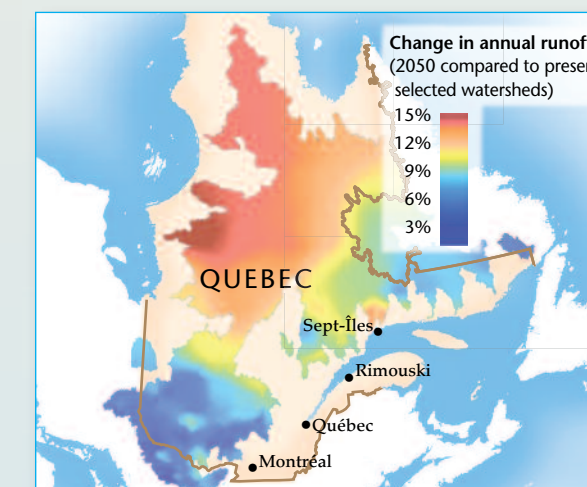
might look like across that specific region. Not all expected impacts of climate change are shown here. Nor is the diagram a prediction. It does not account for time lags between global temperature change and the response of our physical environment. Even if actions limit global temperature increases to just 2°C by 2050, climate change impacts will continue to build up for decades due to the slow response of Earth systems. Adapting to these impacts to reduce or avoid harm is not shown on the diagram but would lessen their effects.



### IMPACTS IN ONTARIO

- More frequent disruptions to water treatment/distribution and energy generation/transmission.
- Increased water shortages in southern Ontario.
- Increased summer temperatures and evaporation rates.
- Increased health risks related to extreme weather, heat, smog and food-, water- and vector-borne diseases.
- Remote communities affected by evacuations, transportation disruptions and stressed forest-based economies.

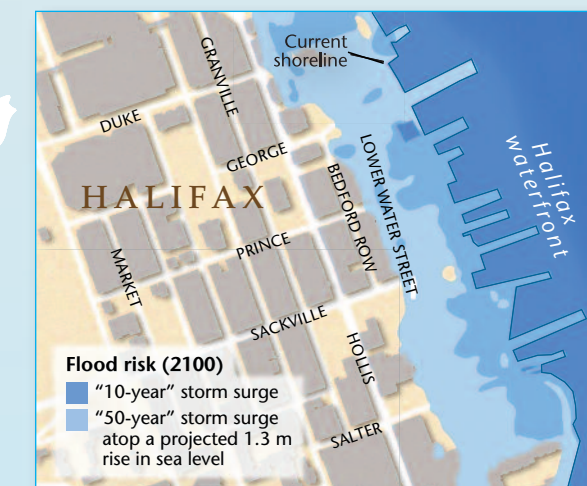
Ontario's capacity to adapt is high, but it is not uniform across the region and between sectors.



### IMPACTS IN QUEBEC

- Northern communities face challenges with critical infrastructure, natural hazards and maintaining traditional ways of life.
- Ecosystem health declines, with significant consequences for natural resource economies.
- Possible benefits for hydroelectricity and forestry.
- Shoreline erosion along the St. Lawrence River estuary.
- More extreme weather conditions in southern Quebec.

Quebec's knowledge economy carries a high degree of adaptive capacity, but little is known about the costs and limitations of adaptation.



### IMPACTS IN ATLANTIC CANADA

- More storms and ocean surges. Sea levels rise.
- Coastal erosion and flooding.
- Increased pressure on water resources.
- Marine fisheries face changes in fish species, threats to infrastructure, occupational health and safety risks.
- Agriculture and forestry may benefit, but also vulnerable to disturbances and moisture stress.

Vulnerability of Atlantic communities can be reduced through careful planning.