



## **FROM IMPACTS TO ADAPTATION: CANADA IN A CHANGING CLIMATE 2007** **Northern Chapter Summary: Impacts in the Yukon**

*From Impacts to Adaptation: Canada in a Changing Climate, 2007* identifies current and future risks and opportunities that climate change presents to Canada. Written by our top scientists, it is based on a critical analysis of existing published scientific (including grey) literature and expert (including Traditional) knowledge. Advances in understanding how we can adapt to climate change are highlighted throughout the report.

**Sea Ice** Models projecting the timing and magnitude of melting sea ice all agree that the Arctic will be ice-free sometime in the next century. This will result in a longer shipping season in the Beaufort Sea, and has implications for national security.

**Fresh Water** Thawing permafrost will result in the loss of some shallow lakes and wetlands (and resident fish and wildlife populations). Changing permafrost and precipitation conditions will affect the hydrology of Yukon rivers and could mean greater flood risk, changes in hydroelectric capacity, and impacts on drinking water quality and quantity.

**Infrastructure** The Yukon is predicted to experience heavy permafrost loss. Older buildings, pipelines and roads may be affected by 'slumping' soil. Fixing these structures will be very expensive, although the engineering of new structures is already considering future trends.

**Mining and Tourism** Mining exploration and oil and gas operations (both on and off shore) will need to adapt to changes in permafrost, winter access, and increased storm and wave activity. Tourism may experience a boost as a warmer climate will extend the travel season.

**Forestry** In the short-term, operations to salvage trees affected by fires and beetle infestations will increase. In the long term, climate change is expected to limit the growth of commercially valuable tree species such as white spruce.

**Fish and Wildlife** The distribution of fish and wildlife species will shift as habitat and local climatic regimes change. Changes in caribou and salmon populations have already been observed here.

**People** Maintaining and protecting aspects of traditional and subsistence ways of life in many Aboriginal communities may become more difficult. In general, Yukoners will fare better than other northerners since three quarters of us live in Whitehorse and can benefit from social and economic supports.

**A warming climate will impact sea ice, snow cover, glacier melt, river and lake ice, freshwater discharge, sea level, coastal stability, terrestrial vegetation zones, fire regimes, biodiversity and freshwater ecosystems.**



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**Northern Chapter Summary: Adaptation Ideas**

**People**

**Northern Impacts**

Protecting aspects of subsistence living more difficult.

**Adaptation Examples**

Economic support for the pursuit of traditional and subsistence ways of life.

**Hydroelectric**

Holding structures lack reservoir capacity.

Raise height of retention dams.

**Oil and Gas**

Greater exploration access. Decreased capacity of permafrost sumps to hold contaminants.

Alternate drilling waste solutions.

**Mining**

Reduced ice road access.

Use of water-based transport.

**Infrastructure**

Building settlement and instability.

Surface insulation or artificial cooling of soils.

**Transportation**

Increased arctic shipping.  
 Decrease in ice roads.

Surveillance and ice-breaking support services.  
 Develop alternate locations for projects based on new access restrictions or opportunities.

**Forestry**

Increased disturbance (fires, pests).

Targeted regeneration of forests.

**Fisheries**

Decline in populations, shift in ranges.

Adaptive management tools to ensure sustainable harvest.

**Wildlife, Biodiversity, Protected Areas**

Habitat degradation and changes in distribution and range of species.  
 Ecosystem restructuring themselves.

Monitor and bring together scientific and traditional knowledge. Ensure management tools are adaptive and able to respond to changes in ecosystems and species abundance.

**Tourism**

Longer travel season.

Cruise ships in the Northwest Passage, extend service season.

**In the past 50 years, the Yukon has warmed by 2.2 degrees, the highest of all three territories, and a whole degree more than Canada as a whole. Overall, there has been more precipitation in the north, although drier summers have being recorded recently in the Yukon. These trends are expected to continue.**