CLIMATE CHANGE RESILIENCE IN THE CANADIAN ARCTIC

Seghan MacDonald, S. Jeff Birchall
Climate Adaptation and Resilience Lab
School of Urban and Regional Planning
Dept. of Earth and Atmospheric Sciences
University of Alberta
Canada’s north is often defined as the area north of the 60th parallel.
REGIONAL IMPACTS

Physical Impacts

Social Impacts
PHYSICAL IMPACTS

- Increasing seasonal temperature variation
- Melting permafrost
- Changing sea ice conditions
- Sea level rise and storm surges
- Coastal erosion
SOCIAL IMPACTS

- Loss of homes and livelihood
- Traditional harvesting practices
  - Ice safety
  - Changing animal migration patterns
CURRENT ACTION
Our Clean Future: A Yukon strategy for climate change, energy and a green economy

Pan-Canadian Framework on clean growth and climate change

2030 NWT Climate Change Strategic Framework

Upagiaqtavut Climate Change Centre
TUKTOYAKTUK, NWT
A community in crisis
Sea level rise and increased storm severity are causing coastal erosion at a rate of approximately 1 to 2 m per year.

898 residents, 90% identify as Indigenous.

Estimated costs of $20-50 million to protect the hamlet from erosion.
HAMLET OF TUKTOKTUK

LAND USE CONCEPT MAP
Overview

Development Areas

See detailed maps for each Stage

MAP DRAWING INFORMATION:
DATA PROVIDED BY GNWT

MAP CREATED BY: SCW
MAP CHECKED BY: AW

MAP PROJECTION: NAD 1983 UTM Zone 22N

DILLON
CONSULTING

PROJECT: 91-695
STATUS: DRAFT
Date: 11/22/2016
Note:
If the predicted erosion or flooding makes the grey area undevelopable, or increased demand because of population growth or economic activity, then Future Growth Areas will be developed.
LAND USE CONCEPT MAP
Stage 3

- **No Development**
- **Developed Area**
- **Future Growth Area**
- **Airport**

**Note:**
If the predicted erosion or flooding makes the grey area undevelopable, or increased demand because of population growth or economic activity, then Future Growth Areas will be developed.
COLLABORATIVE APPROACHES TO RESILIENCE BUILDING
VERTICAL COLLABORATION

Limited resources at the local scale

PROACTIVE vs REACTIVE

Access to resources can impact whether action is proactive or reactive

MAINSTREAMING

Mainstreaming climate adaptation action within existing local policies
TRADITIONAL KNOWLEDGE

AKA Quajimajatuqangit

Local knowledge of the landscape and climate bring perspectives often overlooked by “experts”

Indigenous peoples have historically had a high adaptive capacity
CONCLUSIONS

113,000 people live in the Canadian North

Small isolated communities across the Canadian North experiencing significant physical and social impacts.

Time for Canada to approach climate change in the Arctic with a more collaborative mindset.
THANK YOU!

QUESTIONS?
For further discussion please contact Seghan at:

Climate Adaptation and Resilience Lab
School of Urban and Regional Planning
Earth and Atmospheric Sciences,
University of Alberta
seghan@ualberta.ca