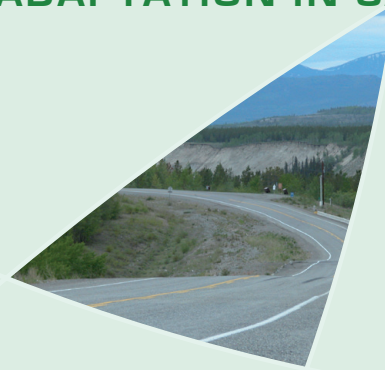


Pan-Territorial Adaptation Strategy

MOVING FORWARD ON CLIMATE CHANGE ADAPTATION IN CANADA'S NORTH

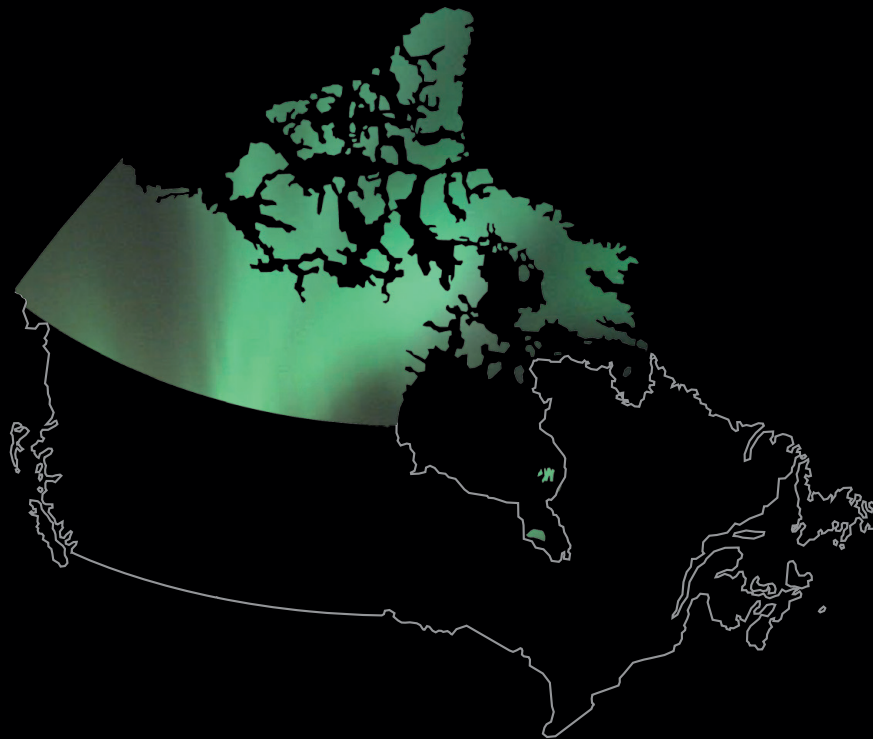


Pan-Territorial Adaptation Strategy

MOVING FORWARD ON CLIMATE CHANGE ADAPTATION IN CANADA'S NORTH



This document is a part of
A NORTHERN VISION: A Stronger North and a Better Canada.
For more information, please visit: www.anorthernvision.ca

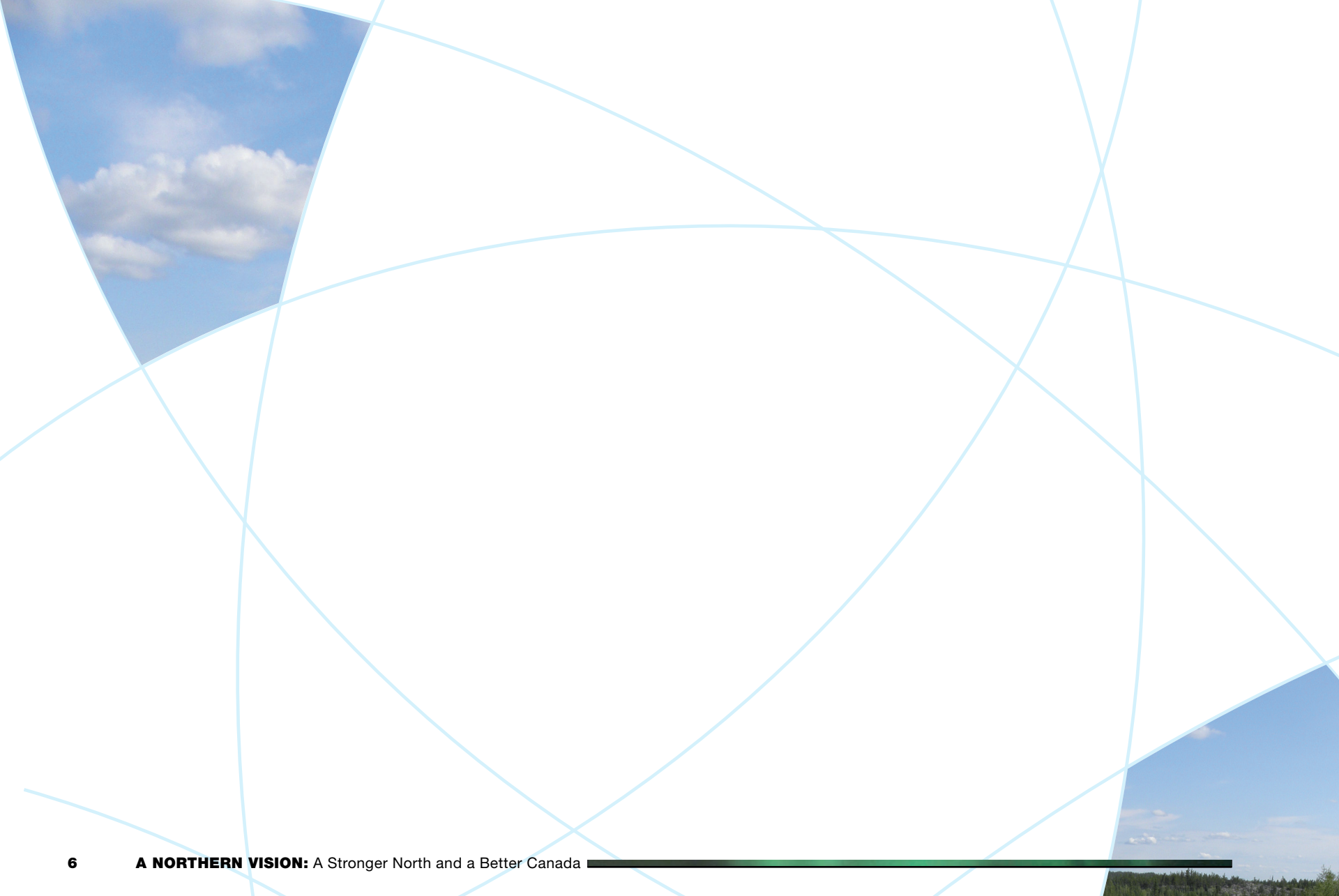


A NORTHERN VISION: A Stronger North and a Better Canada



CONTENT

EXECUTIVE SUMMARY	page 6
INTRODUCTION	page 8
GUIDING PRINCIPLES	page 12
OUR GOAL	page 12
CLIMATE CHANGE IMPACTS IN THE NORTH	page 14
CHALLENGES	page 18
COLLECTIVE ACTION	page 19
STRATEGIES FOR ACTION	page 20
CONCLUSION	page 29



EXECUTIVE SUMMARY

Climate change impacts vary widely in nature and magnitude across Canada's North. The Governments of Nunavut, the Northwest Territories and Yukon agreed in 2009 to work together on climate change, with a focus on practical adaptation measures.

The *Pan-Territorial Adaptation Strategy: Moving Forward on Climate Change Adaptation in Canada's North* identifies six approaches for supporting current and future climate change actions:

- Source funding
- Collaborate with other governments
- Support communities
- Integrate adaptation
- Share knowledge and understanding
- Develop and share tools, technology and innovation

Adaptation requires governments to manage risks and ensure that Northern infrastructure, ecosystems and cultures are resilient to future changes. The territorial governments commit to work closely with partners at all levels - local, national, international - as well as with Aboriginal governments and organizations by sharing climate change adaptation knowledge and developing collaborative activities.



INTRODUCTION

Climate change is affecting Canada's North. The three territorial governments are taking a leadership role to organize for the future now.

At the 2009 Northern Premiers' Forum, the Premiers of Nunavut, the Northwest Territories and Yukon agreed to have their governments work together to better understand the impacts of climate change throughout the North and to propose concrete and practical climate change adaptation measures.

The three territorial governments have a common interest in reducing the risks posed by climate change to Northern infrastructure, economies, human health and safety, ecosystems, and traditional cultures. The *Pan-Territorial Adaptation Strategy: Moving Forward on Climate Change Adaptation in Canada's North* outlines the impacts of climate change in the three territories, and proposes strategies for collaborative actions, while at the same time supporting territory-specific initiatives to meet each territory's unique challenges.

This strategy acknowledges that adaptation efforts link to and complement climate change mitigation measures such as energy efficiency and clean energy sourcing. We recognize that climate change adaptation actions must be taken in addition to efforts to reduce greenhouse gas emissions that cause climate change.

What is adaptation? Adaptation means accepting that climate change is happening and taking action to prevent or reduce potential harm while building on new opportunities. To be effective, adaptation requires governments to assess vulnerabilities and manage risks to ensure that Northern infrastructure, economies, ecosystems and cultures are resilient to future changes.

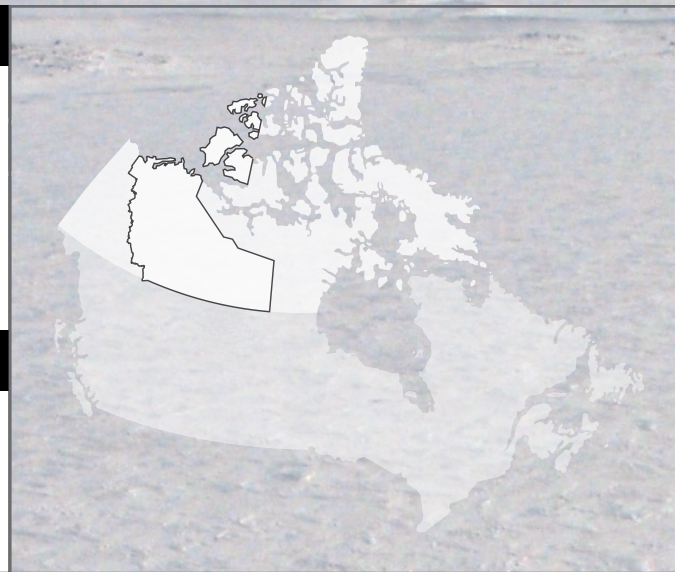
NORTHWEST TERRITORIES

Abbreviated winter road season*

Cold winters are needed in order to build roads over otherwise impassable lakes and muskeg. Most years the Tibbitt to Contwoyto winter road is open 70 days, but the warm winter of 2005-06 meant only 50 days of use thanks to a late start and early closure. Only 6,841 loads out of the planned 9,000 loads made it by truck into the Diavik Diamond Mine, which then had to spend tens of millions of dollars flying in 13,000 tonnes of dry cargo and 11,000 tonnes of fuel.

Coastal erosion

Tuktoyaktuk has experienced significant coastal erosion due to reduced sea ice, melting permafrost and rising sea levels that interact with storms and storm surges. The community has moved several buildings inland, including the school and police station.

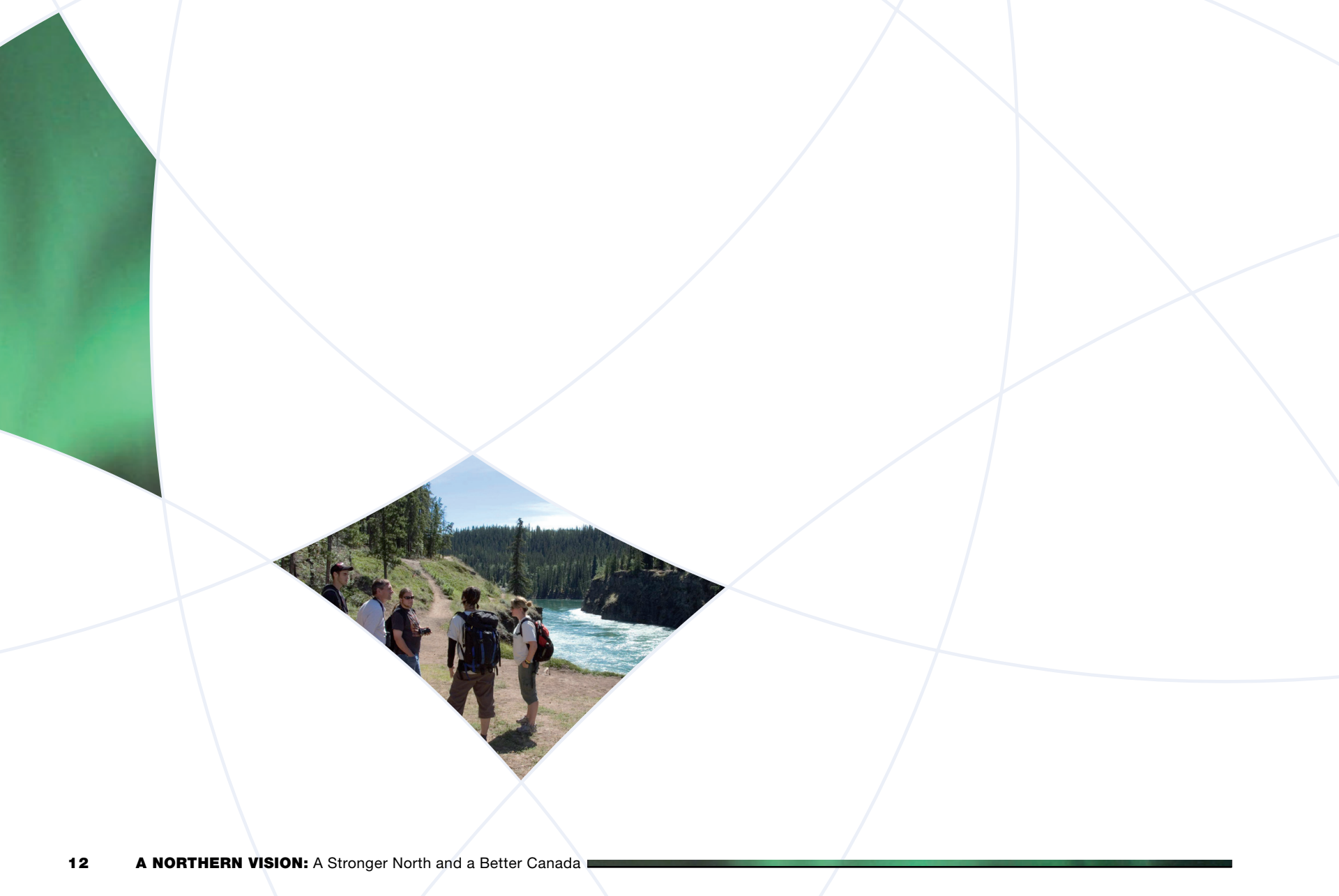


*Abbreviated Winter Road Season

Ashbury, Douglas. "Over the Top." Rio Tinto Review. September 2006. 79: 9-14.

http://www.diavik.ca/documents/Diavik_Airlift.pdf Accessed 15 October 2010





GUIDING PRINCIPLES

This *Pan-Territorial Adaptation Strategy* is guided by the principles of

- Working together and with all levels of government in a transparent and open manner
- Building on existing climate change adaptation actions and initiatives within and across the territories
- Using an informed approach based on science and traditional and local knowledge
- Developing and applying initiatives that are feasible and well-suited for the North

OUR GOAL

The goal of the *Pan-Territorial Adaptation Strategy* is to optimize benefits for the North by ensuring

- Strong partnerships are maintained between and among local, territorial, federal and Aboriginal governments and organizations, as well as intergovernmental and circumpolar forums, the private sector and academia
- Effective communication and information sharing occurs among partners
- Coordination of adaptation actions across the North is enhanced, with flexibility for territory-specific action

CLIMATE CHANGE IMPACTS IN THE NORTH

Climate change specialists recognize two general types of climate change impacts:

Biophysical Impacts including physical changes to northern landscapes and ecosystems.

Socio-economic Impacts that arise from bio-physical impacts and that affect the health, safety and lifestyles of Northerners.





The two types of climate change impacts interact in complex ways, which can place increased stress on the ecosystems, infrastructure, economies, and cultures of the North. They can also have positive effects in some cases.

- **Thawing permafrost** affects the integrity of buildings, roads and other critical infrastructure (e.g. airport runways, sewer systems, water systems, and tailings ponds). This increases maintenance costs and can threaten health and safety of both humans and wildlife.
- **Shifting Biomes** affect the distribution and health of various species. This can result in the spreading of certain illnesses and parasites further North, and may interrupt access to traditional food sources in some communities. Shifting biomes may also increase potential for agriculture and forestry activity.
- **Changing sea ice patterns** cause widespread effects on marine ecosystems, which in turn affect traditional food harvesting practices and compromise the safety of traditional travel routes on ice.
- **Reduction in sea ice thickness and cover**, and an increase in the length of the summer shipping season, will open up previously inaccessible areas of both land and water, allowing for increased shipping, tourism, resource exploration and industrial activities.

Increased access may lead to challenges in security and environmental regulation and could lead to the disruption of traditional lifestyles.

- **Changes in freeze-up and break-up** of Northern water bodies affect the reliability of winter roads and the ability to transport essential goods for communities and industry.
- **Rising sea levels** cause coastal erosion and storm surges that damage buildings, thus increasing maintenance costs or forcing relocation of the buildings.
- **Rising temperatures** increase the risk of wildfire and forest pest infestations, threatening community infrastructure and destroying forest resources. Rising temperatures may also allow invasive species including disease vectors and parasites to survive in new locations in the North, threatening wildlife and human health.
- **Melting glaciers**, reduced ice covers and changing stream flows may result in flooding or water shortages in the future. Both transportation infrastructure and water supply, treatment and distribution systems are vulnerable and may need to be updated or modified.
- **Extreme or unexpected weather events** such as severe storms and intense precipitation or low water levels may threaten infrastructure and shipping as well as human safety.



YUKON

Increased highway maintenance costs

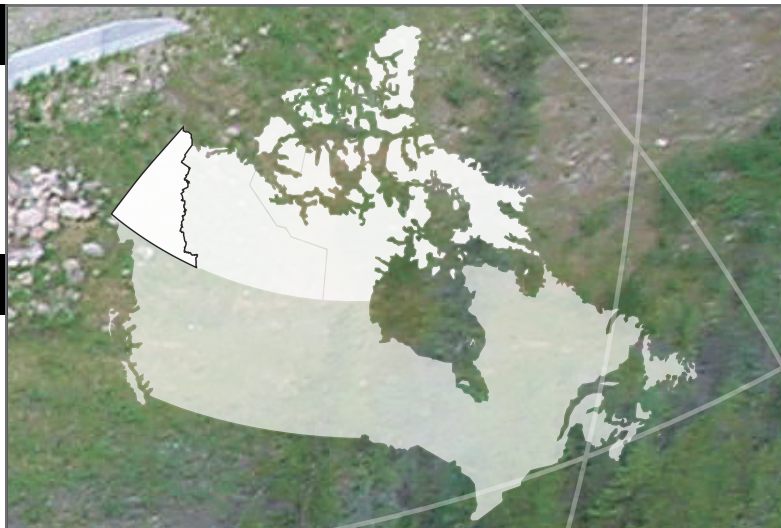
Warmer winters cause the permafrost under many Yukon highways to melt, resulting in significant damage to the roadbed and road surface. On permafrost-free stretches of highway, annual repair costs average about \$4,000 per kilometre. The north Alaska Highway between Destruction Bay and the US border, in contrast, averages \$30,000 per kilometre, or \$6 million each year for that 200-km-long section.

Invasive species

White sweet clover and other invasive plants are spreading throughout the territory with warming temperatures, displacing high quality forage for wildlife and in some cases posing a threat to human health.

Spruce bark beetle

The beetle has killed about 300,000 hectares of spruce forest in the Alsek River corridor in southwest Yukon in what is the largest and most intense outbreak ever seen in Canada. The dead trees are a high fire risk, have little value as lumber, and offer poor habitat for many species.



CHALLENGES

Governments face numerous challenges in responding effectively to climate change through adaptation. Our common challenges provide an opportunity for our governments to work together to focus adaptation efforts and address impacts that are most relevant to our residents and communities. It is especially important for each territorial government to continue working with Aboriginal governments and organizations to increase awareness of climate change impacts, identify risks and develop effective solutions.

Some of our challenges are:

- **Limited financial capacity** and a wide scope of responsibility make it difficult to plan for long-term strategic investments.
- **Prioritization** of other significant concerns in each territory, such as housing and health care, may make responding to climate change a lower priority.
- **Human capacity challenges** due to limited staff numbers in critical areas create challenges in service delivery to small, widely dispersed populations.
- **Risk identification**, analysis of impacts and ability to develop solutions are restricted by limited human and financial resources.
- **Logistical challenges** include a lack of roads to many communities, limited time windows for sealift, expensive air travel, a harsh climate and underdeveloped telecommunications networks. All of these impact government's ability to respond to critical issues and emergencies.
- **Limited baseline** data and climate change scenario projections at the local level.



COLLECTIVE ACTION

We recognize there are challenges and opportunities unique to each territory that will need to be addressed individually. This strategy identifies four areas in which the territorial governments can take collective action:

- Sharing best practices for maintaining and protecting infrastructure from the effects of thawing permafrost.
- Protecting people and property from health and safety risks arising from the effects of climate change on infrastructure, water, sea ice patterns, risk of wildfire and other hazards.
- Strengthening Northern economies by taking advantage of emerging opportunities for industries such as agriculture, forestry, shipping, tourism, and resource development.
- Maintaining food security in the face of a changing environment, noting the cultural importance of traditional hunting and gathering.



STRATEGIES FOR ACTION

The following six strategies identify actions underway and areas for additional collaboration to address impacts and seize opportunities presented by a changing climate.

1) Source funding

Predictable and adequate funding is essential to adapt to a changing climate. Stable, long-term funding for governments and organizations specializing in climate change adaptation work is necessary to effectively address the financial and human capacity and logistical challenges in the North.

We will:

- Work to secure effective funding and program partnerships with the federal government for climate change adaptation initiatives, and continue to fund programs and initiatives from territorial government resources.

2) Collaborate with other governments

There is a great benefit in collaborating with other governments in Canada and across the circumpolar North to share climate change adaptation knowledge and to develop co-operative activities.

We will:

- Establish a formal network of climate change officials in the governments of Yukon, Nunavut and NWT to support collaboration and information-sharing.
- Continue to build and strengthen partnerships between and among local, territorial, federal and Aboriginal governments and organizations, as well as intergovernmental and circumpolar forums, the private sector and academia.
- Look to other circumpolar countries for partnerships and best practices, and in turn share what is occurring in the three territories and how we are responding.

3) Support communities

Many of the impacts of climate change are experienced locally. Adaptation efforts and support at the community level are integral to the success of our overall strategy.

We will:

- Continue to support community efforts in improving resilience to climate change by providing information, training and tools to enable a flexible risk management-based approach to climate change adaptation.
- Support community-based vulnerability and risk assessments, and adaptation planning.
- Assist communities to acquire funding and resources needed for effective adaptation.

4) Integrate adaptation

Integrating adaptation opportunities into government operations and decision-making will enable governments to be more effective in managing risks to infrastructure, economies, human health and safety, traditional culture and heritage, and ecosystems.

We will:

- Where applicable, integrate climate change considerations into:
 - o The development of policies, priorities, and programs.
 - o Best practices for the construction and maintenance of buildings and infrastructure to reflect climate change risks.
 - o The stewardship of natural resources such as ground and surface water, species at risk and migratory species.





5) Share knowledge and understanding

To make informed decisions, governments require access to many streams of knowledge, utilization of diverse and growing sources of data and information, and consideration of local conditions and impacts.

We will:

- Work to increase public awareness of the effects of climate change and the importance of adaptation and mitigation activities.
- Promote and support timely sharing of data and knowledge gained through adaptation research and initiatives with our government and research partners.
- Host climate change adaptation workshops every two years, in rotation across the North, in order to develop networks and share information about programs, projects and funding opportunities.

6) Develop and share tools, technology and innovation

Investments to establish and build on innovative technologies and tools will help us develop effective climate change adaptation responses.

We will:

- Continue and expand monitoring and data collection, and collaboration with traditional and community-based knowledge holders.
- Improve access to projections of future climate change scenarios at the local level.
- Support efforts by partners to secure investment in climate change adaptation research and development.
- Encourage investment in and development of adaptation technologies that:
 - o Protect and secure water supplies and systems
 - o Protect infrastructure
 - o Improve search and rescue, emergency planning and disaster management
 - o Support traditional economies and culture



NUNAVUT

Sea Ice

Later freeze-up results in coastal erosion in the community of Hall Beach since there is no ice to protect the coastline during winter storms. A longer open water season has also led to an increase in shipping through sensitive and sometimes uncharted waters. In the Summer of 2010, two ships were grounded - one carrying 9.5 million litres of fuel.





CONCLUSION

Climate change is a reality in our world. We need to look ahead, to be thoughtful, comprehensive and action-oriented when addressing the issues and making plans to adapt to a changing environment. We believe that future success in this area depends on collaboration, support and integration of our efforts with respect to the urgent concerns and interests of Northerners.

We have committed to working closely with our local, territorial, national, Aboriginal and international partners to share climate change adaptation knowledge and practices in order to develop collaborative activities.

In order to serve all Northerners and ensure their long-term well-being, the governments of Nunavut, the Northwest Territories and Yukon are committed to leading adaptation planning and action efforts in Canada's North.

Publication: APRIL, 2011.

Photo credits: all photos provided courtesy of the Governments of the Northwest Territories, Nunavut, and Yukon. Pages 10 and 19 courtesy of The Diavik Diamond Mine.

Contact information

Government of the Northwest Territories
Department of Environment and Natural Resources
Climate Change Unit, Environment Division
P.O. Box 1320
Yellowknife, NT X1A 2L9
Phone: (867) 873-7654 Fax: (867) 873-0221
www.nwtclimatechange.ca

Government of Nunavut
Department of Executive and Intergovernmental Affairs
Energy Policy Division
P.O. Box 1000, Stn. 200
Iqaluit, NU X0A 0H0
Phone: (867) 975-6000 Fax: (867) 975-6091
www.eia.gov.nu.ca

Government of Yukon
Environment Yukon
Climate Change Secretariat
P.O. Box 2703 (V-205)
Whitehorse, Yukon Y1A 2C6
Phone: (867) 456-5544 Fax: (867) 456-5543
www.gov.yk.ca/climatechange

A NORTHERN VISION: A Stronger North and a Better Canada, a collaboration with the exclusive partners:

