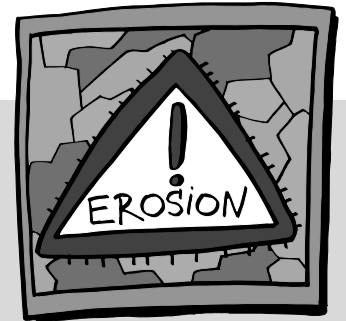
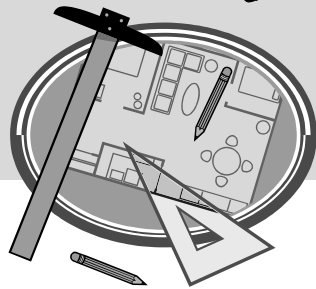
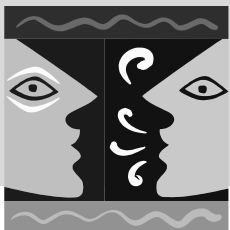


# Climate Change Call to Action



## Adaptation



How can communities reduce  
the negative impacts of climate change  
and  
make the best of positive effects?

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## What is Adaptation?

Adaptation is a process to keep things in balance, as other things change. The natural and human environment always adapt – to ongoing natural and man-made changes.

Our ability to adapt depends on how fast things change, the size of the change, and the number of things that change at the same time.

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## Adaptation – Call to Action

Reduce the negative impacts of climate change and to make the best of positive effects.

Deal with existing impacts of climate change; better prepare for future changes and impacts.

- ☑ **Learn about climate change.** How does climate change affect the services that northern communities must provide?
  - ☑ **Take responsibility and work together.** What is each level of government responsible for – community, Aboriginal, territorial, federal? How can we support each other to meet our needs?
  - ☑ **Make a plan.** What do we need to do right now? What can we leave to later? What happens if we do nothing?
  - ☑ **Invest now and save money later.** How much do we need to spend now? How much does it cost if we delay action?
  - ☑ **Monitor what happens.** What information do we need to make good decisions? How do we adjust the plan as things keep changing?
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## How does climate change affect the north?

The NWT is already one of the fastest warming areas in the world. And scientists expect the warming trend to speed up.

- Melting permafrost.
- Less predictable weather, more extreme weather.
- Warmer winter temperatures.
- Less predictable precipitation. Changes to the amount of snow and rain; and when and where it happens.
- Less predictable ice conditions; less ice.
- Melting sea ice.
- Melting glaciers, higher sea levels.
- Lower water levels along the Mackenzie and other freshwater lakes and rivers.
- Changes to plants and animals. New species appear and existing species disappear. Some species change their habitat.
- More forest fires in some areas.

Increased impacts of climate change will happen at the same time as we take action to use less fossil fuel and reduce greenhouse gas pollution. We need to adapt – we cannot stop the change that’s already happening.

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## How much does adaptation cost?

Adaptation costs money. But doing nothing could cost a lot more. One study shows in the ‘worst case’ scenario it could cost \$420 million to fix NWT building foundations.

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## How does climate change affect northern services?

Climate change affects our environment, people, and economy. We can expect the impacts of climate change to build over time - to come faster and to affect more things.

- Shorter winter road season and lighter load weight limits.
- Damage to building foundations, roads and bridges, airport runways, and other infrastructure. Melting permafrost can create potholes, and cause the ground to heave and slopes to fail and erode. The active layer – the part that melts and freezes every year – will increase.
- Increased costs for snow removal. More snow makes it harder to deliver community services such as water, sewer, or garbage.
- More spring flooding in some areas.
- Low water levels on the Mackenzie River restrict barge traffic, and delay or prevent deliveries.
- Changes to sewage lagoons and / or water reservoirs. Melting permafrost can cause them to breach and drain.
- Increased marine transport and access to the Northwest Passage.
- Increased access to resources in the Beaufort Sea.
- Eroding shorelines along the marine coast.
- Increased need for search and rescue missions.

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## What is already happening in the NWT?

The City of Yellowknife, Dehcho First Nations, and the Tlicho government have each started to develop their own adaptation plan.

Diamond mines are exploring alternatives to the existing winter road.

Federal and territorial governments are studying how to extend the winter road season. For example:

- Build permanent bridges – also to help protect stream crossings.
- Use ice spray technology to more quickly build roads that can take heavy loads.
- Use radar to measure ice thickness and locate thin ice.

The 2008 'Climate Change Impacts and Adaptation Report' identifies what the GNWT is doing to help adapt. Some infrastructure examples:

- Repair and replace damaged pile foundations. Recommend that new piles have larger diameter and sit deeper in the ground.
- Use aboveground screw jack foundation supports. Good airflow between the floor and ground means less melting permafrost.
- Consider location, drainage, and erosion factors in construction project design. Improve drainage and strengthen earthworks.
- Develop a guideline to use thermosyphons – to help keep permafrost ground cool and foundations solid.
- Repair Inuvik and Yellowknife runways. Protect and restore the permafrost.
- Design roof structures to handle changing snow conditions.
- Assess infrastructure and plan maintenance, and use the assessment to measure impacts of climate change over time.

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## Call to Action: Develop a plan for further action

- Decide who is responsible for what. Communities and other levels of government need to coordinate their actions. Everyone needs to take responsibility, work together, and do more.
- Work with qualified experts to identify existing and possible future problem areas. Impacts from climate change are ongoing. Examples: damage to roads, sewage lagoons, water reservoirs, and foundations.
- Assess the risk for each problem area and the cost to deal with the problem. Example: a dyke may not be the best or cheapest solution to a small risk of increased flooding.
- Decide what actions you need to take right away, when, and why. Decide what actions can wait, for how long, and why. Know that doing nothing may cost more in the long run.
- Take action to prevent problems – fix things before they get to be a problem. Example: reinforce foundations - do not wait for damage from melting permafrost.
- Find adaptation solutions that also reduce greenhouse gas pollution. Example: the Whatì mini-hydro project means the community relies less on ice roads and reduces the amount of fossil fuel they use.
- Invest in solutions that are most likely to work, that deal with changes most likely to occur, and that help save money. Example: build away from an eroding shoreline.
- Do some relatively inexpensive things that help us to adapt. Example: develop a community garden; increase young peoples' education levels, and land and cultural skills.
- Consider the impacts of climate change as you plan and carry out regular maintenance on existing infrastructure.

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## Call to Action:

### Make an adaptation plan for new infrastructure

- Carefully assess any new infrastructure sites for impacts from climate change, such as melting permafrost.
  - Identify problem areas. Check for problem areas from existing impacts and possible future impacts. Build in low risk areas.
  - Identify the technology or other methods to deal with the problem, and the cost. For example, thermosyphons that protect permafrost from melting.
  - Use qualified, skilled people to design and build new infrastructure. Make sure they have experience and know what to do with impacts of climate change.
  - Consider the ongoing impacts of climate change as you plan and carry out regular maintenance on new infrastructure.
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## Call to Action:

### Make adaptation part of all community planning

The impacts of climate change affect many areas of life. An adaptation plan helps a community identify those impacts and explore possible solutions to problems the impacts cause.

Communities also develop other types of plans, such as the Integrated Community Sustainability Plan – which includes energy planning and capital planning. Communities may take a more practical approach and include adaptation with other community plans.

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## Call to action

Talk to your leaders, your family, your community

- ? What changes do you see in your community, because of a warmer climate? How do the impacts of climate change affect services in your community?
- ? What can your community do to help adapt to the impacts of climate change. What should the territorial and federal governments be doing?
- ? What problems do we need to deal with right now? What problems can we leave for later? Why?
- ? How are we going to pay the extra costs for adaptation?
- ? What can we do to keep track of the impacts of climate change?

Ecology North produced this discussion paper about adaptation, and another paper about mitigation.

Mitigation is anything we do to use less fossil fuel and produce less greenhouse gas pollution. See our website.

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Ecology North started in 1971. We are an environmental non-government organization with 150 NWT members. Our three priorities are environmental education, climate change, and sustainable living.



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