



Shared Resilience to a  
Changing Climate in the NWT

# Summary

NWT Climate Change Risks and  
Opportunities Assessment

Évaluation des risques et des possibilités  
liés au changement climatique aux TNO

October 2024 Octobre

## Sommaire

Renforcer notre capacité  
d'adaptation au changement  
climatique aux TNO commune

K'áhshó got'jne xadā k'é hederi ʔedjhtl'é yeriniwę nı dé dúle.  
Dene Kədə

Dëne Sı́líné

Edi gondi dehgáh got'je zhatié k'éé edat'éh enahddhę nide naxets'é edahfi.  
Dene Zhatié

Jii gwandak izhii ginjik vat'atr'ijahch'uu zhit yinohtan ji', diits'at ginohkhii.  
Dinjii Zhu' Ginjik

Uvanittuaq ilitchurisukupku Inuvialuktun, ququagluta.  
Inuvialuktun

ᑕᑦᑭᐱ ᐱᐱᑦᑲᐱᑦ ᐱᐱᐱᐱᑦ ᐱᐱᐱᐱᑦᑲᐱᐱᐱᑦ, ᐱᐱᐱᐱᑦ ᐱᐱᐱᐱᑦᑲᐱᐱᐱᑦ.

Inuktitut

**Hapkua titiqqat pijumagupkit Inuinnaqtun, uvaptinnut hivajarlutit.**  
**Inuinnaqtun**

kispin ki nitawihtīn ē nīhīyawihk ōma ācimōwin, tipwāsinān.  
nēhiyawēwin

Tɬɪtʃo yati k'èè. Di wegodi newo dè, gots'o gone de.  
Tɬɪtʃo

**Indigenous Languages**  
request\_Indigenous\_languages@gov.nt.ca

# Acknowledgement

## The GNWT would like to thank:

- **The Climate Risk Institute** team. The project team contracted the Climate Risk Institute to assist in the development and completion of the Assessment, including engagement activities. *The Climate Risk Institute (CRI) is a non-profit, academically affiliated organization focused on advancing practice and delivering services related to climate change risk assessment, adaptation planning, policy evaluation and resiliency. CRI works collaboratively with a range of players in Canada and internationally to mobilize knowledge and build capacity for improved climate resiliency practices across professions and sectors.*
- The **NWT Climate Change Council** members that provided guidance and feedback throughout this project.
- All participants, from survey respondents to event and workshop participants, who shared their knowledge and expertise.



## About the Illustrator

All of the illustrations in the Assessment were drawn by Alison McCreesh, a Yellowknife graphic artist. Since 2009, Alison McCreesh has been working as a visual artist, cartoonist and illustrator in Yellowknife. As part of her business, Alison offers her services doing live large-scale graphic recording and taking visual notes at meetings and conferences, as well as creating infographics, visual summaries and animated explainer videos. Alison enjoys the challenge of combining visuals and illustrations to communicate at-times-dense content in a way that is accessible and engaging. While we all know in-depth written reports are important, there are many times where an image is worth a thousand words!

# Table of Contents

<b>Acknowledgement .....</b>	<b>3</b>
<b>About the Illustrator .....</b>	<b>3</b>
<b>Executive summary .....</b>	<b>5</b>
<b>Abbreviations .....</b>	<b>7</b>
<b>1. Overview of results .....</b>	<b>8</b>
1.1 A values-based framework .....	8
1.2 Summary of most concerning climate change risks .....	9
1.3 Increasing existing vulnerabilities.....	10
<b>2. The process of building a shared picture of key climate change risks .....</b>	<b>11</b>
2.1 Engagement.....	11
2.2 Approach to identify the most concerning climate change risks.....	13
<b>3. Detailed Illustrations on the Climate Risks and Impacts to NWT Resilience Values.....</b>	<b>17</b>
Observed and Projected Changes to Ecosystems .....	17
Observed and Projected Changes to Health & Well-Being .....	18
Observed and Projected Changes to Connection to the Land and Culture.....	19
Observed and Projected Changes to Infrastructure & Access to Essential Services .....	20
Observed and Projected Changes to Connection to Business and Economy.....	21
Observed and Projected Changes to Cross-Cutting Climate Vulnerabilities.....	22
<b>4. Building Made-in-the-NWT Adaptation Pathways .....</b>	<b>25</b>
4.1 A pathway braiding reconciliation and self-determination .....	25
4.2 A pathway balancing opportunities arising from climate change .....	27
4.3 A pathway that incorporates both social and economic equity .....	27
4.4 A pathway further advances the NWT as a climate change research centre, integrating multiple ways of knowing.....	28
<b>5. Conclusion and Next Steps .....</b>	<b>30</b>



# Executive summary

This first NWT Climate Change Risks and Opportunities Assessment (the Assessment) aims to provide a shared understanding of the most pressing climate change risks that Northwest Territories (NWT) residents and communities will face in the next decade.

It is a roadmap that outlines shared climate change adaptation priorities, where better collaboration, coordination and pooling of resources could lead to meaningful and impactful adaptation and preparedness for a changing climate.

The Assessment is the outcome of a two-year engagement process across the NWT with residents, and public servants, and elected officials from local governments, Indigenous governments, and Indigenous organizations, as well as representatives from civil society, youth, federal agencies, and academia through a number of engagement activities. Representatives from the NWT Climate Change Youth Council were directly engaged, and the NWT Climate Change Council provided guidance throughout the project. Quotes from engagement activities are included throughout the report.

The Assessment is not a scientific, peer-reviewed publication, rather it is a prioritization of known risks and opportunities that is meant to guide NWT decision makers. To interpret the results of the Assessment, it is important to keep in mind its scope, assumptions and limitations.

The Assessment adopts a values-based approach, focusing on the experiences and perspectives of those most affected by climate change, including what is worth preserving and achieving, and what the goals of adaptation should be. In building climate change resilience in the NWT, values that matter most to residents were identified during the engagement. These values can be summarized as follows: ecosystems; health and well-being; connection to the land and culture; access to essential services and infrastructure; and business and economy. These values capture what matters

the most to the 'Northern way of life' and are essential to building climate change resilience in the NWT.

Seven groups of climate change hazards were identified during the engagement: climate and weather changes; vegetation and wildlife changes; freshwater changes; marine and coastal changes; wildfire; permafrost thaw; and river erosion.

The NWT values provided a reference to assess the impacts of climate hazards. The Assessment identified the most concerning climate change risks – those that have the highest potential to compromise or threaten the NWT's climate change resilience values (see table 2 on page 9).

Overall, climate change is negatively impacting the NWT. An initial list of 36 projected climate change risk scenarios and one opportunity scenario were identified (see Appendix B of the longer version

Assessment). The list was then put through a collaborative analysis to determine the most concerning risks as related to the resilience values which were then summarized in table 2. The scenarios are meant to be high-level and may not impact in the same way every community in the NWT. In addition, the Assessment highlights how climate change increases current vulnerabilities in the NWT: resource, labour and capacity shortages; unequal impacts for certain communities and groups; limited climate monitoring data; and gaps in historical climate data.

The Assessment also highlights the ways the NWT is already,

and can continue, building resilience and preparing for the changing climate. It uses the concept of ‘adaptation pathways’, highlighting that numerous adaptation options are on the table, each leading to a different possible future for the NWT. An adaptation pathway is the result of step-by-step choices and a series of decisions made by NWT residents and communities that can be reassessed over time as the climate and social values change. These choices balance short-term and long-term goals, as well as climate change uncertainty. The Assessment outlines four elements of a possible made-in-the-NWT adaptation pathway.

Building on the most concerning climate change risks, the NWT values, and elements of made-in-the-NWT pathways identified in this report, the GNWT will be guided by this Assessment, and will work closely with the federal government, community governments, Indigenous governments and Indigenous organizations, co-management boards, industry, academia, non-government organizations, the NWT Climate Change Council, other NWT stakeholders as well as the public to collaborate, coordinate and pool resources to advance shared climate change adaptation priorities to meaningfully adapt and prepare for a changing climate.

---

*A brochure and long version are available. For more information, please visit:*  
***[www.gov.nt.ca/ecc/en/services/climate-change](http://www.gov.nt.ca/ecc/en/services/climate-change)***

---

# Abbreviations

<b>CCAG</b>	Climate Change Advisory Group
<b>CRI</b>	Climate Risk Institute
<b>ECC</b>	Environment and Climate Change (GNWT Department)
<b>ECCC</b>	Environment and Climate Change Canada (Federal Department)
<b>EMO</b>	Emergency Management Organization
<b>FMA</b>	Forest Management Agreements
<b>GNWT</b>	Government of the Northwest Territories
<b>IPACs</b>	Indigenous Protected and Conserved Areas
<b>MACA</b>	Municipal & Community Affairs (GNWT Department)
<b>NRCan</b>	Natural Resources Canada (Federal Department)
<b>NWT</b>	Northwest Territories
<b>NWTAC</b>	Northwest Territories Association of Communities
<b>WLU</b>	Wilfried Laurier University

# 1. Overview of results

## 1.1 A values-based framework

Building a shared understanding of climate change and identifying priorities to respond to its impacts requires an understanding of the impacts of climate change on those affected. This values-based approach puts at the core of the framework the following considerations:

- NWT residents’ experience of climate change impacts
- NWT residents’ perspectives on what the goals of adaptation should be (e.g., what is worth preserving and achieving)

Five core values that matter most to NWT residents for making NWT resilient to climate change were identified during

the engagement activities. These values which capture what matters the most to the ‘Northern way of life’ are called ‘NWT values for climate change resilience’ (NWT values). They are presented in **Table 1**.

Resilience refers to the capacity to recover quickly from difficulties. Imagine how an elastic can quickly spring back into its shape. Building climate change resilience is similar. It means understanding the possible climate change risks we face and making changes to how we do things, so when a risk becomes a reality there is less damage, and we can recover more quickly.

Seven categories of climate change hazards were also identified during the engagement: climate and weather changes; vegetation and wildlife changes; freshwater changes; marine and coastal changes; wildfire; permafrost thaw; and river erosion. **Section 6**, located in the long version of the Assessment, provides more information on each hazard category.

The NWT values provide a reference for assessing the impacts of various climate hazards and for identifying the most concerning climate change risks – those that have the highest potential to compromise or threaten climate change resilience in the NWT.

**Table 1. NWT Values for Climate Change Resilience (NWT Values)**

	<b>Ecosystems (Land, Water and Wildlife).</b> NWT ecosystems and sustainable livelihoods are thriving.
	<b>Health and Well-Being.</b> The health and well-being of NWT residents are strong, and their communities are safe and sustainable.
	<b>Connection to the Land and Culture.</b> Indigenous knowledge, culture and identity are valued and passed to new generations. NWT residents connect with and experience the land in ways that are meaningful to them.
	<b>Infrastructure and Access to Essential Services.</b> NWT communities and residents have access to affordable, reliable, and sustainable essential services and public infrastructure.
	<b>Business and Economy.</b> Economic self-sufficiency promotes a positive economic environment in the NWT for profit-based and traditional economic activities.








## 1.2 Summary of most concerning climate change risks

**Table 2** presents a summary of the most concerning climate change risks across the NWT through the lens of NWT values. **Section 3** provides more details on these risks. These risks were identified during the engagement activities presented in **Section 2**.

Overall, climate change is negatively impacting the NWT. Some listed risks have, in fact, already become a reality, while others will become more pressing in the coming decades. The severity of these risks may be reduced or eliminated if adequate preparedness and adaptation measures are put in place.


**Table 2. Summary of most concerning climate change risks in the NWT.**

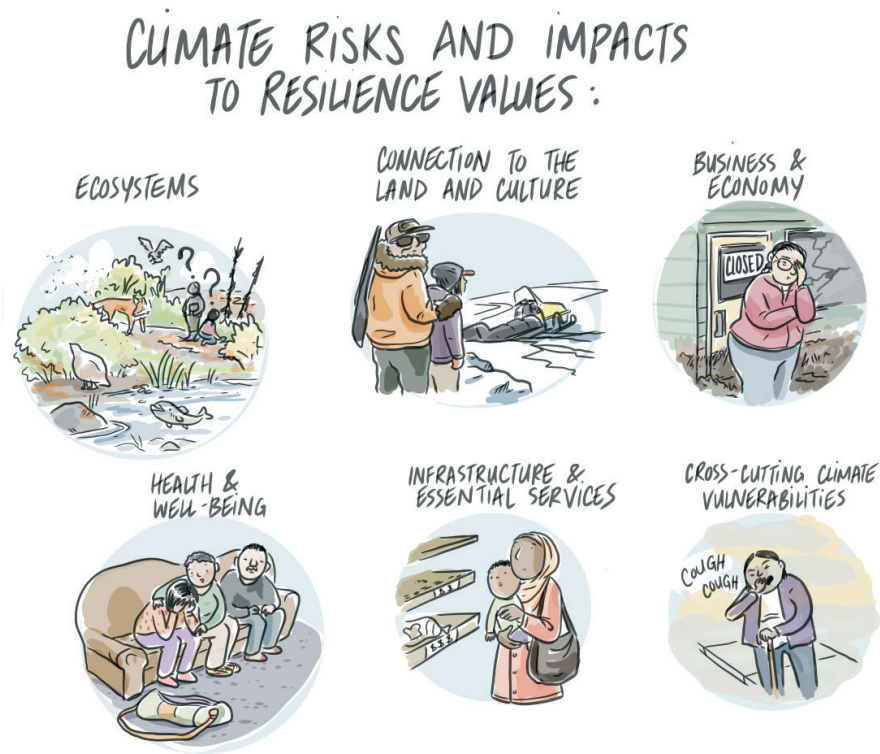
	<p><b>Risks to ecosystems (Land, Water and Wildlife).</b></p> <ul style="list-style-type: none"> <li>• Permafrost thaw is changing NWT landscapes.</li> <li>• NWT biodiversity is impacted by warming temperatures, changing precipitation patterns, and extreme weather.</li> <li>• The quality and quantity of surface and groundwater in the NWT are being impacted by climate change.</li> <li>• Longer and intense wildfire seasons are likely to alter NWT landscapes, vegetation, and wildlife habitat.</li> <li>• Permafrost thaw, larger wildfires, and longer wildfire seasons are likely to increase carbon dioxide emissions from the landscape.</li> </ul>
	<p><b>Risks to health and well-being.</b></p> <ul style="list-style-type: none"> <li>• The safety and well-being of many NWT communities is threatened by flooding and wildfires.</li> <li>• Climate change is affecting physical health conditions for some NWT residents.</li> <li>• Climate change is threatening the mental well-being of some NWT residents.</li> <li>• Climate change is increasing food insecurity challenges in the NWT.</li> </ul>
	<p><b>Risks to connection to the land and culture.</b></p> <ul style="list-style-type: none"> <li>• Less predictable weather and ice conditions are affecting people's ability to access the land safely.</li> <li>• Climate change is having a profound impact on Indigenous knowledge, culture, and identity.</li> <li>• Culturally important places and heritage sites are being threatened by thawing permafrost, wildfires, erosion, sea-level rise, and flooding.</li> </ul>
	<p><b>Risks to infrastructure and access to essential services.</b></p> <ul style="list-style-type: none"> <li>• Supply chains in the NWT are being disrupted as the impacts of climate change intensify.</li> <li>• Without mitigation planning and action, shoreline infrastructure and buildings will likely be at risk from more rapid erosion processes and flooding.</li> <li>• Increasing extreme weather events, changes in precipitation (e.g. snow conditions), and in some cases, changes in soil conditions due to permafrost thaw, bring new risks that need to be considered when building, maintaining and operating infrastructure.</li> </ul>
	<p><b>Risks to business and economy.</b></p> <ul style="list-style-type: none"> <li>• The high cost to adapt and respond to climate change and climate-related disasters can cause financial losses or constraints for governments, businesses, and residents, affecting economic resilience in the NWT.</li> </ul>

1.3 Increasing existing vulnerabilities

The consequences of climate changes span beyond their impacts on the five NWT values. They lead to cascading effects, adding stressors to other issues that the NWT is facing. **Table 3** presents existing vulnerabilities exacerbated by climate change.

Table 3. Vulnerabilities exacerbated by climate change.

	<ul style="list-style-type: none"><li>• Efforts to reduce and adapt to the impacts of climate change may be slowed by limited resources and capacity shortages and a lack of adequate processes and/or governance mechanisms to respond efficiently.</li><li>• Climate change risks can amplify existing inequities and disproportionately affect certain communities and groups.</li><li>• Lack of robust historical climate data in the NWT, and limited climate monitoring and ways to share data, can challenge informed decision-making in the NWT.</li></ul>
---	--



## 2. The process of building a shared picture of key climate change risks

This section presents the activities and methodology used throughout the engagement process to build a shared picture of the most concerning climate change risks and adaptation priorities across the NWT.

### 2.1 Engagement

The Assessment is the outcome of a two-year engagement process across the NWT.

The project team engaged with staff and elected officials from local governments, Indigenous Governments, and Indigenous Organizations, as well as representatives from civil society, youth, federal agencies, and academia through a number of engagement activities. Representatives from the NWT Climate Change Youth Council and the NWT Climate Change Council were also involved (see **Box 2** for more information).

Key engagement activities included:

- The first and the second NWT Climate Change Advisory Group (CCAG) gatherings held in October 2021 and October 2022;
- A series of five thematic workshops held in March 2023;
- Seven climate hazard specific surveys (one for each hazard category<sup>1</sup>) targeted at subject matter experts.

In addition, the project team gathered perspectives during events organized by partners, such as the Northwest Territories Association of Communities (NWTAC) 2022 annual general meeting.

A public survey was conducted in November and December 2022. Over 190 residents from across NWT's five administrative regions responded. Many of the quotes in this Assessment are taken from responses to this survey. Here are some statistics about the respondents:

- Over two-thirds have lived in the NWT for more than 15 years;
- Almost one third identified as Indigenous;
- 12% spend over half of their time living on the land;
- Over 40% of respondents were under 40 years old, including 6% who were under 25 years.

Finally, the project team regularly reported back to the NWT Climate Change Council for guidance on the project (see **Box 2**).

<sup>1</sup> River erosion likelihood was assessed using a workshop addressing similar questions as the other hazard themes surveys.

## BOX 2. WHAT IS THE NWT CLIMATE CHANGE COUNCIL AND THE CLIMATE YOUTH COUNCIL?

The NWT Climate Change Council is a formal forum for the sharing of information, for collaboration, and for engagement between non-elected staff of Indigenous governments and Indigenous organizations, representatives of NWT communities and the GNWT, with input from external partners. The Council provides guidance and advice to inform and advance GNWT climate change and environment programs in alignment with Indigenous governments and Indigenous organizations and community perspectives, interests, and knowledge. Further, the Council provides an opportunity to build on and strengthen relationships, shared understandings, and trust, which supports the GNWT's commitment to move towards implementation of the United Nations Declaration on the Rights of Indigenous Peoples.

The Climate Change Youth Council brings together the critical perspectives of youth from all NWT regions and provides input and advice to the NWT Climate Change Council on all matters pertaining to climate change.

The goals of the Climate Change Youth Council are to understand the key climate-related issues and challenges, to develop youth priorities, and to empower its group members to influence and mobilize other youth to act. The CCYC goals also include amplifying the voices of NWT youth to influence policy and action by decision-makers; and overall, to build the capacity, experience and networks of engaged youth to be the next generation of NWT climate leaders. See the ***NWT Climate Change Council website*** for more information on the Council and its members: [gov.nt.ca/ecc/en/services/climate-change/climate-change-council](http://gov.nt.ca/ecc/en/services/climate-change/climate-change-council)





## 2.2 Approach to identify the most concerning climate change risks

The GNWT project team worked closely with the Climate Risk Institute (CRI) to develop and conduct the Assessment. The CRI is a well-established, not-for-profit organization with expertise in climate change risk assessment and policy.

The project team decided to adopt a values-based approach to conduct the assessment. A values-based approach strives to understand what the effects of climate change mean to those affected. A values-based approach contributes to building a shared understanding of climate priorities by putting the following considerations at the core of the framework:

- NWT residents' experience of climate change impacts

- NWT residents' perspectives on what the goals of adaptation should be (e.g., what is worth preserving and achieving)

A framework was developed during the first phase of the project through literature review and inputs gathered during the first and second CCAG gatherings, held respectively in October 2021 and 2022.

During these gatherings, values that capture what matters the most to the 'Northern way of life' and are essential for resilience to climate change were identified, as explained in section 1.1. These 'NWT Values for climate resilience'

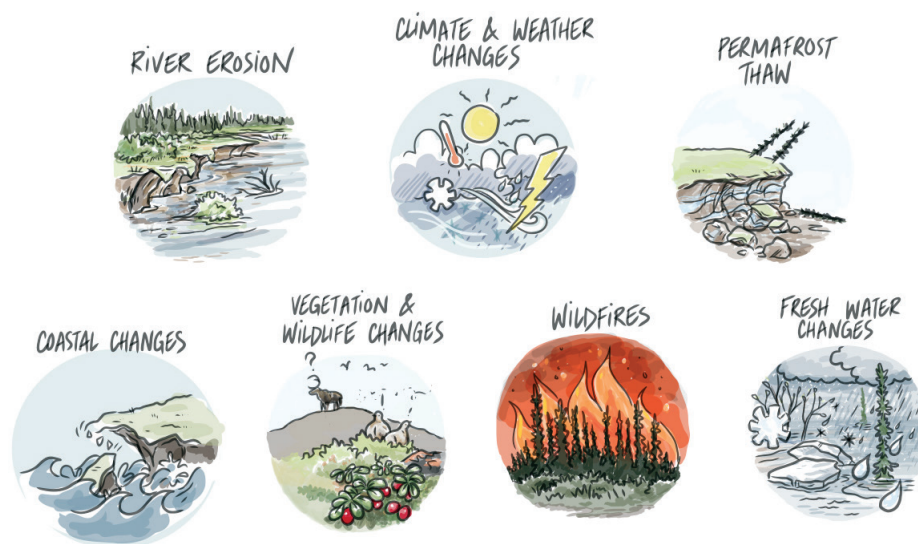
can be summarized into five categories:

1. Ecosystems
2. Health and Well-Being
3. Connection to the Land and Culture
4. Infrastructure and Essential Services
5. Business and Economy

Seven key climate change hazard categories were also identified during these gatherings:

1. Climate and weather changes
2. Vegetation and wildlife changes
3. Freshwater changes
4. Marine and coastal changes
5. Wildfire
6. Permafrost thaw
7. River erosion

### KEY CLIMATE CHANGE HAZARD CATEGORIES

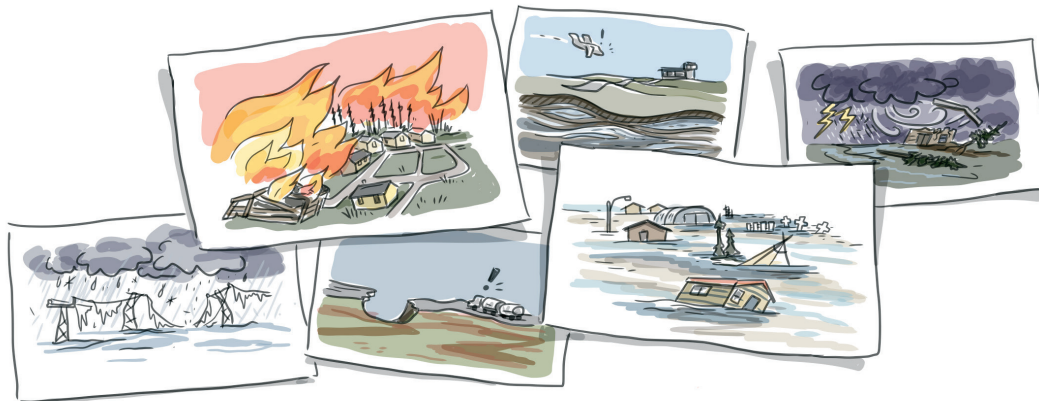


The framework of the Assessment connects the NWT values with the climate hazards. The NWT values provide a reference for assessing the impacts of various climate hazards and for identifying the most concerning climate risks – those that have the highest potential to compromise or threaten climate change resilience in the NWT (See Table 2 on pg 9).

For each category of hazard, both historical climate trends and future changes under climate change were considered. Data limitations, as well as research and monitoring needs, are summarized in **Section 6**, located in the long version of this report ([www.gov.nt.ca/ecc/sites/ecc/files/resources/4414\\_-\\_gnwt\\_ecc\\_-\\_ccroa\\_plainlang\\_report\\_online\\_1.pdf](http://www.gov.nt.ca/ecc/sites/ecc/files/resources/4414_-_gnwt_ecc_-_ccroa_plainlang_report_online_1.pdf)).

From here, a list of 37 climate change risks scenarios were developed. A scenario describes a possible event. Such events are difficult and complex to forecast, as there are several variables and processes at play, creating strong uncertainty. In the end, these possible events may or may not occur, and it is difficult to have a full picture of the consequences.

### CLIMATE RISK SCENARIOS



The second phase of the project aimed to assign two scores to each scenario to assess their level of severity:

1. A likelihood score, to rank how likely it is for this scenario to occur.
2. A consequence score, to assess the level of threat this scenario could pose in relation to the NWT values, if the scenario was to occur.

For the likelihood score, participants were mainly subject matters experts

and researchers who used quantitative data such as climate data and results from climate modeling.<sup>2</sup> They were engaged through a survey. For the consequence score, participants included representatives from different levels of governments (local, regional, territorial and federal governments), Indigenous governments and Indigenous organizations, non-governmental organizations, industry, NWT Youth Climate Group, and the NWT Climate

Change Council. They provided qualitative data such as lived and work experience, what they have heard from community members and peers, and local knowledge and expertise from living in the NWT. They were engaged through the five thematic workshops.

The final climate change risks score was the result of the combination of the likelihood score and the consequence score.

## CALCULATING CLIMATE RISK SCORE FOR EACH SCENARIO



Two sets of scores were developed: one for 1971-2000 (baseline) and another for 2040-2070 (the 2050s). Likelihood scores for the 2050s incorporated climate projections developed by

Climalogik. The scores tended to be higher in the future (2050s) for two reasons: first, because climate hazards are expected to be more intense in the future; and second, because we did not account for preparedness and

adaptation actions that could reduce the consequences of the climate change risks.

The scores were used to rank the scenarios.

<sup>2</sup> To inform this risk assessment, the GNWT engaged Climalogik to develop a dataset of historical and modelled (projected) future climate variables for the NWT.

During the last phase, the results were reviewed and validated by the NWT Climate Change Council, other NWT partners and GNWT climate experts during meetings and workshops. During this validation phase:

- An additional risk to ecosystems was identified: “Permafrost thaw and larger and longer wildfire seasons are likely to increase carbon dioxide emissions from the landscape.” There was no scenario associated to this risk and it was not ranked like the others.

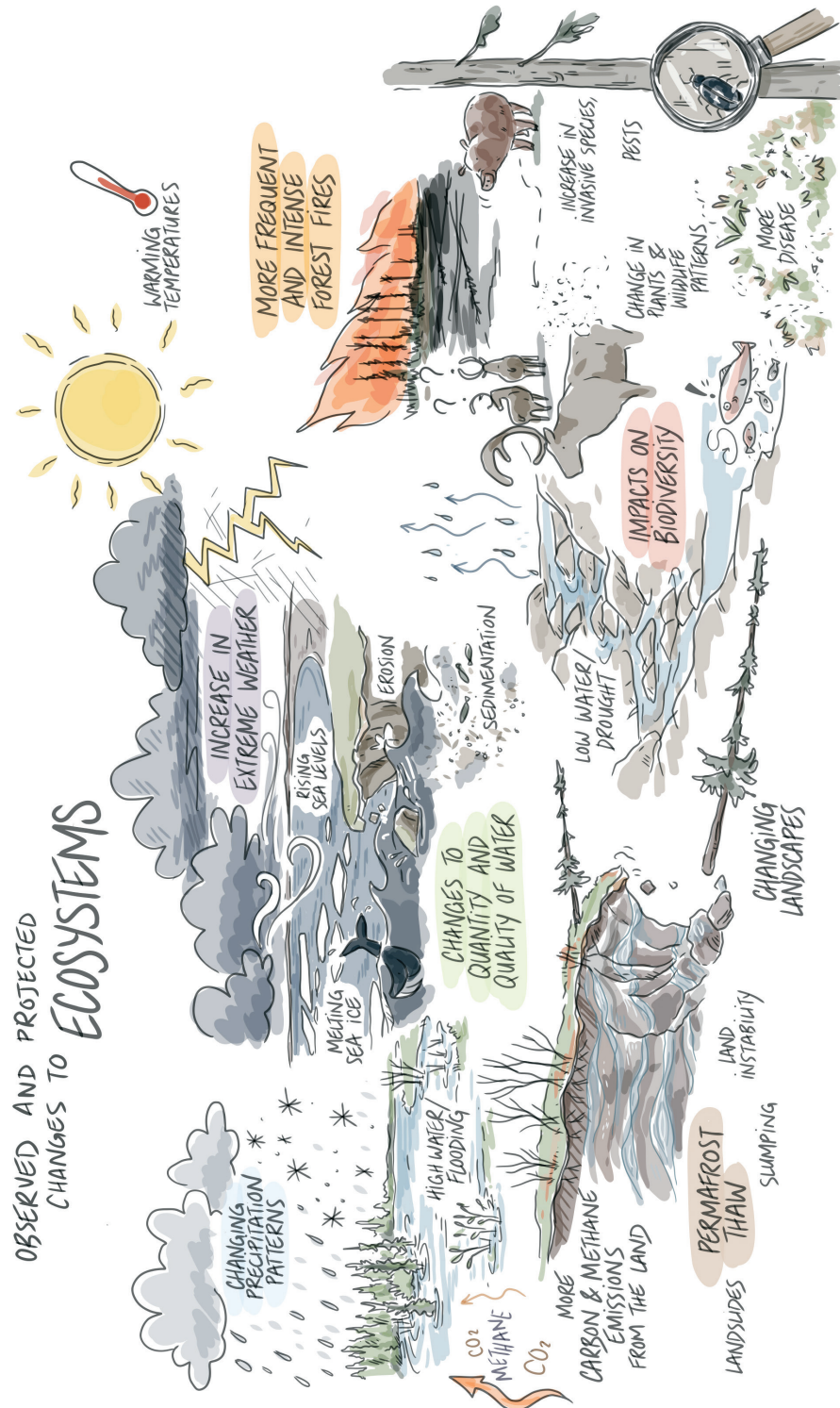
- An additional climate hazard was identified: river erosion. As a result, a new scenario was developed (Scenario #5) and its scoring followed a different methodology. A separate workshop was held in March 2024 to score the likelihood. For the scoring of the consequences, the scoring of Scenario 22 was used as the impacts of coastal erosion on communities and infrastructure is relatively similar.

Finally, assessing climate change risks and opportunities

is an ongoing process. For it to be relevant and accurate, it should be updated on a regular basis and integrate new climate sciences and knowledge, as well as consider the effects of adaptation measures. Indeed, the next iteration of the Assessment will be able to highlight new significant risks, as it will use updated climate projections. Similarly, risks identified as high in this iteration of the Assessment may rank medium or low in the future, due to the successful implementation of adaptation and preparedness measures.



## Observed and Projected Changes to Ecosystems

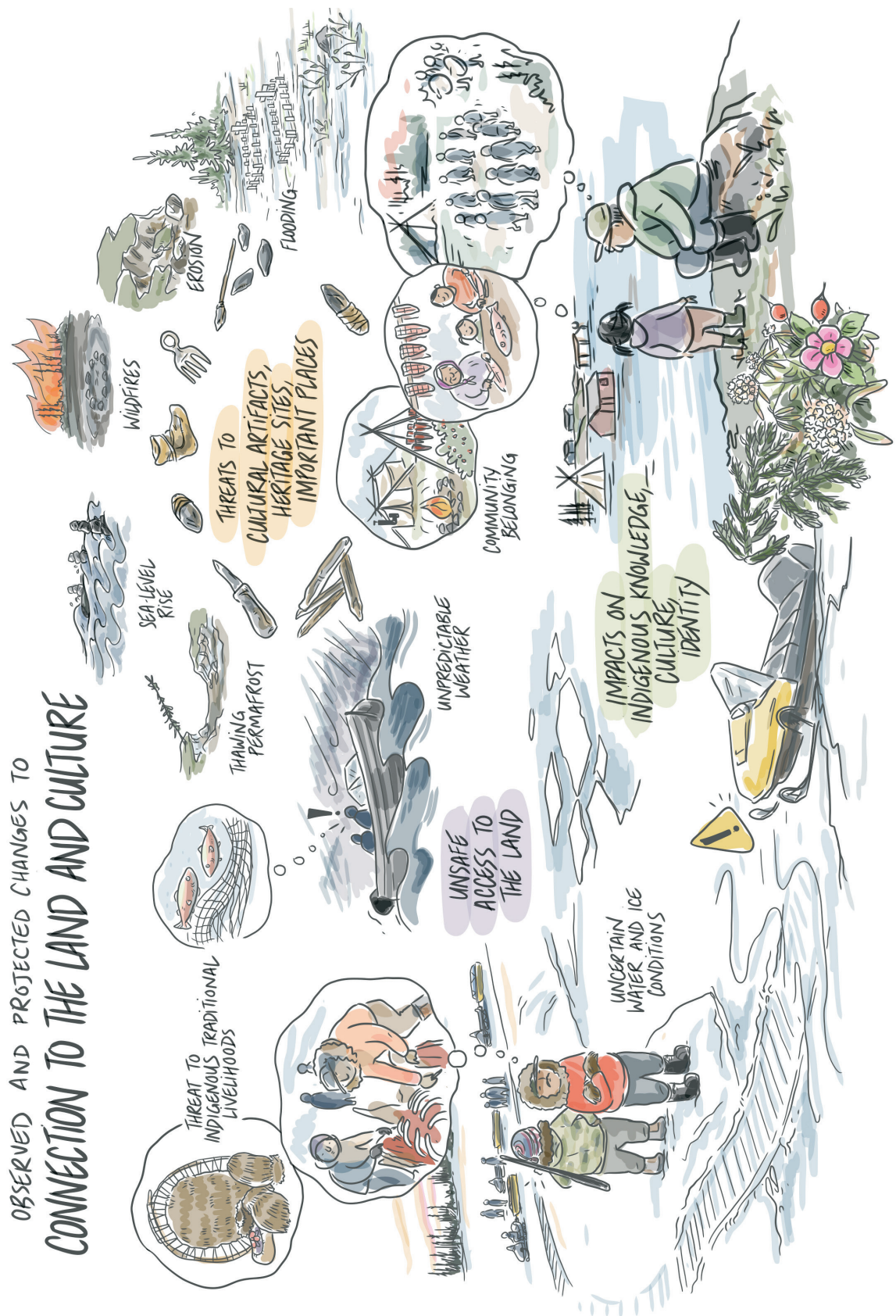


## Observed and Projected Changes to Health & Well-Being

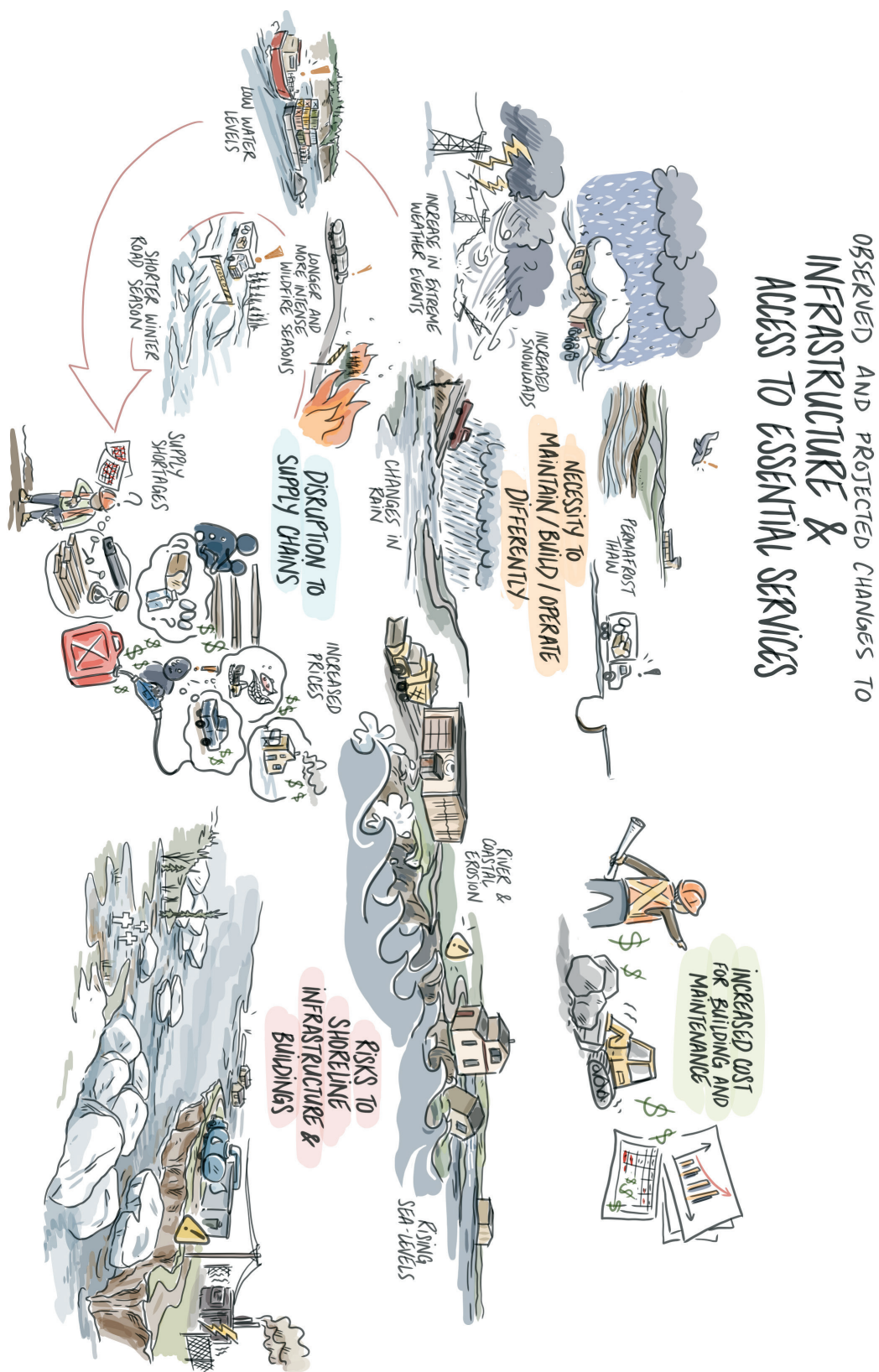




Observed and Projected Changes to Connection to the Land and Culture

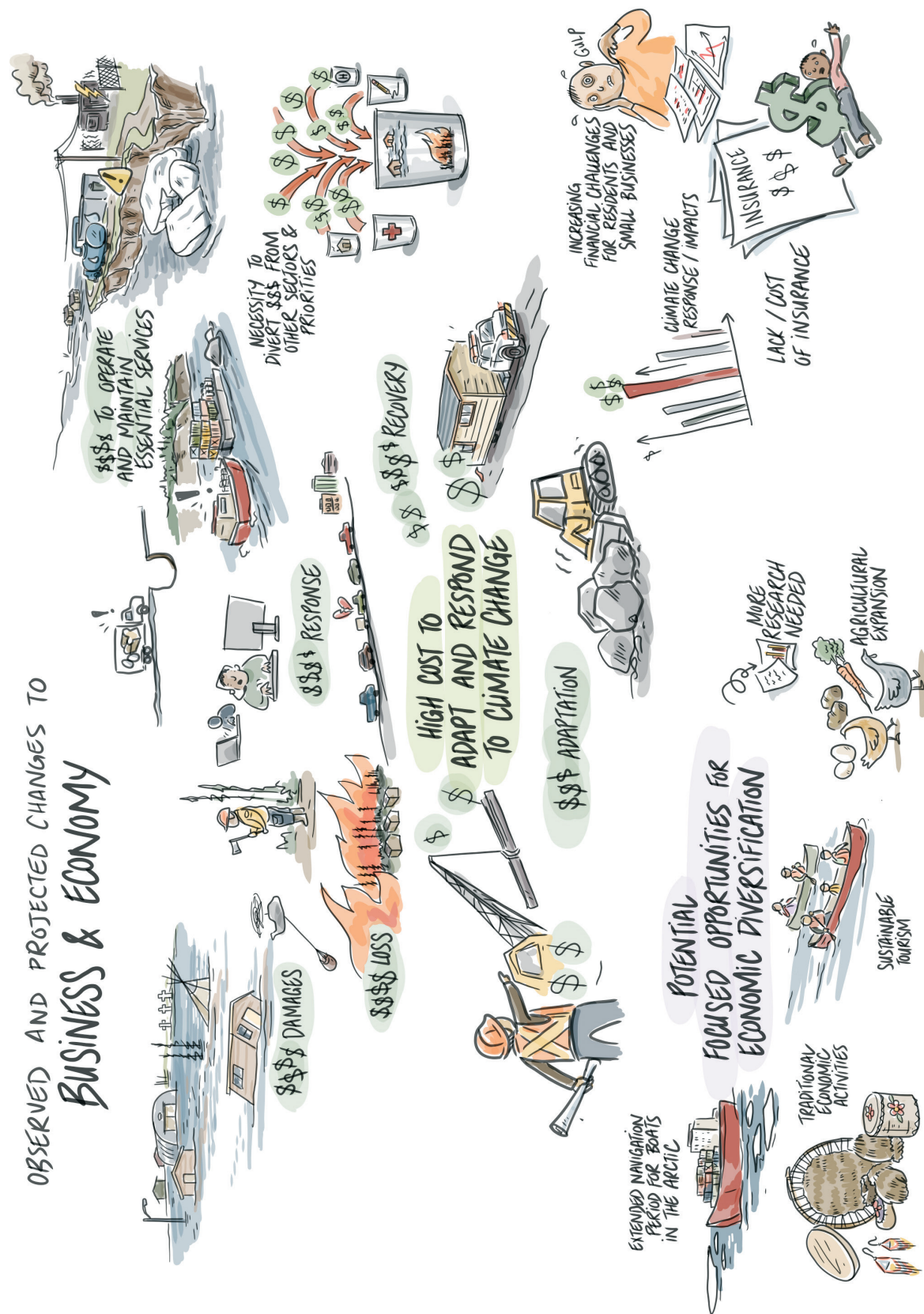


Observed and Projected Changes to Infrastructure & Access to Essential Services

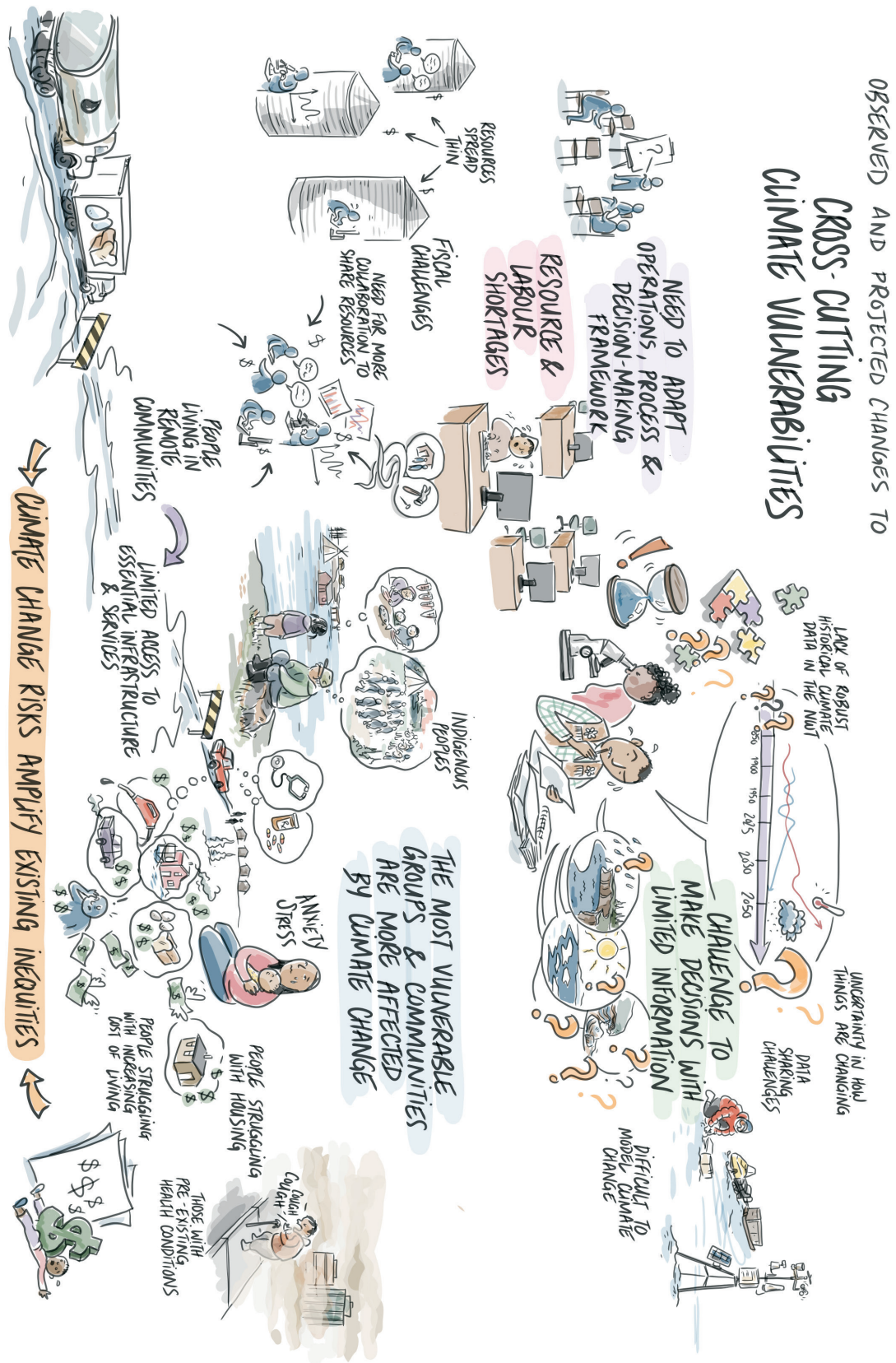




Observed and Projected Changes to Connection to Business and Economy



## Observed and Projected Changes to Cross-Cutting Climate Vulnerabilities



## BOX 1. WHAT IS CLIMATE CHANGE AND HOW IT IS DIFFERENT FROM WEATHER?

**Climate and weather are intimately connected. As the climate changes, it has a dramatic impact on the weather.**

We are all familiar with how **weather** can be hot or cold, wet or dry, windy or calm—sometimes all in the same day. One of the things we know to expect about weather is that it changes often and sometimes very rapidly. By contrast, **climate** is not about the moment-to-moment conditions, but rather it refers to average conditions over a longer period of time (generally 30 years). Therefore, climate stays relatively stable over a long period time. Climate is also different from region to region.

Climate change refers to long-term shifts in variables such as temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. However, since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil and gas.

Burning fossil fuels generates greenhouse gas emissions, like carbon dioxide, that act like a blanket wrapped around the Earth, trapping the sun's heat and raising temperatures.

A common misunderstanding is to think that climate can vary in the same way as weather. This is not the case. Changes that seem small when we think in terms of weather are significant when it applies to climate. Normally, changes in climate occur over a very long time. For instance, the average temperature on Earth was 4°C colder during the last Ice Age, 20,000 years ago. At this time, Canada was almost entirely buried in glaciers and ice sheets up to thousands of metres thick.

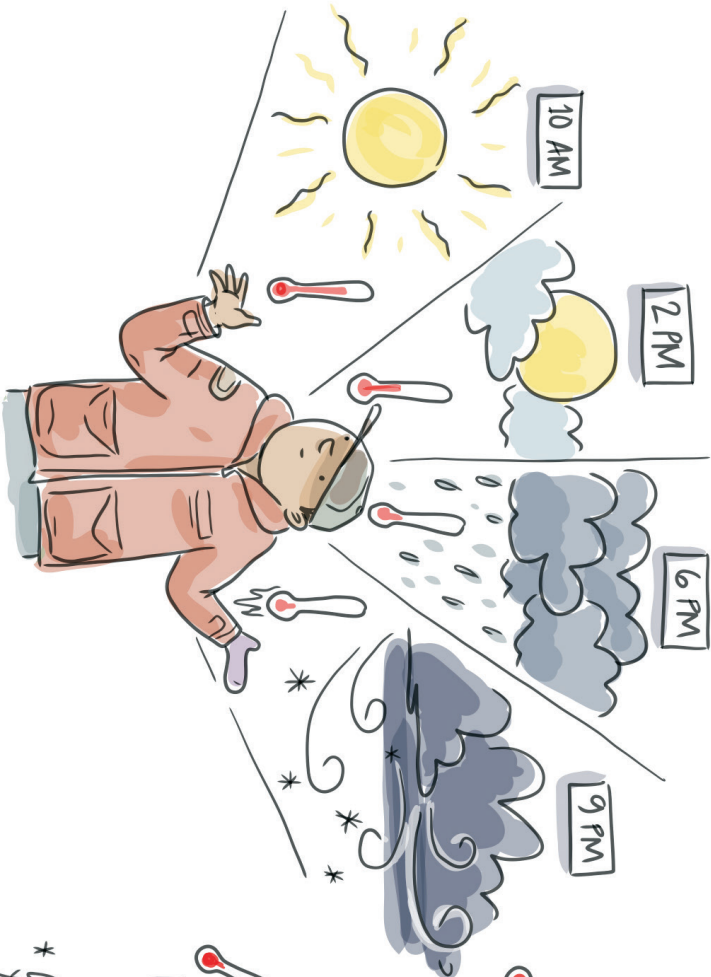
The current pace of global warming is significant: we're seeing changes over a few decades that would otherwise have happened over thousands of years. The average temperature of the Earth's surface is now about 1.1°C warmer than it was in the late 1800s. Throughout 2023, temperatures were on average 1.5°C warmer than the pre-industrial average. This is warmer than at any time in the last 100,000 years.

*Adapted from Climate Atlas of Canada's Climate vs. Weather ([climateatlas.ca/climate-vs-weather](https://climateatlas.ca/climate-vs-weather)) and United Nations explainer What is Climate Change? ([un.org/en/climatechange/what-is-climate-change](https://un.org/en/climatechange/what-is-climate-change))*



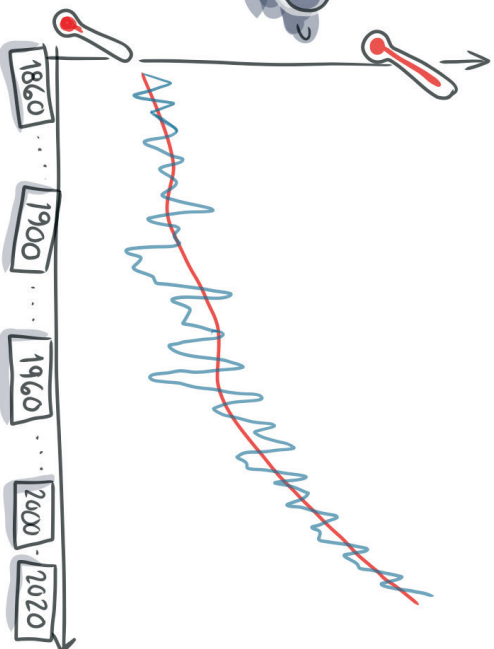
## WEATHER

- ✓ CONDITIONS OF THE ATMOSPHERE OVER A SHORT PERIOD OF TIME.
- ✓ CAN CHANGE WITHIN MINUTES OR HOURS.



## CLIMATE

- ✓ HOW THE ATMOSPHERE BEHAVES OVER A LONG PERIOD OF TIME & SPACE.
- ✓ AVERAGE REGIONAL WEATHER PATTERN OVER DECADES? (AT LEAST 30 YEARS)\*



\* CLIMATE SCIENTISTS GENERALLY USE AT LEAST 30 CONTINUOUS YEARS OF WEATHER DATA TO DETERMINE TRENDS IN CLIMATE.

## 4. Building Made-in-the-NWT Adaptation Pathways

Throughout the engagement on the Assessment, we heard that NWT residents and communities are resilient and have the ability to adapt and adjust to the risks caused by climate change.

This Assessment identifies our climate change risks, but it is important to highlight the ways that we can, and already are, adapting to our changing climate.

There are many ways to adapt to climate change. Numerous adaptation options are on the table, each leading to different possible outcomes for the NWT. This range of possible outcomes are called ‘adaptation pathways’. An adaptation pathway is the result of step-by-step choices and decisions made by

residents and communities, reassessed over time as the climate and social values change. These choices balance short-term and long-term goals, as well as climate change uncertainty (see Box 4).

What could a made-in-the-NWT adaptation pathway look like? No one idea will be a blanket solution for all the NWT’s diverse regions, groups, and communities. Building on what was heard during the past two years of engagement activities, this section outlines possible elements of what a made-in-

the-NWT Adaptation Pathway could look like that strengthens the five NWT values. We highlight adaptation actions that are already underway in the NWT, as well as future pathways.

Whatever pathway the NWT will take, the level of adaptation effort will depend on the level of global carbon emissions from human activities. This is why the NWT is doing its share to reduce its carbon emissions through the implementation of the 2030 Climate Change Strategic Framework and the 2030 Energy Strategy.

### 4.1 A pathway braiding reconciliation and self-determination

In the NWT, there is a unique opportunity to adopt a climate change adaptation pathway that embraces Indigenous reconciliation and self-determination.

Multiple Indigenous governments and Indigenous organizations across the North

are proactive in identifying climate change action priorities. For instance, the Inuvialuit Regional Corporation has developed and is implementing the *Inuvialuit Settlement Region Climate Change Strategy*. The North Slave Métis Alliance and the Tłıchq Government are working with

their respective members to identify their climate change adaptation priorities, to inform the co-development process of the federal *Indigenous Climate Leadership Initiative*. Many other Indigenous governments and Indigenous organizations are in the process of developing their own similar Strategies

and pathways shaped by their unique needs and priorities. In addition, work is on-going to identify shared priorities across all segments of NWT society, for a whole-of-the-NWT climate change adaptation pathway.

Identifying these shared priorities for a made-in-the-NWT adaptation pathway relies on collaboration and trust. This collaboration has been fostered through the **NWT Climate Change Council**. The Council is a key forum for Indigenous governments', Indigenous organizations', and NWT community governments'

perspectives on climate change impacts and solutions. The Council met in February 2024 to inform and develop shared climate change action priorities for the NWT. Their input guided the drafting of the 2025-2029 NWT Climate Change Action Plan, and they have expressed the desire to enable and guide coordination and collaboration for climate change action in the NWT. This coordination role provides an opportunity to build on and strengthen relationships, shared understandings, and trust, which in turn supports

the GNWT's implementation of the United Nations Declaration on the Rights of Indigenous Peoples (see Box 4).

The work of Indigenous governments and Indigenous organizations to define and implement their own climate change adaptation priorities emphasizes their right to maintain and protect their unique cultures, traditions, and ways of life. It also highlights the importance of Indigenous Knowledge in supporting climate change adaptation decision-making that affect their lands and resources.

BOX 4: WHAT IS THE UNITED NATIONS DECLARATION OF THE RIGHTS OF INDIGENOUS PEOPLES?

- The United Nations Declaration on the Rights of Indigenous Peoples describes the fundamental human rights of Indigenous peoples around the world. It describes how governments should respect the human rights of Indigenous peoples. The Declaration recognizes Indigenous peoples' right to self-determination, culture, language, and traditional lands. In addition, the Declaration describes the minimum standards required to protect Indigenous peoples' rights and contribute to their survival, dignity, and well-being.
- Made up of 46 articles that describe specific rights and actions that governments must take to protect the rights of Indigenous peoples, this Declaration is a valuable tool for developing strategies and taking action. Both the Truth and Reconciliation Commission and the National Inquiry on Missing and Murdered Indigenous Women and Girls included calls for all levels of government to adopt the UN Declaration as the framework for reconciliation across Canada.
- On March 2023, the GNWT introduced *Bill 85: The United Nations Declaration on the Rights of Indigenous Peoples Implementation Act*. Here in the Northwest Territories, this declaration is especially relevant because it acknowledges the rights of the First Nations, Métis and Inuit peoples who have lived here for generations.



## 4.2 A pathway balancing opportunities arising from climate change

A made-in-the-NWT adaptation pathway could also explore the potential economic opportunities residents identified from climate change. These might include sustainable tourism, an extended open water navigation period in the Arctic Ocean, agricultural expansion, and leveraging future Nature Finance opportunities.<sup>3</sup>

However, these potential opportunities are to be approached cautiously. For example, decreased sea ice may increase access to the Northwest

Passage which may increase pollution and Arctic security concerns. However, new defense infrastructure may have positive synergies for northerners if such infrastructure can increase northern resilience to climate change. More work is needed to assess their overall benefits, their barriers, as well as their unintended consequences.

For instance, some aspects of climate change that can be perceived positively from an economic lens will likely result in negative impacts to ecosystems and connections to the land

and culture. This trade-off was highlighted by a participant from the Inuvialuit region: “Increased marine traffic (cruise ships) and ‘over-tourism’ brings money, but also brings negative impacts to our traditional ways of life. We are seeing this already in our communities.” These negative impacts could include increased risks of accidents when conducting traditional activities on seas with nearby cruise ships, impacts on the quantity and quality of fish, and disturbance of marine animals due to underwater noise and pollution of cruise ships.

## 4.3 A pathway that incorporates both social and economic equity

Climate change can increase existing socio-economic inequities in the NWT as it disproportionately affects vulnerable communities and groups. The Indigenous-led *For our future: Indigenous resilience report*<sup>4</sup> highlights how climate change increases existing inequity for Indigenous people in Canada. Made-in-the-NWT adaptation pathways need to identify climate change adaptation solutions that address these socio-economic inequities, like housing and food insecurity.

Housing NWT is already undertaking work to upgrade

and build climate-resilient homes that are more resistant to wildfire and ground instability from permafrost thaw. Others are advancing local energy systems that rely on woodstoves and solar and wind energy to reduce the cost of energy for households while increasing their energy security and independence.

Adopting actions that enable local food production, such as community gardens, greenhouses, and small-scale agriculture farms and fisheries also tackles the inequity of food insecurity. Many communities and Indigenous organizations

have already initiated these types of projects. For instance, the Inuvialuit Regional Corporation operates a greenhouse and local food processing plants, while the North Slave Métis Alliance built a community garden and greenhouse to provide locally grown food for their members. The *Northern Food Systems Research Group*<sup>5</sup> within Wilfrid Laurier University, supported by the GNWT, is working with Ka’a’gee Tu First Nation, Délı̨nę Got’ı̨ne Government, Tsá Tué Biosphere Reserve, Sambaa K’e First Nation, and the City of Yellowknife to access traditional foods, fish, game, and gardens to

<sup>3</sup> Nature Stewardship Framework (NSF) introduced Nature Stewardship Credits (NSCs) to recognize and reward measurable biodiversity conservation, ecological restoration, and sustainable livelihoods. <https://bit.ly/4h0Mln2>

<sup>4</sup> <https://changingclimate.ca/indigenous-resilience/chapter/3-0/#article-3-5>

<sup>5</sup> The research group website is available at: [researchcentres.wlu.ca/centre-for-sustainable-food-systems/research/northern-food-systems-research-group.html](https://researchcentres.wlu.ca/centre-for-sustainable-food-systems/research/northern-food-systems-research-group.html).

increase food security and food sovereignty. Some communities and Indigenous organizations have also established community freezers so that locally harvested food can be frozen to last longer, providing communities with more predictable access to country foods amidst unpredictable changing conditions on the land. The Sustainable Livelihoods Action Plan supports country food

research and programs across the territory.

Northern adaptation solutions for the NWT could also include continuing and enhancing on the land activities and safety courses that connect Youth and Elders so that intergenerational knowledge, including knowledge of climate change and climate solutions, are passed between generations.

These adaptation solutions likely involve the creation of new jobs, whose training and certification could be done in the NWT through Aurora College trade and apprenticeship programs. Increasing local food and energy production would also increase the NWT’s capacity to be more resilient to supply chain and infrastructure disruptions.

**4.4 A pathway further advances the NWT as a climate change research centre, integrating multiple ways of knowing**

*“The time to act is now. Lessons learned from climate action in the North will be valuable elsewhere across the global north and south in the years to come and will be of great benefit to future generations.”*

*Pan-Northern Leaders’ Statement on Climate Change*

As the North warms up to four times faster than the rest of the world, the NWT is at the forefront of climate change impacts. Understanding these impacts will help improve climate change modelling, which in turns helps us prepare for, and adapt to, future climate hazards. This modelling is crucial not only for us in the North, but for all of Canada and the world at large.

A made-in-the-NWT adaptation pathway can go hand-in-hand with positioning the NWT as a climate change research centre of expertise. This involves climate change knowledge and adaptation that integrates both Western and Indigenous

ways of learning and knowing. Section 6 presents some research opportunities that could serve as potential examples to channel investment into research in the NWT. Research that helps prepare and adapt to the changing climate could include developing, testing, and commercializing new technologies and approaches such as carbon offsets, innovative wildlife or conservation management, adapting buildings for permafrost thaw and weather changes, and advancing local food production in northern regions. Research like this can, and does, create further spin-off economic activity and diversification.

The NWT is already well positioned to become an advanced climate change research hub. Many initiatives that integrate Western and Indigenous ways of learning and knowing are already in place, as presented in Box 5 below: NWT initiatives to position the NWT as a centre for climate change research integrating Western and Indigenous ways of knowing. The GNWT will continue to advocate for this pathway at the national and international level, as indicated in the GNWT Innovation Action Plan<sup>6</sup>.

<sup>6</sup> Released in 2023, one of the goals of the GNWT Innovation Plan is to expand research activities in the NWT by strengthening and promoting the NWT as a location for targeted research; by promoting Indigenous, traditional, and local knowledge in research programs. And by supporting further development of domestic research capabilities. [https://www.iti.gov.nt.ca/sites/iti/files/Innovation\\_Action\\_Plan\\_2023.pdf](https://www.iti.gov.nt.ca/sites/iti/files/Innovation_Action_Plan_2023.pdf)

## BOX 5: NWT INITIATIVES TO POSITION THE NWT AS A CENTRE FOR CLIMATE CHANGE RESEARCH INTEGRATING WESTERN AND INDIGENOUS WAYS OF KNOWING

- Indigenous Knowledge.** The NWT values multiple ways of learning and knowing. For instance, the Northwest Territories Cumulative Impact Monitoring Program (NWT CIMP) is a source of environmental monitoring and research in the NWT with a focus on three priorities: caribou, water, and fish. The program coordinates, conducts, and funds the collection, analysis and reporting of information related to environmental conditions, while prioritizing the use of Indigenous Knowledge. NWT CIMP considers all sources of knowledge, including science and Indigenous knowledge equally valuable. Community capacity building and community-based monitoring are key principles that are supported and linked to monitoring that produces information relevant to cumulative impacts. Similarly, the Tłıchq Government's Research and Training Institute, Hotł ts'eeda, which has attracted academic partners and research funding for its *Ekwo` Nàxoède K'è: Boots on the Ground* caribou monitoring program, caribou monitoring program based on the traditional knowledge of Indigenous Elders and harvesters that began in 2016. It is a multi-year traditional knowledge monitoring program that uses a methodology of "do as hunters do." The researchers identify and wait at specific na'oke (water crossings) and follow caribou herds by boat and on foot to identify traditional knowledge indicators.
- Research capacity and facilities.** The NWT hosts several research institutes whose activities intersect with climate research. This includes Aurora College's Aurora Research Institute (Inuvik, Fort Smith, Yellowknife) and independent research organizations like the Institute for Circumpolar Health Research. The GNWT operates the Tundra Ecosystem Research Station at Daring Lake that facilitates climate change research. The GNWT's Knowledge Agenda identifies climate change priorities that direct GNWT research partnerships. For instance, the Wilfrid Laurier University (WLU) - GNWT partnership led to 40 research programs focused on climate change, impacts of climate change on resources or communities in the NWT, and developing research capacity. Through the WLU-GNWT partnership, WLU has had an office located in Yellowknife since 2017, and the partnership has brought \$ 42.8M of funding for local research and infrastructure in the NWT since 2010.
- Cross-cutting research on permafrost.** The NWT Permafrost Team, nested within the Northwest Territories Geological Survey, has staff in Yellowknife and Inuvik. The team undertakes baseline monitoring and terrain characterization across the NWT to better understand permafrost thaw and its impacts on community infrastructure, roads, and ecosystems. The Permafrost Team also promotes its research results nationally and internationally, with the goal of increased research collaboration and funding flowing to the NWT. This group also disseminates research results to NWT residents and supports partners in writing successful grant applications that meet their research needs. The team also participates in several initiatives to train Indigenous partners to participate in research fieldwork programs, such as the *NWT Thermokarst Mapping Collective* ([nwtgeoscience.ca/services/northwest-territories-thermokarst-mapping-collective](http://nwtgeoscience.ca/services/northwest-territories-thermokarst-mapping-collective)).

# 5. Conclusion and Next Steps

NWT residents and communities have the ability to adapt and adjust to the risks caused by climate change. The people of the North are resilient, and they can, and already are, adapting to the changing climate.

Numerous adaptation options are on the table, each leading to a different possible future for the NWT. This range of possible futures or “adaptation pathways” is the result of step by-step choices and series of decisions made by residents and communities, reassessed over time as the climate and social values change. These choices balance short-term and long-term goals, as well as climate change uncertainty.

Building on what was heard, made-in-NWT Adaptation Pathways can strengthen the five NWT values.

The Assessment identified four possible elements of a made-in-the- NWT pathway:

- A pathway braiding reconciliation and self determination

- A pathway balancing opportunities that arise from climate change
- A pathway that integrates social and economic equity
- A pathway that further builds the NWT as a climate change research centre, integrating multiple ways of knowing.

The Assessment provides a shared picture of the most pressing climate change risks that NWT residents and communities are facing in the next five years. It is a roadmap that outlines shared climate change adaptation priorities, where better collaboration, coordination and pooling resources could lead to meaningful and impactful adaptation to and preparedness for a changing climate. Aligning adaptation priorities across the NWT will also be essential in securing the resources and capacity needed to implement these actions. This will also be essential to work on paving the way to made-in-the-NWT adaptation pathways that address these shared priorities and shared values.

The GNWT will use this Assessment and will work

closely with NWT partners and the public to identify and prioritize adaptation actions and measures it can lead and support by securing federal funding, coordinating work undertaken by different parties in different places, or by building capacity. For instance, the NWT’s new Climate Change Action Plan will be informed by this Assessment. Similarly, the GNWT will also address data gaps identified in this Assessment to inform its monitoring plan.

Risks identified in the Assessment can also help better inform future sector-based risks assessments as well as an assessment and action plans at the NWT, regional, and community level. Finally, to ensure the most concerning risks remain relevant and accurate, the GNWT will review the Assessment in five years from now to identify new priorities or confirm existing ones and update the assessment in 10 years time.

Please refer back to the longer report and the poster brochure guide for more information on the Assessment.

*“The time to act is now. Lessons learned from climate action in the North will be valuable elsewhere across the global north and south in the years to come and will be of great benefit to future generations.”*

*Pan-Northern Leaders’ Statement on Climate Change*





