

**CLIMATE CHANGE ADAPTATION
PLANNING GUIDEBOOKS**
FOR INDIGENOUS COMMUNITIES



GUIDEBOOK 2

**CLIMATE CHANGE IMPACTS
IN THE COMMUNITY**

These Guidebooks were created by the Centre for Indigenous Environmental Resources in partnership with Sioux Valley Dakota Nation in Manitoba and Peter Ballantyne Cree Nation, Deschambault Lake Community, in Saskatchewan. The Centre for Indigenous Environmental Resources updated the guidebooks in 2020 with guidance from T-Sou-ke First Nation in British Columbia and Fox Lake Cree Nation in Manitoba.

Please contact earth@yourcier.org for any questions or comments on these Guidebooks.

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CLIMATE CHANGE ADAPTATION PLANNING GUIDEBOOKS

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GLOSSARY

Adaptation: The process of adjustment to actual or expected climate change and its effects.

Ability to Adapt: how easy or difficult it will be for the community to adjust to the resulting changes (before implementing any forms of adaptation).

Climate: The word “climate” refers to a region’s long-term weather patterns. The conditions that make up the weather in an area – precipitation, temperature, wind and so on – are measured daily, whereas climate describes what the weather is like over a long period of time (often based on thirty-year averages). Weather can change dramatically day-to-day, but climate is expected to be relatively consistent over time. This is summed up by the old saying, “climate is what you expect, weather is what you get”.

Greenhouse Gases (GHGs): Life on Earth is possible because various gases in the atmosphere trap heat and keep the planet at a livable temperature. These gases that keep the Earth warm are called greenhouse gases (GHGs). When the amount of GHGs increase, the Earth gets warmer.

Indigenous Knowledge: For the purpose of this guide, Indigenous Knowledge is defined as: “A holistic system of knowledge acquired over time through experience or observation and is tied to the cultural, linguistic, spiritual and subsistence ways of Indigenous peoples” (CIER and UBC, 2011).

Magnitude: the importance or size of the effect of the climate change impact on the system or community (e.g. an out of control forest fire in the community could have a large effect on the community’s infrastructure)

Mitigation: An intervention that either reduces the sources or enhances the sinks of greenhouse gases. This may also include reducing the sources of ozone altering substances (e.g. Carbon monoxide, Nitrogen Oxides, etc.)

Sensitivity: the characteristics of the system or community (e.g. a small drinking water source would be highly sensitive to drying up if climate change caused severe drought)

Sustainability: sustainability can be thought of as the ability of a community to adapt and become more resilient to climate change impacts, allowing the community to continue thriving well into the future.

Vulnerability: In this document we will specifically be using the term vulnerability to describe any predispositions (tendencies) your community may have that could increase its likelihood of being adversely (negatively) affected by climate change (IPCC, 2014).

ABOUT THE GUIDEBOOKS

The Climate Change Adaptation Planning Guidebooks for Indigenous Communities consists of a series of guidebooks. The guidebooks provide an overview of the six-step climate change adaptation planning process

The goal of the six guidebooks is to provide a user-friendly and culturally appropriate climate change and adaptation resource to assist Indigenous communities with adaptation planning in order to avoid, minimize, or adapt to the impacts caused by climate change. The planning process outlined in the guidebooks allow for wide application, local adaptation, and ongoing modifications.

Understanding the Planning Process

Each of the guidebooks focus on one of the six climate change adaptation planning steps. The six guidebooks (and accompanying activities included in each guidebook) focus on the following topics:



GUIDEBOOK 1: STARTING THE PLANNING PROCESS

Understanding the importance of climate change adaptation and assembling a team of community leaders and members to assist with the climate change adaptation planning process.

Activities:

1. Meet with Community Leadership: create briefing note for your community's leadership that explains the project and the importance of including climate change adaptation in community plans and decisions for the long-term success of the community.
2. Set-up a Working Group: develop a pamphlet that outlines Working Group member roles and responsibilities and recruit potential Working Group members.
3. Hold a Community Event: inform the community about climate change adaptation planning and provide an opportunity for community members to share their ideas and provide suggestions and direction by hosting an outreach activity or event.



GUIDEBOOK 2: CLIMATE CHANGE IMPACTS IN THE COMMUNITY

Understanding the impacts of climate change and its effects on Indigenous communities, learning about adaptation (adjusting to climate change impacts) versus mitigation (reducing or preventing climate change impacts), and identifying climate change impacts in your own community.

Activities:

1. Gather Background Information: compile information on nature and the environment in your community, including how people currently use and live on the land (e.g. current and past settlements and subsistence, commercial and traditional uses of land, water, wildlife, and plants)
2. Brainstorm Local Observations of Climate Change: generate a list of climate change impacts that have been observed by community members and how these observations have affected the activities people do in the community.



GUIDEBOOK 3: IDENTIFYING COMMUNITY SUSTAINABILITY AND CLIMATE CHANGE VULNERABILITIES

Developing a community vision for a climate resilient future, understanding the difference between community sustainability and vulnerability to climate change, and developing different community climate change scenarios (e.g. no adaptation versus successful adaptation).

Activities:

1. Community Vision: gain a sense of community members' vision for the future, including what should be preserved, what should be added (that is currently missing), challenges that the community is facing and would like to resolve/remove, and things to keep out of the community to ensure it remains healthy/successful.
2. Sustainability Brainstorm: understand how the community is sustainable in relation to the environment, economy, society, and culture.
3. Vulnerability Brainstorm: understand how the community may be vulnerable to the climate change impacts that were identified in guidebook 2 and during the previous Sustainability Brainstorm activity.
4. Vulnerability Ranking: understand areas where the community may be most vulnerable to the predicted impacts of climate change
5. Identifying Connections: understand if/how vulnerabilities to climate change are related to more than one area of sustainability (environment, economy, society, culture)
6. Influence Diagram: develop a list of final climate change effects on the community (i.e. illustration of the changes that may occur in the community due to predicted climate change impacts)
7. Scenario Building: gain an understanding of what the community could look like if climate change impacts occur and no adaptation is implemented, if climate change and community development occur with no adaptation, and if successful adaptation is implemented.



GUIDEBOOK 4: IDENTIFYING SOLUTIONS

Identifying and prioritizing solutions for adapting to climate change and determining the feasibility of different solutions.

Activities:

1. Revisiting the Influence Diagram: generate a list of possible adaptation and coping solutions to help community minimize/eliminate negative effects and enhance positive effects
2. Revisiting the Scenarios: alternate method for generating list of possible solutions
3. Determining Feasibility: shortlist of feasible adaptation solutions
4. Setting Priorities for Climate Change Planning: from the list of feasible solutions, a list of priority solutions that community members would like to see implemented first
5. Creating a Comprehensive List of Priorities: a comprehensive list of all the priority solutions that were identified from previous activity working with different groups of community members that are feasible for implementation within your community.



GUIDEBOOK 5: TAKING ADAPTIVE ACTION

Understanding past successes in your community, developing an action plan to implement your climate change adaptation solutions, ensuring ongoing community participation in the climate change adaptation process, and celebrating your achievements.

Activities:

1. Decision-making in Your Community: learn more about the community's past successes and decision-making processes to learn how it might inform the current climate change adaptation planning process in a positive way
2. Developing an Action Plan: work with leadership and the Working Group members to create a detailed action plan that outlines how each of your adaptation solutions can be implemented in the community, including level of priority, resources required, roles/responsibilities, milestones, budgets, timelines, and measures of success.
3. Challenge Tree: share your action plan with the broader community and identify ways in which community members can support or help implement the different adaptation solutions and actions.



GUIDEBOOK 6: MONITORING PROGRESS AND CHANGE

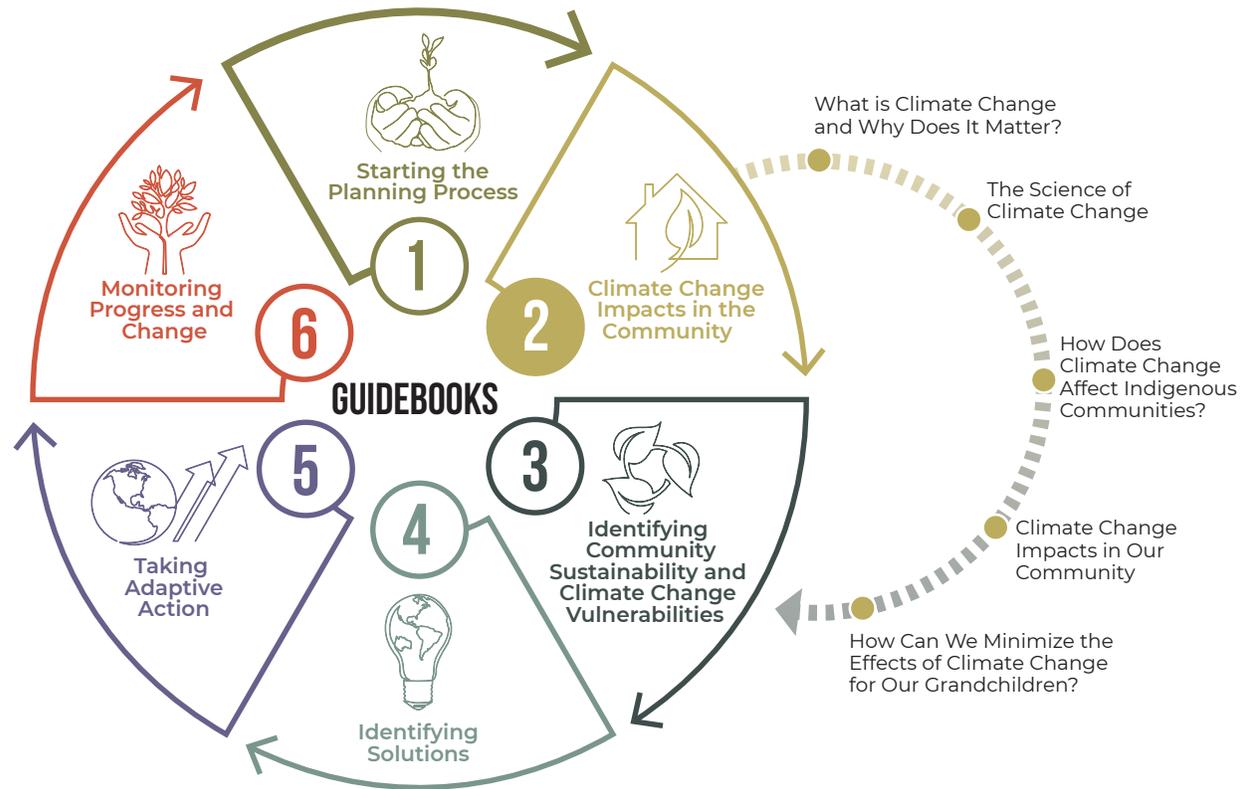
Tracking and evaluating the success of your climate change adaptation action plan, adjusting your activities and actions (as needed), and understanding the importance of revisiting the climate change adaptation planning process in the future to ensure it is still useful for your community.

Activities:

1. Evaluating Your Action Plan: evaluate your adaptation action plan and determine if progress has been made in reaching the community's adaptation goal.

UNDERSTANDING THE PLANNING PROCESS

The guidebooks build on one another and are intended to be used in order (from 1-6). Each guidebook provides information, considerations, and activities to walk the user through each step of the planning process and prepare them for the next step of planning. The activities included in the guidebooks are designed to engage community members during the planning process. These activities are suggestions. However, you may decide to change or adapt certain activities to better fit your community's needs.



HOW TO USE THE GUIDEBOOKS

In each guidebook, you can expect to find relevant background/introductory information related to the topic and planning step covered in that guidebook and key considerations, tips, and activities to assist you in completing that step of the planning process.

Note: the suggested activities included in the guidebooks are designed to engage community members during the planning process, however, you may decide to change certain activities to better fit your community's needs.

Checklist

In each of the six guidebooks, you'll find a checklist, like the example below, to help you stay on track and work through each of the planning activities that are required to complete that step of the climate change adaptation planning process. The project coordinator can use the checklists as a tool to see how many tasks need to be completed, who is responsible for completing them, and what progress has been made. Checklists are located at the end of each guidebook or you can refer to Annex I for a complete set of checklists from all six guidebooks.

Task	Recommended to complete task	Progress
Designate a Project Coordinator		Complete
Meet with Leadership	Coordinator	Complete
Set up a Working Group	Coordinator	In progress (meeting scheduled)
Inform Community Members	Coordinator	Not completed

Symbols Used in the Guidebooks

Throughout the guidebooks, there are a series of symbols (shown below) to indicate where a particular type of meeting or activity is suggested. The symbols include the following:

				
Activity	General Meeting Note: the "general meeting" symbol suggests a meeting with other groups not specifically listed below: <ul style="list-style-type: none"> • Elders Meeting • Community Meeting • Youth Meeting 	Working Group Meeting	Materials	Checklist
				
Important Information	Indigenous Knowledge	Environmental	Economic	Social
				
Cultural	Winter	Summer	Spring	Fall

Text Boxes

In coloured text boxes throughout the guidebooks, you will find stories and examples of climate change and community planning in Indigenous communities, as well as examples of CIER and community participants working through the activities suggested to engage people in the project.

WHAT WILL YOU LEARN IN THIS GUIDEBOOK?

In guidebook 2, you will learn more about climate change as well as climate change adaptation (adjusting to existing climate change impacts) versus mitigation (reducing or preventing climate change impacts). Guidebook 2 includes several community stories that illustrate the effects climate change has had on Indigenous communities across Canada. Lastly, guidebook 2 includes a series of activities to help you engage community members in order to identify local climate change impacts within your own community, so that these can be incorporated into your adaptation plan.

WHAT IS CLIMATE CHANGE AND WHY DOES IT MATTER?

The word “climate” refers to a region’s long-term weather patterns. The conditions that make up the weather in an area – precipitation, temperature, wind and so on – are measured daily, whereas climate describes what the weather is like over a long period of time (often based on thirty-year averages). Weather can change dramatically day-to-day, but climate is expected to be relatively consistent over time. This is summed up by the old saying, “climate is what you expect, weather is what you get”.

Climate change occurs when long-term weather patterns are altered. This can happen for different reasons, but the current changes we are seeing with our planet’s climate are largely due to human activity. For example, the global emission of carbon dioxide, resulting from human activity, is a key factor in determining how much Canada (and the world) will experience warming in the future (Bush and Lemmen, 2019).

For thousands of years, the average temperature of the Earth’s atmosphere has remained around 15°C. This average temperature is increasing, and the Earth is experiencing a general warming trend. This trend is what people are referring to when they use the phrase “global warming”, although warming is just one measure of climate change. In Canada, the rate of warming is predicted to be approximately double the rate of warming that is occurring on a global scale; this is particularly notable in northern regions and communities (Bush and Lemmen, 2019). Climate change has a wide range of consequences, including extreme weather events and changes to local ecosystems, that impact each part of the world differently. In Canada more specifically, some of the key effects of warming include extreme heat, less extreme cold and shorter snow/ice cover seasons, increased glacial melt, thawing permafrost, and rising sea-levels (Bush and Lemmen, 2019).

WHY IS CLIMATE CHANGE A CONCERN?

Life on Earth is possible because various gases in the atmosphere trap heat and keep the planet at a livable temperature. These gases that keep the Earth warm are called greenhouse gases (GHGs). When the amount of GHGs increase, the Earth gets warmer. When they decrease, the Earth gets cooler. Although these gases are naturally present in the atmosphere, human activity (e.g. burning fossil fuels, travel and transportation, agriculture and diet, deforestation, etc.) is adding too many natural GHGs and some harmful human-made GHGs to the atmosphere. These increased GHGs are causing the Earth’s temperature to increase faster than science has observed in the Earth’s history (IPCC, 2018).

It is normal for the climate to change. The concern is that over the last few decades, the climate has been changing too quickly. Scientists predict that in the next 100 years, the average temperature of the Earth will increase by 1.4-5.8°C (IPCC, 2014B; NOAA, 2012).

Even small changes in the Earth's average temperature will result in big changes for all life on Earth. In 2017, human-induced warming already reached 1°C above pre-industrial levels (early 1700s) (IPCC, 2018). Even this small change in global temperature has resulted in an increase of severe and unpredictable weather events such as intense precipitation events (i.e. rain or snow) in some regions, while other regions are experiencing more frequent droughts. Regions most likely to feel the largest climate change impacts include coastal areas, the Arctic, and dryland regions (IPCC, 2018).

THE EFFECTS OF CLIMATE CHANGE

Climate change will have far-reaching and unpredictable environmental, social, and economic consequences. The effects of climate change will be felt globally, across the different regions of Canada, and in our own communities. Warmer temperatures will mean different things for different regions, but generally includes more frequent severe weather events, greater variation in water levels, and, rising sea levels. In some parts of the world, there will be longer and more intense heat waves and droughts.

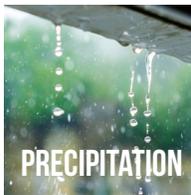
For example:



Oceans are continuing to warm, becoming more acidic and less oxygenated from carbon dioxide emissions; this poses a threat to marine species and ecosystems (Bush and Lemmen, 2019).



Higher risk of water supply shortages due to changes in the seasonal availability of freshwater (Bush and Lemmen, 2019). For instance, smaller snowpacks, melting glaciers, and increased water evaporation (from warmer temperatures) will result in lower streamflows over the summer months (Bush and Lemmen, 2019).



Precipitation is predicted to continue increasing, with an increase in rainfall and a decrease in snowfall (Bush and Lemmen, 2019). Increased rainfall will contribute to increased risk of inland and urban flooding (Bush and Lemmen, 2019).



It is predicted that there will be an increase in severe heatwaves and extreme temperatures, resulting in more droughts and higher risk of wildfire (Bush and Lemmen, 2019). Elders and others that live on the land are seeing changes in the length of the winter season and the shortening of extreme cold snaps in the winter.



Plant and animal species are migrating further north as conditions become warmer and they are able to survive in regions that were previously too cold. Ecosystems will change; for example, it is predicted that increasing temperatures over the long term will cause the prairies to expand and boreal forest, tundra habitats, and sea ice to shrink.

In addition to the environmental impacts of climate change, there will be social and economic impacts as well. Human health will be affected as different diseases thrive in warmer temperatures and economies that depend on the natural world to produce goods will need to adapt to the changing climate. For example, Canada relies heavily on its natural resources to support a strong economy and enable our way of life. The roles of people employed in the natural resources sector such as farming, fishing, and forestry may need to adapt to the effects of climate change such as changing seasons and extreme weather, which could cause challenges.

It is important to note that climate change won't be the same across the different regions of Canada. Polar regions will likely warm more than southern regions, and the Atlantic region may cool slightly. Coastal zones and the Arctic will be the most dramatically affected (IPCC, 2018). For example, climate change impacts have caused traditional, below-ground freezer storage in the Inuvialuit Settlement Region to become unreliable and unsafe. In response the Inuvialuit Regional Corporation is installing solar powered industrial freezers in each of the Inuvialuit communities (Kanatami, 2019). The Arctic and Atlantic oceans are experiencing longer periods of sea-ice free conditions, which impacts ice-dependent marine species who rely on these regions as refuges (Bush and Lemmen, 2019). With decreasing sea ice, there will may be larger storm surges and waves, increasing the risk of damage to coastal infrastructure and ecosystems (Bush and Lemmen, 2019).

Climate change will be felt locally. People may need to adapt activities such as hunting, fishing, and picking medicines as climate change continues to cause changes in animal behaviour and plant growth. For communities in the north, there are likely to be impacts on everyday activities as well as infrastructure. For example, regular activities such as travel may be affected as warming temperatures shorten the length of time suitable for travel on the ice and winter roads. Climate will also impact infrastructure, including airstrips, railways, water facilities and building foundations (e.g. housing) as a result of thawing permafrost (Boyle et al., 2013).

The effects of climate change are being felt now and will continue to be experienced, likely to a greater degree, in the future. Given that human activity is the main driver of climate change, communities should take action to reduce GHG emissions and lessen climate change impacts. But communities must also prepare for the inevitable by being adaptable and planning for the ways that climate change will impact their local landscape.

HOW DOES CLIMATE CHANGE AFFECT INDIGENOUS COMMUNITIES?

Indigenous communities can have very different experiences when dealing with the effects of climate change. CIER has worked with many Indigenous communities throughout Canada and heard many different stories and observations about the changes Indigenous Peoples are witnessing on their lands.

Unexpected and Severe Storms in Swan Lake First Nation, Manitoba

Swan Lake First Nation in Manitoba has observed unexpected and severe storms in their community. One such storm took place in June 2018. Huge winds, estimated to be nearly 100 km/h, and hail swept through the community. One community member described how the winds were so strong that it caused the hail to fly horizontally. The storm damaged trees and roofs, smashed windows, and blew in one of the public work building's walls. The hail from the storm also took the birds by surprise. Birds were found dead on the ground as they were not able to find shelter before the hail came down.

Unexpected and severe storms such as the one in Swan Lake First Nation are causing people to panic. People used to be able to predict when a large storm was coming with enough time to find shelter. The old ways of predicting storms are not as reliable anymore as the climate is changing faster than ever before. This has caused some people to feel anxious and unsafe. There is a need to build safer homes in communities, that are strong enough to handle the severity of these new storms.

Spruce Budworm

Some Indigenous communities with are noticing an increase in the spread of spruce budworm. Spruce budworm is an insect that feeds on the buds and needles of balsam fir and white and black spruces. The defense mechanisms of trees can become weakened if there is a repeated loss of new buds and needles over a few years, making them more susceptible to other insects/pests and diseases.

The increased spread of spruce budworm could be triggered by a decreased winterkill (i.e. death from exposure to winter conditions) of the insect, as some regions are not experiencing the long cold winters they did in the past. Another factor that could be contributing to the spread may be heat or water stress experienced by trees during the summer, making them more susceptible to insects like the spruce budworm and other diseases. The negative environmental and economic impacts of spruce budworm infestations are increasing as entire forests of spruce trees can die off after severe foliage damage. This creates intense forest fires due to the high fuel loading caused by dead spruce trees.

Winter Road Access to Indigenous Communities

Many Indigenous communities within Canada's north rely on winter road systems for the transportation of goods and services to and from their communities. As the climate changes, shorter and milder winters are predicted in some areas of Canada. There are many elements required to support winter road construction. One of these elements is a sustained and prolonged period of time with below freezing temperatures. This is especially true for winter road systems that cross fast flowing rivers or large waterbodies. Milder winters jeopardize the feasibility of constructing and maintaining winter roads. First Nations communities all over Canada have been experiencing shortened winter road seasons. These shortened winter road seasons result in community members having to rely on other, more expensive means of transportation to move essential equipment and supplies in and out of the community. This has resulted in social impacts, including shortages of food, fuel, and construction materials and supplies, as well as economic impacts such as an increased cost of goods and services.

Access to the Land for Work, Recreation, and Cultural Purposes in Fox Lake Cree Nation

Fox Lake Cree Nation has experienced unstable weather patterns, which has impacted the community's wild foods as well as the ability of community members to access the land to harvest foods. Unstable weather patterns have changed Caribou migration routes, decreased the number of berries, and ultimately made accessing wild foods expensive as community members have to travel much further to access these foods and medicines. People in the community have noticed their community member's physical health deteriorating from lack of land access and not eating wild foods as often as they used to.

In the summer of 2018, the area experienced a drought which resulted in low water levels in the local watershed. This impacted the community in many ways including having to cancel a Youth Climate Change Monitoring and Wild Food Harvesting Canoe trip. The canoe trip was cancelled due to dangerously low levels of water making the river unnavigable.

GLOBAL IMPACTS AND LOCAL ACTIONS

Climate change is a global challenge. In 2015, Canada and 194 countries reached the Paris Agreement, a global plan with targets to keep global temperature rise this century well below 2 degrees Celsius. The Agreement identifies the need to respect the rights of Indigenous peoples, local communities, human rights, and gender equality when taking climate actions.

Indigenous Nations have been leaders in responding to climate change. Across Canada, Indigenous Nations have implemented monitoring and adaptation activities to identify how climate change is impacting their territories and to plan for adapting to future climate scenarios.

Communities, schools, and families are recognizing that individual actions can affect climate change and are participating in programs to help reduce GHGs and learn about climate change.



The Role of Indigenous Knowledge in Climate Change Adaptation

For the purpose of this guide, Indigenous Knowledge is defined as: *"A holistic system of knowledge acquired over time through experience or observation and is tied to the cultural, linguistic, spiritual and subsistence ways of Indigenous peoples"* (CIER and UBC, 2011).

Indigenous Knowledge (IK) can provide direction, motivation, and support for climate change adaptation processes, assessments, and tools. Elders and Knowledge Holders have a wealth of invaluable knowledge and wisdom about the lands, plants, animals, seasons, weather processes, and how the environment has been changing as a whole. Incorporating Elder insights, interviews, and/or mapping processes into the climate change adaptation planning process is critical; their guidance and wisdom will help you implement a respectful, appropriate, and sustainable climate change adaptation plan. The upcoming activities in guidebook 2-5 will help guide you through the process of working with different groups of Elders, Knowledge Holders, and community groups to incorporate IK into your climate change adaptation planning process. These activities include brainstorming/interview activities, mapping, visioning, determining priorities, and understanding successful approaches to decision-making in the community.

When collecting Indigenous Knowledge, it is important that you are adequately prepared to protect and securely store the Indigenous Knowledge you collect. Review the section below, “Protecting Indigenous Knowledge” for information on how to protect your community’s Indigenous Knowledge during the climate change adaptation (and other) planning process(es).

Protecting Indigenous Knowledge



IMPORTANT INFORMATION | Throughout the guidebooks, many of the activities will include a focus on collecting Indigenous Knowledge. The following are suggestions and resources for collecting and storing your Indigenous Knowledge securely in order to ensure it is adequately protected. These considerations are particularly important if you are collaborating with an external party or organization during the climate change adaptation planning process.

Collecting Indigenous Knowledge: when gathering Indigenous Knowledge, it is important to review your band/community’s protocols, processes, and expectations for collecting Indigenous Knowledge and for meeting with Elders and Knowledge Holders. Remember, it is good practice to compensate Elders/ Knowledge Holders for their time and knowledge. This may include an offering of tobacco, Honorarium, a gift, or your community may have a different process in place for providing compensation.

Storing Indigenous Knowledge: consider storing your Indigenous Knowledge separately from other data types, in a more secure capacity with enhanced privacy settings and confidentiality measures.

Data-Sharing: collecting Indigenous Knowledge may require the development of a data-sharing agreement, particularly if you are collaborating with an external party. A data-sharing agreement sets out the community’s expectations around if and how Indigenous Knowledge can be shared or interpreted by individuals/organizations outside the community. The objective of a data sharing agreement is to provide the community with complete control over their knowledge, whether or not it can be shared, and how it can and cannot be used. It is important to determine who within the community/organization has authority to make decisions about data sharing and to develop a data-sharing agreement that outlines clear guidelines and expectations (Indigenous Guardians Toolkit, 2016). The Elders and Knowledge Holders with whom you speak may be able to provide guidance on whether or not the knowledge they are sharing can be shared. For more information, templates, and resources related to developing a data-sharing agreement, refer to:

- **Indigenous Guardians Toolkit [Data Sharing Questions \(and Considerations\)](https://www.indigenousguardianstoolkit.ca/community-resource/draft-data-sharing-questions-ecotrust-canada):**
<https://www.indigenousguardianstoolkit.ca/community-resource/draft-data-sharing-questions-ecotrust-canada>
- **Indigenous Guardians Toolkit [Information Sharing Agreement Template](https://www.indigenousguardianstoolkit.ca/community-resource/information-sharing-agreement-template):**
<https://www.indigenousguardianstoolkit.ca/community-resource/information-sharing-agreement-template>
- **[The Alberta First Nations Information Governance Centre Framework for a Data Sharing Agreement](http://www.afnigc.ca/main/includes/media/pdf/community%20resources/Data_Sharing_Agreement.pdf):**
http://www.afnigc.ca/main/includes/media/pdf/community%20resources/Data_Sharing_Agreement.pdf

Resources: For more information and resources, visit:

- **The [First Nations Information Governance Centre](https://fnigc.inlibro.net/cgi-bin/koha/opac-main.pl):** <https://fnigc.inlibro.net/cgi-bin/koha/opac-main.pl>
- **The [First Nations Principles of OCAP®](https://fnigc.ca/ocap) (Ownership, Control, Access, and Possession of data):**
<https://fnigc.ca/ocap>

Spotlight: Indigenous Climate Leaders

There are numerous examples of Indigenous communities and individuals who are advocates and leaders at the forefront of the climate movement. A few examples include:

Nuxalk, Kitasoo/Xai'Xais, Wuikinuxv, and Heiltsuk Nations (collectively forming the Central Coast Nations) **combine Indigenous Knowledge with science to inform the development and implementation of marine protection plans that uphold Indigenous laws** and ensures marine resources are managed in a way that upholds the Nations' cultures and ensures healthy ecosystems and communities.

Learn more: <https://www.ccira.ca/keepers/>

Northlands Denesuline First Nation is leading the way in implementing and transitioning to a large-scale alternative energy system including biomass heating, geothermal heating, and solar energy to reduce diesel dependence.

Learn more: <http://bokeconsulting.com/northlands-denesuline-renewable-energy-remediation/>

3D Wave, Indigenous-owned animation and communication company designs climate modeling software to help Atlantic communities prepare for climate-related flooding and wildfire impacts.

Learn more: <https://3dwavedesign.com/#more> and <https://www.cbc.ca/news/indigenous/mikmaq-software-climate-change-floods-wildfire-3d-models-1.5482571>

The stories above are just a few key examples of Indigenous climate change leaders, but there are many more stories of individuals and Nations that are leading the way to address and adapt to the impacts of climate change. For more inspiring stories and ideas, visit the **ClimateTelling** website (<http://www.climate-telling.info/projects-by-region-map.html>) and Acting on Climate Change: Indigenous Innovations (<http://www.sustainablecanadialogues.ca/en/scd/indigenouinnovations>)

ADAPTATION AND MITIGATION: MINIMIZING THE IMPACTS OF CLIMATE CHANGE FOR FUTURE GENERATIONS

Although these Guidebooks focus on climate change adaptation planning (i.e. planning for the changes and impacts that will result from climate change), we can also take actions to minimize the effects of climate change on future generations by reducing the causes of climate change.

Adaptation: The process of adjustment to actual or expected climate change and its effects.

Mitigation: An intervention that either reduces the sources or enhances the sinks of greenhouse gases. This may also include reducing the sources of ozone altering substances (e.g. carbon monoxide, nitrogen oxides, etc.)

When thinking about actions that you can take to reduce the effects of climate change on future generations, it is important to consider both adaptation and mitigation strategies. Adaptation focuses on planning for the longer-term impacts of climate change, whereas mitigation strategies are immediate actions that can be taken to reduce greenhouse gas emissions. Since mitigation actions won't result in immediate change, it is important for communities everywhere to consider both adaptation and mitigation.

We can mitigate the effects of climate change by reducing the greenhouse gas emissions released into the atmosphere. Examples of mitigation for climate change include improving the energy efficiency in buildings (to decrease the amount of fossil fuels needed for heating and cooling), or increasing the use of sustainable transportation - like walking, biking, car-pooling - in your community (to decrease the amount of fossil fuels burned for transportation).

Ideas for Climate Change Adaptation & Mitigation

The following table shares ideas for adaptation and mitigation as generated by Indigenous participants in CIER's climate change workshops, as well as some additional ideas. Think about these ideas and actions and whether they could be implemented in your community. Don't forget to involve youth – they can be great champions for positive change!

MITIGATION (actions to help reduce GHGs and climate change)			
Actions/Ideas	Level of action (individual/family or community-wide)	Is it possible in your community?	Has it been completed?
Energy Efficiency			
Turn off the lights and/or use energy efficient lightbulbs	Individual/family		
Unplug electronic devices when not in use	Individual/family		
Build energy efficient buildings	Community-wide		
Buy energy efficient appliances	Individual/family		
Use cold water for laundry and hang clothing to dry	Individual/family		
Insulate your house: caulking	Individual/family		
Renewable Energy			
Use renewable energy (wind power, solar power, biomass)	Individual and/or community-wide		
Geothermal heat	Individual and/or community-wide		
District heating	Individual and/or community-wide		
Transportation			
Canoe (instead of motor boat)	Individual/family		
Carpool, walk, take the bus	Individual/family		
Water Usage			
Use less water in your home	Individual/family		
Low flush toilets, repair leaky taps	Individual/family		
Collect rainwater to water plants/gardens	Individual/family		
Local Foods/Diet			
Start a community garden, home garden or greenhouse to grow vegetables. Try composting your fruit/vegetable scraps to feed your garden.	Individual/family		
Increase reliance on traditional foods (fish, deer, moose, etc.)	Individual/family		

MITIGATION (actions to help reduce GHGs and climate change)			
Actions/Ideas	Level of action (individual/family or community-wide)	Is it possible in your community?	Has it been completed?
Green the Community			
Add plants and vegetation to your neighbourhood or community. Consider planting native vegetation, trees, and/or pollinator friendly flowers.	Individual/family		
Organize a community clean-up and/or an event to clean out community storm drains	Community-wide		
Materials			
Use local materials	Individual/family		
Repair, reuse, and recycle or upcycle items	Individual/family		
Other ideas?			

ADAPTATION (actions to adjust to the effects of GHGs and climate change)			
Actions/Ideas	Level of action (individual/family or community-wide)	Is it possible in your community?	Has it been completed?
Infrastructure			
Plan for community infrastructure	Community-wide		
All weather roads	Community-wide		
Food Security			
Food supply planning	Community-wide		
Emergency Management			
Emergency planning (e.g. for severe weather and impacts such as building damage)	Community-wide		
Other ideas?			

IDENTIFYING CLIMATE CHANGE IMPACTS IN YOUR COMMUNITY

Now that you have learned more about climate change and its effects, it is time to start thinking about the climate change impacts in your community. In the remainder of guidebook 2 and guidebook 3, you will work through a series of seven workshops and activities designed to guide you through the process of collecting background information about nature and the environment in your community, as well as identifying and prioritizing the climate change impacts that are being felt in the community. The workshops are designed to help you connect with different groups and individuals in the community to identify, validate, and prioritize the climate change impacts being observed by community members. This information will help guide the development of your climate change adaptation plan.



In guidebook 2, you will:

- Start by collecting background information to better understand the community's baseline environmental, economic, cultural, and social conditions. This will provide a reference point to compare to when discussing the changes that have resulted from climate impacts.
- Once you've compiled your background information, you will work on brainstorming local observations of climate change with the working group members, in order to help you get started thinking about the types of changes that are occurring in your community and how these changes are affecting community members.
- After brainstorming with the Working Group, you will be prompted to organize additional workshops (or interviews) with other community members, including Elders, youth, leadership, community members and/or committees or associations of people who work on the land/water and who have Indigenous Knowledge to help expand your understanding of climate change in the community. These workshops and interviews will help to validate the information that is being shared. For example, are multiple people observing the same climate impacts? Do several community members share the same climate-related concerns? The feedback that you get from community members during these workshops/interviews will also help you to prioritize the impacts in your climate change adaptation plan.



After completing the above activities, guidebook 3 will walk you through the process of:

- Collaborating with community members to create a vision for the community's future. What do community members want the community to look like in 10 years? 20 years? 50 years?
- Once you have created a vision, you will be prompted to work with different community groups (Elders, youth, Working Group members, etc.) to brainstorm areas of sustainability within the community in order to identify areas where the community is climate resilient.
- After identifying what makes the community sustainable and creating a vision for the community, you will work on identifying areas where the community may be susceptible to the impacts of climate change.
- Lastly, guidebook 3 will walk you through the process of creating different scenarios to assess what the impacts of climate change could do to your community. This exercise will allow you to explore different possible future outcomes for the community. For example, you can explore what the community may look like if climate adaptations or interventions are implemented, if they are not implemented, and how to bring together different scenarios and considerations (health, land use, climate, etc.) in your climate change adaptation planning process.

Now that you have an understanding of the upcoming workshops and activities in guidebooks 2 and 3, let's get started! In the next section, you will begin with collecting important background information to kick-off your climate change adaptation planning process.

Gather Background Information

It is important to have good background information on nature and the environment in your community. It is also helpful to understand how people currently use and live on the land by including background information on current and past settlements, subsistence, commercial and traditional uses of land, water, wildlife, and plants. In addition to gathering and reviewing background information on the environment, you also want to understand the community's economy, society, and culture. If your community has done its own community story, community plan, or maintains good records, this information may be easy to gather.

Key considerations that can be taken into account while planning for climate change adaptation, include:

- Community demographics (e.g. is the population young or old, growing or shrinking?)
- Housing (e.g. # and types of buildings, # of houses, # of businesses and services)
- Community groups (e.g. Elders group, Junior Chief and Council, committees)
- Local economy (e.g. different types of employment within the community, unemployment levels, seasonal employment)
- Health (e.g. types of health programs to service the community); and
- Human resources (e.g. what skills exist in the community? Are there people who can implement the climate change adaptation plan?)

There are also different types of information that can be gathered during the community planning process, related to society, culture, and economy. Think about how to gather information that illustrates how your community has achieved previous goals and how the community's traditions, values, and sense of community have been used to support the community during previous times of hardship or adaptation.

If your community does not have a comprehensive community plan, gathering background information is a key step, and will make developing a climate change adaptation plan much easier.

There are two approaches (below) that you can use to gather relevant background information. The first approach uses a table with suggestions and resources to help you gather background information. The second approach includes a mapping exercise to help you map/collect information to inform the climate change adaptation planning process. Review each of the activities and determine which may work best for your community. You may find it helpful to complete both activities. Refer to Annex II for more information and suggestions related to mapping. If you choose to do the mapping activity below, we recommend you review Annex II first.



ACTIVITY



INDIGENOUS KNOWLEDGE

Approach 1: Gathering Background Information (Table)



MATERIALS • Notebook • Pen

Use the following table as a tool while you are collecting background information about your community. The table below includes examples of the type of information you may want to collect, as well as where this information may be found. Think about other types of information that will help inform your climate change adaptation planning process and add it to the table below.

Information that Can be Collected	How to Gather the Information	Information Source	Existing Resources in the Community
Demographics	Talk to the Band Office Ask your band membership clerk Look up Census data	Statistics Canada Community's website	Band membership list
Traditions	Ask Elders and Knowledge Keepers for examples of traditions your community has that have helped the community achieve previous goals. Offer tobacco if appropriate to do so. Note – if your budget permits, it is good to compensate Elders and Knowledge Keepers for their time and knowledge.	Elders Knowledge Keepers Local historians	
Values	Identify what your community values are (e.g. local food sources like Salmon). Tip: you can ask Elders and Knowledge Holders for this information when you meet with them during the upcoming brainstorm session.	Elders Knowledge Holders	
Infrastructure & Housing	Talk to the Band Office, Housing Department, Public Works, etc. Look up past & current plans. Talk to past & current consultants. Tour the community.	Lands and Trust Office Government departments Community's website	Housing plan Asset Management Plan ACRS Reports
Local Economy	Talk to the band office Ask Elders how the community used to gather resources/sustain themselves in the past	Band office Elders	
Human Resources	Community leaders Community members with innovative ideas	Band office	

Mapping

Using maps is a good way to talk about and record background information on the environment and discuss the community's relationship with the land and waters within their home territory. Expansion and accessibility of technology allows people to utilize digital maps and use geographic information system (GIS) software to get real-time data instantaneously. Fifteen years ago, many Indigenous communities did not have reliable access to the Internet and as connectivity improves in remote areas through fiber optics and satellite, digital mapping and the use of digital maps has gotten easier, more user-friendly, and cost effective.



ACTIVITY



INDIGENOUS KNOWLEDGE

Approach 2: Community Mapping Exercise



MATERIALS

- Topographic map(s)
- Aerial photos
- Roll of tracing paper
- Masking tape
- Pencils
- Post-it or sticky notes
- Different coloured markers (thick and thin)
- Large table to spread out maps

Note: if you choose to complete this mapping activity, we recommend you first review Annex II for helpful background information, suggestions, and explanations related to mapping. Remember, it is important to ensure that anyone who engages in mapping or sharing local knowledge consents to the process ahead of time.

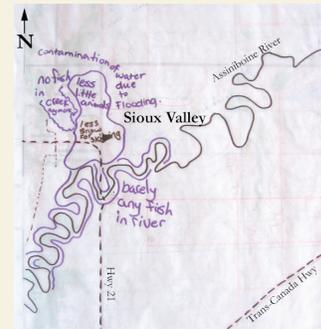
Topographic maps and aerial photos are useful base maps. This exercise will guide you through the process of creating several community maps that can be used to help inform your climate change adaptation planning process. It is recommended that you reach out to your lands department or others in the community who may have experience with mapping, to assist with this activity.

1. Cut a piece of tracing paper to fit the map (use masking tape to keep the edges in place) and use markers to trace some of the main features (e.g. jurisdictional borders, water, buildings, etc.) so that the map outlined on the tracing paper has enough information that it can be understood on its own. You could also use large pieces of mylar (plastic overlay), plastic, or if you have multiple copies of the map you could draw directly on the map. Be sure to label the base map and tracing paper copies.
2. Provide sticky notes (and/or graphics or photos) for people to add more information to the map.
3. Use each tracing paper map to record information added by a particular group (e.g. fishers, Elders) based on their experience and knowledge.

If you do this mapping exercise with different groups of community members, you will end up with a series of different maps that create layers of information that you and the Working Group can compile into more comprehensive maps. If your community has been involved in community planning, land use planning, or other activities that involve mapping, you may already have this information or even the maps themselves (e.g. a community atlas). It is a good idea to talk to people in the Band Office or individuals working in administration to see if/what maps already exist. Depending on how recently these maps were created, you may want to facilitate a community activity to update the information. Remember that maps are living documents and because the environment and our relationship with it change over time, the community will need to update the maps on a regular basis to reflect any changes that have occurred.

Community Mapping: Youth in Sioux Valley

To encourage people to think about how their community is affected by climate change, youth in Sioux Valley used maps to identify places in their traditional territory where they have noticed changes (e.g. flooding, forest fires, and changes to wildlife habitat). With tracing paper overlaid on maps of the Sioux Valley area, youth mapped out affected areas, wrote specific comments about these effects, and explained how the impacts are affecting their lives. Some of the changes noticed by the youth include fewer fish in the rivers, contamination of water due to flooding, and fewer animals seen in the area.



This type of mapping exercise encourages people to work together and start thinking about the impacts of climate change in their community and about how the community might plan to reduce community vulnerability and environmental impacts in the future.

Community Mapping: Brokenhead Ojibway Nation

Since the establishment of the reserve system, Brokenhead Ojibway Nation (BON) members have experienced many changes including the development of a major highway, fluctuation of the water level in Lake Winnipeg, declining access to traditional geese and duck hunting grounds, declining fish quality, moose hunting restrictions in time honoured hunting areas, and an influx of non-community members accessing traditional medicine locations. Community members also noted that harvesters have to travel further to access traditional foods and medicines and extreme weather is making difficult to harvest. Youth leaders identified food security as a priority in preparing for climate change, and have a vision to restore traditional food practices in order to prepare for climate change emergencies. Initiatives such as greenhouses, community gardens, and workshops on traditional food and canning preparations have been identified as priorities.

The Youth leaders decided to host a mapping workshop in an effort to identify locations that community members have harvested foods in the past. They invited Elders, Knowledge Keepers, and hunters to participate in the workshop. For this workshop the group used both paper maps and digital maps, including Google Earth as well as a projector and screen, in order to facilitate a discussion on the changes that have been observed in harvesting areas due to climate change.

Some features you may want to include on your maps are:

- Vegetation
- Watersheds
- Rivers
- Lakes
- Wetlands/marshes/muskeg
- Soil type
- Sensitive areas (e.g. environmentally, culturally)
- Historical information
- Natural resources
- Traditional use areas
- Other

Now that you have collected your background information, you will have a better understanding of some of the community's baseline environmental, economic, social, and cultural conditions. This will provide a reference point and allow you to compare the baseline conditions with the changes that have been observed by community members as a result of climate change. The next step is to begin identifying some of the key changes that have occurred in the community as a result of climate change. The activities below will guide you through the process of working with different community members and groups to brainstorm and identify climate change impacts that have observed over the years.

Brainstorm Climate Change Impacts



WORKING GROUP MEETING | Most Indigenous communities in Canada have seen the effects of climate change directly. Now is a good time to have a discussion with the Working Group about some climate change basics (review the first three sections of this Guidebook) and local observations of climate change. This could be a simple brainstorming session with the Working Group where you think about the different seasons and how things have changed over time. You can use some of the observations from other Indigenous communities in Canada (as noted in earlier sections of this guidebook) to help get you started. People may want to start talking about how these changes have impacted what people do in the community. You could set up your paper or whiteboard so that you can separate out common activities and connect observations to activities.



ACTIVITY

Brainstorm Local Observations of Climate Change



MATERIALS

- chart paper
- index cards
- different colour markers
- tape or sticky tack (for the wall)

During a brainstorming activity, people share their ideas without judgement, which means that there are no wrong answers. The idea behind the activity is to get as much information discussed and written up as possible in a short period of time (e.g. on chart paper or a whiteboard). The information raised during a brainstorming session can usually be grouped into common themes or categories if you look for similarities between some of the ideas. You can do this grouping with the Working Group or afterwards if time is short.

Tips

- Be friendly! Make sure everyone feels welcome and listened to.
- Start the meeting off by having everyone introduce themselves. You might want to include an ice-breaker activity to help get everyone more comfortable with one another and more comfortable with sharing their ideas.
- If you have a large group, use breakout sessions where you divide the group into smaller groups to brainstorm, instead of working in one large group.
- Provide handouts with discussion questions and prompts.
- Ask for help recording the information. It can be hard to facilitate a meeting and take notes at the same time.
- Make sure everyone's voice is being heard. Has everyone in the room been given an opportunity to speak?
- Close the meeting by reflecting on the main themes you heard through the day. Ask the group if they have any closing remarks.
- Summarize the meeting notes soon after the meeting so that the material is still fresh in your mind.

1. Ask people to think about the changes they have seen in the climate during the winter.
 - If the group works well together and are respectful of each other's time to talk, you can have an informal discussion where people speak out as ideas come to them. You can also do a roundtable discussion.
 - Another option is to give people index cards and ask them to write down the changes they have seen. Then, put the cards up on the wall for everyone to see.
 - Using cards for brainstorming makes grouping common themes together easy, as you can easily move the cards around on the wall
2. Ask people to think about the changes they have seen in the climate in other seasons.
 - Work through each season to identify changes in climate relevant to each:



3. After you have talked about all four seasons, ask people to think about how these changes have impacted the things people do in the community. Talk about impacts on the community's environment, economy, society, and culture.
 - If you are using chart paper, you can add these ideas in a different colour near the change it is associated with.
 - If you are using index cards, give people a different coloured marker or pen so that impacts and observations are easily separated when you look at the cards on the wall. You can put up each impact card next to or near the observation(s) the change is associated with.



After brainstorming with the Working Group, it is important to organize meetings or discussions with other people in the community to continue brainstorming local climate change observations. Different people will have different perspectives, knowledge, and information about climate change and the impacts of these changes. Connecting with as many people as possible will help provide you and the Working Group with a better picture of the community's reality. See page 22 for an example of how Fox Lake Cree Nation held a Youth BBQ to engage youth in a discussion on local climate change observations.

Remember, it is important to connect with Elders and Knowledge Holders during your brainstorm sessions. Elders and Knowledge Holders hold a wealth of Indigenous Knowledge and wisdom that is critical for providing direction with the climate change adaptation process. The following brainstorm meetings and activities include suggestions and ideas for meeting with Elders and Knowledge Holders in order to collect Indigenous Knowledge to help with the development of your climate change adaptation plan.



GENERAL MEETING



INDIGENOUS KNOWLEDGE

Set up a meeting with Elders, youth, leadership, community members and/or committees or associations of people who work on the land or water (e.g. trappers, hunters, fishers, natural resource staff and coordinators), who use nature's resources (e.g. for medicines, for food, for ceremonies), and who have Indigenous Knowledge will expand your understanding of climate change and your community.

1. Use the same brainstorming exercise with these groups OR interview people in small groups or individually.
 - The interviews can be informal discussions. Invite a group of Elders for tea and bannock or visit people in their homes. Ask to attend a meeting of a community association and for time on their agenda.
2. Think about the questions you want to ask people and talk about these with Working Group members so that you remember to ask similar questions during outreach activities.
 - Talking to many people about the same issues helps to determine the credibility of information and can help to prioritize planning. For example, if one person talks about seeing certain animals late in the fall (e.g. skunks when they are usually hibernating) in one particular area, this could be interesting, but could represent unusual behaviour in just one or a few animals. If, however, several people have seen this in different areas of the territory, or over several years, it could be of greater concern (e.g. the weather has stayed too warm) and may represent more reliable information. You and the Working Group can use this Indigenous Knowledge to start thinking about how changes are impacting the community's sustainability and identify issues as priorities for planning.

Climate Change Observations – Fox Lake Cree Nation Youth

To introduce their climate adaptation planning project to the community's youth, and to initiate a discussion on local observations of climate change, the coordinator from Fox Lake Cree Nation decided to host a Youth BBQ and poster-making contest.

Leading up to the BBQ, youth learned how to catch, prepare, and smoke fish using traditional methods. The smoked fish was brought to the BBQ the next day, where it was supplemented with other foods prepared by the project's coordinator.



The event started by welcoming the youth to the BBQ, introducing the project, and sharing project updates. The discussion was turned over to the youth who shared their knowledge and ideas about climate change, the effects they've noticed, and what we can do to address the associated problems. They expressed concern for the fish, animals, and birds and the need for us to protect them. The youth also worried about the unstable climate and what kind of risks it poses to the safety of the community. In addition, the youth talked about the way large dams in Fox Lake Cree Nation territory damage the earth and prevent the ecosystems from functioning properly.



After the discussion, the youth were given poster making materials. The youth thought about climate change and then put their ideas onto paper. Most of the youth created images depicting how they would like to see the world, clean and beautiful. The youth were awarded prizes after the posters were complete.

The youth expressed their enjoyment of the day and being involved in the project. Think about what the youth in your community might enjoy and how you can bring them together to discuss this climate change adaptation process.

WHAT'S NEXT?

In guidebook 2, you learned about the effects of climate change, particularly in Indigenous communities and learned about the difference between climate adaptation versus mitigation. You also began the process of collecting background information and gathering community feedback on the different climate change impacts that have been observed in your community.

In guidebook 3, you will continue the process of working with community members in order to develop a community vision and to consider the ways in which your community is already sustainable, as well as ways in which the community may be susceptible to climate change impacts. You will develop different community climate change scenarios to explore what the community may look like if climate adaptations or interventions are implemented or if they are not implemented, to better inform how your community can achieve a climate resilient future.



GUIDEBOOK 2 CHECKLIST

The project coordinator is the one responsible for coordinating the following checklist of tasks. It is their responsibility to ensure meetings with the proper groups takes place. The working group should assist the coordinator as much as possible as they are the group driving the project.

The checklist below may be useful in ensuring the tasks outlined in this guidebook are accomplished. Remember, these Guidebooks provide suggestions on how to accomplish tasks but your community may have other methods that work best.

Task	Recommended to complete task	Progress
Collect background information about the environment, economy, society, and culture in the community	Coordinator	
Brainstorm local observations of climate change	Working group	
Set up a meeting with the broader community OR collect information through interviews or surveys	Coordinator	

REFERENCES

- Centre for Indigenous Environmental Resources (CIER) and the University of British Columbia (UBC). 2011. *Climate Change and Adaptive Capacity in Aboriginal Communities South of 60 Assessment Report*. Retrieved from <http://www.yourcier.org/climate-change-and-adaptive-capacity-in-aboriginal-communities-south-of-60-assessment-report-2011.html>
- Boyle, J., Cunningham, M., and Dekens, J. (2013). *Climate Change Adaptation and Canadian Infrastructure: A Review of the Literature*. Retrieved from https://www.iisd.org/pdf/2013/adaptation_can_infrastructure.pdf
- Bush, E. and Lemmen, D.S., editors. (2019). *Canada's Changing Climate Report*. Government of Canada. Retrieved from <https://changingclimate.ca/CCCR2019/>
- Centre for Indigenous Environmental Resources (CIER) and the University of British Columbia (UBC). 2011. *Climate Change and Adaptive Capacity in Aboriginal Communities South of 60 Assessment Report*. Retrieved from <http://www.yourcier.org/climate-change-and-adaptive-capacity-in-aboriginal-communities-south-of-60-assessment-report-2011.html>
- Indigenous Guardians Toolkit. (2016). *Chapter 10: Monitor and Collect Data*. Retrieved from <https://www.indigenousguardianstoolkit.ca>
- IPCCC. (2014a). *Annex II: Glossary [Mach, K.J., S.PLANTON and C. von Stechow (eds.)]In: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Geneva, Switzerland: IPCC.
- IPCC. (2014b). *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II, and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]*. Geneva, Switzerland: IPCC.
- IPCC. (2018). *Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]*. Geneva, Switzerland: World Meteorological Organization.
- Kanatami, I. T. (2019). *National Inuit Climate Change Strategy*. Retrieved from https://www.itk.ca/wp-content/uploads/2019/06/ITK_Climate-Change-Strategy_English.pdf
- NOAA. (2012, March 6). *Climate Change: Global Temperature Projections*. Retrieved February 20, 2020, from <https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature-projections>





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