Mapping
Yukon Climate Change & Northern Food Systems Assets

SUMMARY REPORT

March 2019

About the Partners

The Agriculture Branch is part of the Yukon Government's Department of Energy, Mines and Resources. The branch offers a range of programs and services in support of the budding agricultural industry in the Yukon.

The Arctic Institute of Community-Based Research (AICBR) is a unique non-profit organization based in Whitehorse, Yukon, co-founded in 2007. The mission of AICBR is to facilitate, promote and conduct community-based, Northern-led research aimed at improving the lives of Indigenous and non-Indigenous Northerners and the health of Northern environments. AICBR works in collaborative and participatory ways to bring together multiple groups and sectors to work on issues of common importance, to mobilize knowledge and to facilitate community-led action on complex issues. Current organizational priorities include food security, climate change adaptation and youth engagement and leadership.

Acknowledgements

Executive Summary

Climate change is considered one of the greatest threats to our survival on this planet and the North is warming faster than any other place on earth, changing the health of society and ecosystems in significant ways. Indigenous communities are amongst those most affected. One of the ways that climate change is impacting northern Indigenous communities is the noticeable decline and shift in traditional food species, which historically have been central to promoting mental, physical, emotional, and spiritual health, and this connection remains important today. Connection to the land and its species is integral for promoting environmental stewardship and conservation for many in the North, whether one identifies as Indigenous or non-Indigenous. Despite the many changes occurring to northern land, air and water systems due to climate change, communities are resilient and innovating in modern and traditional ways for adaptation.

This four-year project (2017-2021) seeks to explore ways that communities are developing their food systems as a way to both mitigate against and adapt to the threat of climate change across the North and to mobilize these stories in order to inspire action. Two online inventory mapping tools have been developed, which compile the many climate and food system assets present across five northern regions (Yukon, Northwest Territories (NWT), Nunavut, Nunavik, and Nunatsiavut). These maps will share key asset information, highlight promising community initiatives, compile resources for program, policy and research development, and connect people and groups as a pathway to promote partnerships and greater collaboration.

The **Yukon Climate Change** and **Northern Food Systems Inventory Maps** contain comprehensive information around initiatives, services and entities (collectively, called assets), which relate to multiple themes and other attributes. In total, 178 climate change assets were captured in the Yukon, pertaining to three themes, *adaptation, mitigation and monitoring.* The Northern Food System Map, which explored assets across the five northern study regions, captured a total of 1048 assets, categorized according to eight themes, *production/harvesting, transportation, distribution/exchange, consumption, food skills/knowledge/culture, and food system coordination/policy/networks.* A broad range of activities and entities were captured across both inventories related to research, program, policy, funding, education, and service/product provision; current and past assets were included and initiatives/services/entities led by government, non-governmental organizations, research institutions, community, the private sector, or networks were distinguished. Of special interest were the governance and collaboration efforts that were present, and concerted community outreach was completed to capture community-level, community-driven initiatives in particular. This was important because the impacts of climate change occur at the local level and thus, solutions must be driven from local people who

know intimately what their needs are and what action might best address them. Wider territory/region-wide assets as well as national, pan-northern and international assets based in the North were also captured (i.e. coded as asset 'reach'). The following lists show some of the highlights from the summary analysis.

Yukon Climate Change Inventory Map
- Total assets = 178
- Percentage of assets by current status:
    ⇒ Current = 42%
    ⇒ Not-current = 44%
    ⇒ Unknown = 13%
- Percentage of assets by reach:
    ⇒ Community-level = 65%
    ⇒ Yukon-wide = 30%
    ⇒ Pan-Northern = 6%
- Percentage of assets by theme:
    ⇒ Adaptation = 47%
    ⇒ Mitigation = 37%
    ⇒ Monitoring = 16%
- Percentage of assets by category:
    - Research = 40%
    - Entities = 20%
    - Services = 12%
    - Programs = 12%
- 53% of all assets were led by partnerships (although almost all activities and entities involved some type of collaboration)

Northern Food Systems Inventory Map
- Total assets = 1048
- Number of assets based on study region:
    ⇒ Yukon = 449
    ⇒ NWT = 377
    ⇒ Nunavut = 162
    ⇒ Nunavik = 28
    ⇒ Nunatsiavut = 32
- Percentage of assets by current status:
    ⇒ Current = 71%
    ⇒ Not-current = 3%
    ⇒ Unknown = 26%
- Percentage of assets by reach:
    ⇒ Community-level = 55%
    ⇒ [Territory/region]-wide = 32%
    ⇒ Pan-Northern = 6%

- ⇒ National = 3%
- ⇒ International = 5%
- Percentage of assets by primary theme:
    - ⇒ Production/Harvesting = 15%
    - ⇒ Transportation = 0% *(0.3% rounded to nearest percent)*
    - ⇒ Processing/Storage = 1%
    - ⇒ Distribution/Exchange = 18%
    - ⇒ Consumption = 23%
    - ⇒ Food Skills/Knowledge/Culture = 25%
    - ⇒ Food System Coordination/Policy and Networks = 17%
    - ⇒ Food Waste = 1 %
- Percentage of assets by category (top three most common):
    - ⇒ Entities = 41%
    - ⇒ Programs = 24%
    - ⇒ Event/campaign = 12%
- Percentage of assets by structure (i.e. leadership) (top three most common):
    - ⇒ Government-led = 41%
    - ⇒ Business-led = 30%
    - ⇒ Community/NGO-led = 22%
- Top most common success factors (in declining order, Yukon inventory only):
    1) Provision of healthy food (also includes local/traditional food) (n=52)
    2) Educational or skills building opportunities available (n=38)
    3) Programming or activities are community-driven/supported and participatory (n=36)
    4) Dedicated staff/volunteers (also important was whether staff were trusted and consistent) (n=34)
    5) Participants value the initiative/service/entity (n=32)
    6) Initiative/service/entity addresses a need in the community (n=32)
- Top most common challenges (in declining order, Yukon inventory only):
    1) Lack of resources (non-financial) and capacity (n=14)
    2) Funding issues (i.e. limited or lack of enough, stable funding) (n=9)
    3) Accessibility issues (i.e. due to poor, isolated location, reliance on southern supply, lack of transportation and technical assistance options, and arduous processes or restrictive policies) (n=8)
    4) Cost prohibitive (i.e. high cost of labour, operational or transportation costs, which impacted ability to remain competitive in a small, remote market) (n=6)
    5) Inability to meet current demand (n=4)
    - ⇒ *Some other challenges included a need for more community engagement (i.e. including lack of funding to do engagement), poor quality (i.e. produce), unpredictability/unreliability (i.e. mostly due to weather challenges and capacity issues), as well as theft and vandalism.*
    - ⇒ *Common gaps and barriers to accessing programming in particular were transportation issues, limited alternative options available and childcare needs not being met.*

This project is seeks to create a space for knowledge sharing, to build a repository for new and existing information around community assets and to highlight stories of local action. The inventories are broad and comprehensive and were developed in collaboration with a number of partners from across the country; deliverables and lessons learned will be widely disseminated so that others can build off of them. Future project work entails the creation of additional knowledge mobilization tools to promote northern assets, connect communities to resources, tell stories, as well as engage communities around action-planning in order to promote development of more effective, resilient, strength-based, and sustainable food systems initiatives as a way to adapt to climate change.

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Project Background

Yukon communities and First Nations have expressed urgent concerns that changes in the climate are negatively impacting traditional food availability and compelling residents to turn to alternative food choices, which are often nutritionally inferior and expensive (Council of Canadian Academies, 2014). The Yukon food system (which is made up of a mix of market, locally produced and harvested traditional foods) is, and will continue being impacted by climate change. Thus, planning for the sustainable future of our food system is imperative for taking advantage of adaptation opportunities and to mitigate, where possible, climate change's threats to health and wellbeing. Advancing sustainable food systems is a way to promote food security and adapt to and mitigate against climate change. It is estimated that only 2% of foods currently consumed by Yukoners are locally produced, with limited data available to assess the contribution of traditional harvested foods in Yukoners' diets (Chiu, Dorward, Feeney, Harris, Kissinger, Mullinix, Polasub, Rallings, Smukler, and Sussman, 2015). Best available estimates indicate "over 20% of rural residents and over 8% of Whitehorse residents obtain more than 50% of the food they eat from home-grown or harvested sources. Furthermore, over 30% of Whitehorse residents and over 50% of rural residents report obtaining food through berry picking, hunting, and/or fishing" (Chiu et al, 2015).

Communities across the North are calling for more northern-based and northern-bred and -led solutions to food insecurity and food systems development, which take into account the unique context of each community/region and respect linkages with climate change. The North is vast and diverse and is often 'painted with the same brush' when it comes to development and discussion on these issues; each territory and region are unique in their respective cultures, histories, demographics, geographies, and political/economic influences, however, when it comes to climate change and its impact on food security, many of the devastating effects are shared across the North. Thus, there is a desire for more knowledge sharing between communities about what is working and how to build from it.

This project involves two main phases. In Phase I, a literature scoping review was performed to explore the impacts of climate change on traditional and local food consumption in the Yukon. This was also conducted to create an understanding of how climate change is impacting food systems and traditional diets and to identify existing baseline data and methodologies to inform future research. Phase II builds off of some of the recommendations outlined in the literature scoping review (*see full list of recommendations below*), namely the need to develop a more comprehensive picture of the assets and agencies that work in the area of climate change and food systems sectors in the Yukon (and across the North). The overarching goal of this project is about characterizing food systems as a means for climate change adaptation, mobilizing existing knowledge as well as highlighting promising initiatives in order to inform policy and program development and inspire community action.

Recommendations arising from the literature scoping review, completed April 23rd, 2018:
1. Compile an inventory of food related climate change adaptation projects in the Yukon and elsewhere in the North.
2. Identify and further document promising practices in food related climate change adaptation projects.
3. Impacts of Climate Change on Traditional and Local Food Consumption in the Yukon
4. Share the inventory and promising practices with communities in an accessible way and so that they might be inspired to take action. Celebrate the success of some initiatives by promoting them to the media.
5. Identify possible adaptation projects that might be of interest to communities and support them in taking first steps to fund and develop the initiatives.
6. Explore the field of citizen science to determine opportunities for a future community-based climate change monitoring project. Obtain preliminary feedback from communities about indicators that may be of interest to them.

Building off of current and previous successful mapping projects, two inventories of climate change and food systems assets were developed into publicly available, online mapping tools. These asset maps will help to mobilize stories, share key asset information and be analyzed to identify strengths and where further work may be needed to promote sustainable northern food systems development as a means for adapting to climate change. A mixture of online and tangible knowledge products will be created and shared with communities and partners through workshops and webinars as well as other online and social platforms. An important focus of this project is also establishing and developing partnerships. AICBR has worked with a large network of partners over the years and has learned that key ingredients to developing successful, sustainable initiatives are collaboration, regular knowledge and information sharing, utilizing a strength-based approach, and harnessing existing resources and relationships. The project will also explore new partnerships and opportunities for amplifying the activities and contributing to broader northern food system and climate change work going on.

"Networks are created by spiders, and we are all spiders creating networks. First, you grab onto something and swing out into the unknown on a thread until you find something else that you can grab onto. You connect with it and then climb back up to where you started and do it again. Then you move across to those two nodes and connect them. You keep repeating this process until there is a whole web. There are two things that are really important here. One is that the filament, the silk that the spider spins, comes out of her gut; the other is that it is stronger than steel. The strength of the network is the strength of the links we have built ... all of which, together, create that wonderful and beautiful mosaic that is our food movement."

- **Cathleen Kneen, Founding Member of Food Secure Canada**
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Introduction

To fulfill the need for knowledge mobilization in the area of community-based food systems development and climate change adaptation strategies in the North, between April 1st and December 19th, 2018, AICBR and Yukon Government's Agricultural Branch, in collaboration with others, sought out to gather insight on the various community-level and broader territory-wide/pan-Northern assets, which could be promoted and shared in a means accessible to communities. Currently, no listing, report or website exists that comprehensively describes what northern communities are doing at the grassroots level to adapt to climate change (Sheedy, 2018). A number of groups have inventoried various aspects of the food system as well as policy, research and monitoring actions related to climate change, however what was often missing is the community-level, informal or ad-hoc initiatives, led by communities and community organizations. Thus, this inventory project focuses on drawing out those initiatives while building on and pulling together some of the work that has previously been done, focusing on identifying strengths, or assets. Two inventories, representing food systems and climate change assets were then developed into publically available online inventory mapping tools (i.e. the Yukon Climate Change Inventory Map and the Northern Food Systems Inventory Map), which enable filtering, searching and geographic representation of the data according to a number of different attributes.

IMAGE 1-3: MAP SNAPSHOTS (NORTHERN FOOD SYSTEM)

Organic Waste Program

KCS organic waste pick-up program has three large organic waste bins (downtown, at the Dome Road, and in the dredge pond subdivision). The City brings this organic waste to a separate pile at the landfill to be composted. KCS also has 50 commercial and 50 residential clients in their organic waste pick-up program.

≣ **Initiative Type:**
Food Waste
⛺ Community/non-governmental organization initiative
👤 Klondike Conservation Society
➤ Dawson City - Quigley Landfill

More Info

Pictured above: Online maps show number of clustered assets found in each community; by clicking on the numbered circle, the assets spiral out, each represented by an icon signifying their theme. Clicking on an individual icon will show a pop-up with information such as description of activities, asset type, asset host and location, among other attributes.

Purpose of the Maps

- *To develop a clearer picture of the various initiatives/services/entities related to northern food systems and climate change assets in the Yukon. This will help the public, programmers, organizations, governments/policy makers, and businesses, among others, share information on food system/climate change activities, strengthen networks/partnerships as well as identify strengths and opportunities for further action on climate change and food systems development in the North.*

This mapping initiative is intended as a 'birds-eye view' of the activities and entities across the territory and beyond in an attempt to mobilize knowledge on key asset information, highlight promising community initiatives, compile resources for program, policy and research development, and connect people and groups in order to strengthen partnerships and promote collaboration. It is not a complete list of the policies, resources and initiatives that pertain to climate change and food systems, however it is meant to act as a foundation for which to build off of and inspire community action.

The Study Region – Yukon

> *Note: While the scope of the study is primarily the Yukon, the food systems inventory map compiled existing mapping work in Yukon, Northwest Territories, Nunavut, Nunatsiavut, and Nunavik. The Northern Food Systems Inventory Map was created for the purposes of contributing to existing knowledge sharing networks and further strengthening opportunities to learn from and collaborate across regions on food systems development as a climate change adaptation strategy in the future. The following report focuses on the Yukon, while providing only summary statistics from the northern map; because of the broad nature of the attributes and assets captured between the two theme area maps (i.e. climate change and northern food systems), and the concentration on outreach within Yukon-only, drawing conclusive comparisons between territories and regions should be cautioned against.*

The Yukon is the western most Territory in Canada and is home to 40,606 people (Yukon Bureau of Statistics, 2018). The majority of the population is concentrated in and around the capital city of Whitehorse (pop. 31,680) and the rest is spread out over 15 rural communities and their surrounding areas. According to the 2016 Census, approximately 23% of the population identifies as being 'Aboriginal'. Of the 14 Yukon First Nations groups, 11 are self-governing, having signed modern treaties between 1993 and 2005. Indigenous groups in Northwest Territories and British Columbia have overlapping territory in the Yukon (Yukon Government, 2019). Unlike its fellow northern territories, the Yukon is fortunate that all communities except for the fly-in community of Old Crow are accessible by road, year-round. This means that most food can be shipped up via current road systems, instead of having to be flown in, which increases the cost of food considerably. However, due to permafrost melt, unpredictable weather, increasing prevalence and severity of natural disasters such as fire and flood, among other factors, these road systems are not always reliable. After the 2012 washout of the Alaska Highway, food and goods, which were usually shipped up via the highway, were not able to reach northern communities and within a few days, the grocery store shelves were empty. This was felt most acutely in rural communities, many of which rely on driving to Whitehorse to access fresh market foods. Currently only Old Crow qualifies for subsidies offered through the Nutrition North Canada Program, which at present is the only federal program that seeks to lower the cost of food for Northern communities. The program is in the process of being revamped, however, it is unknown whether the eligibility requirements will broaden so to include more Yukon communities.

Food Security

"Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life".

- World Food Summit, 1996

Food security is intrinsically linked to the health of the food system, however is highly dependent on a complexity of factors that relate to broader social determinants of health. According to PROOF, a Toronto-based food insecurity policy research group, food insecurity is defined as "the inadequate or insecure access to food due to financial constraints", not necessarily the 'lack of food security' (2012). Food insecurity is a complex issue and a serious public health concern. On an individual level, when people are food insecure, they lack secure access to sufficient amounts of safe and nutrition food necessary for normal growth and development, making them less likely to be able to lead a healthy and active life. When children grow up hungry they are more likely to experience poor health conditions later in life and adults living in food insecure households have higher rates of depression, diabetes and heart disease, among other chronic conditions (Tarasuk, Mitchell and Dachner, 2016). The results of long-term food insecurity not only affect individuals and their households but also affect the population as a whole. On a population level, food insecurity is linked to the environmental, economic and social health of a particular place and the wellbeing of its people; these aspects are also intermingled with the wider historical, political and geographic issues, further compounding food insecurity's impacts on populations (Tarasuk et al, 2016; Reading and Wein, 2009; Pratt et al, 2016).

Food System

A food system has many interrelated parts and in simple terms, encompasses all stages along the path that food takes before it reaches people's stomachs. It includes everything from the growing and harvesting, processing, transporting, storing, managing/marketing/packaging, eating, distributing and sharing, and disposing of food. It also involves the networks, entities and systems involved in the governance, sustainability, nutrition and safety, and coordination of these components (Food and Agriculture Organization of the United Nations [FAO], 2018; University of Oxford, no date).

The following vision statement was derived from the Yukon Food Security Roundtable, which AICBR hosted in 2016. This event brought together multiple sectors of the Yukon food system from across the territory (and beyond) to develop a common understanding of what food security means for Yukoners and identify some actions to advance it.

> *"We believe in a food secure, food producing and food sharing Yukon where the land and the waters are harvested and protected. Through the wise use of resources, every person has dignified, affordable access to sufficient food to sustain a healthy, happy, and productive life. Yukon leaders and citizens work collaboratively to ensure food is*

generated by a robust network of local gardeners, farmers, hobby growers, hunters and fishers, businesses, and advanced systems that preserve and distribute food."

- Participants at the Yukon Food Security Roundtable, May 2016

- **Local food** – Local food has been defined as any agricultural [animal and plant-based] foods produced and consumed in the Yukon. Local food can be purchased at the grocery store, farmers' market, and farm-gate sales or through the non-market economy such as backyard/community gardening or informal sharing networks.

- **Traditional food** – Traditional foods are considered plant or animal species harvested from the local environment as part of Indigenous culture and usually involve the traditional practices and values associated. In some regions of Canada, traditional foods are also called country foods, but the term 'traditional' is used by most Yukon First Nations. Because many non-First Nations people in the Yukon harvest species from the land, the term 'traditional food' may also encompass foods harvested this way by non-First Nations.

- **Market food** – This refers to any food or foodstuffs obtained through the market economy and commercialized food chain (including mass distribution systems). In the North, market food is often considered food that originated in the south and was bought at the grocery store or supermarket. While local food can also sometimes be bought at the market or grocery store, for the purposes of this project, if it is locally produced and procured, it is considered a 'local food' rather than a 'market food'.

Climate Change

According to the United Nations, climate change is the most problematic issue of our time. We are at a defining moment in history for the survival of the planet. Climate change is already impacting the globe in significant ways; shifting weather patterns and more extreme adverse weather events and natural disasters threaten food production, human safety and whole ecosystems; melting permafrost in the North results in expensive damages to vital infrastructure; and rising sea levels force whole civilizations of island-dwelling people out of their homelands. These are only a few examples of the often devastating and catastrophic examples that depict the circumstances of climate change today and it will only get worse if no action is taken. The causes of climate change have been highly debated in the public media. However, among the world's scientific community, it is certain that a human-caused increase in greenhouse gases is the culprit. Greenhouse gases occur naturally in the atmosphere and are key to our and many other species' survival. However, it is the dramatic increase in certain gases, primarily methane, carbon dioxide and nitrous oxide, caused by industrialization, deforestation and large-scale agriculture over the last century and a half that are cause for concern. The most abundant greenhouse gas (GHG) accounting for 2/3rd of all GHGs is carbon dioxide, which is largely the result of burning fossil fuels. The effect of the increased concentration of greenhouse gases in the earth's atmosphere results in what is known as the 'greenhouse effect'; the sun's rays can penetrate the atmosphere but fewer are able to escape. Instead the rays are reflected back to earth, further blanketing the warming planet (United Nations, 2019).

The Yukon is among the most rapidly warming places in the world. Research shows that the Yukon temperature has risen faster than the rate of Canada's global warming as a whole (Office of the Auditor General of Canada, 2017). Over the last half a century, Yukon's average temperature increased by 2°C (with a 4°C average rise in the winter). This is two times the warming rate of southern Canada. Locally, this has resulted in an increase in average winter temperatures, changes in the amounts of snow and rain, more extreme weather events like lightning storms, strong winds, increased prevalence and severity of flooding and forest fires, rapidly melting glaciers and sea ice, thawing permafrost, as well as changes to lake, river and water quality. All of these effects greatly impact Yukoners' health and wellbeing and have had a particularly pronounced impact on Indigenous communities by limiting their access to traditional food sources and affecting their ability to practice their cultural and traditional activities on-the-land safely. Permafrost melt in particular, has caused damage to buildings, roads, power lines, water supplies, and other important infrastructure (Yukon Government, 2018). It is clear that climate change's impacts to the local food system are among the topmost effects to northern communities. As agriculture is a major contributor to climate change, building food systems that are environmentally sustainable and ecologically responsible can also be a mechanism for mitigating climate change and adapting to its effects. Because traditional diets are so deeply affected by climate change, governments must support community strategies through policies and funding that support traditional food security as part of their climate change adaptation strategies (Arctic Monitoring Assessment Programme [AMAP], 2017, quoted in Sheedy, 2018).

Methods

In order to build a more comprehensive picture of what communities are doing to adapt to climate change and strengthen their food systems, AICBR, as research lead of the project, sought to compile three main types of assets: initiatives, services and entities. Of particular interest were the assets relating to knowledge, governance and collaboration efforts, which included research projects, programs (service and education related programs), tools, funding, policies, strategies, and networks. Data collection methods included a consolidation of existing inventories, an internet search of publically available data, surveys circulated online, contributions from First Nations youth champions during a climate change training event, and additional surveys conducted via phone and email to community. Knowledgeable community contacts were identified through referral, public listings (such as First Nation government websites and farm listings) and former inventory work. Key asset attributes of interest gathered through the survey included type, description, contact details, structure, funding, partners, success factors, and challenges. Further cleaning, coding and validation was performed by the community outreach contractor, project lead and AICBR's Executive Director. The following paragraphs describe in more detail some of the specific methodology pertaining to the two separate inventories, followed by a detailed list of definitions of key attributes gathered.

Yukon Climate Change Inventory

The climate change inventory map contains information about initiatives/services/entities based in the Yukon that relate to three main climate change themes: **adaptation, mitigation and monitoring** (*defined below*). A number of existing inventories of climate change adaptation and monitoring projects were shared with AICBR by various government and community partners (who included the Yukon Government (Climate Change Secretariat), Council of Yukon First Nations (Community Liaison), and Vuntut Gwitchin First Nation); these inventories largely contained lists of climate change adaptation research projects and monitoring initiatives which were funded through federal programs such as Crown-Indigenous Relations and Northern Affairs Canada's (formerly known as Indigenous and Northern Affairs Canada) - Northern Contaminants Program, Indigenous Community-Based Monitoring Program and Climate Change Preparedness in the North Program. To capture additional First Nations-led, community-based initiatives going on, First Nations youth who were attending a climate change champions training (see AICBR's YIC4 Project) were also asked to identify the climate change activities related to adaptation, mitigation and monitoring that were going on in their communities. This information was further validated through follow-up phone calls to youth and other community contacts.

Northern Food Systems Inventory

The food system inventory map captures eight themes (defined below), which describe the various food systems' actors and assets: **production/harvesting, transportation, distribution/exchange, consumption, food skills/knowledge/culture, and food system coordination/policy/networks.** This inventory was compiled using a number of different datasets as well as strengthened through outreach to Yukon communities. Partners across the country contributed their work so that knowledge could be further disseminated and mobilized for communities to use. Previous inventory mapping work that was consolidated in this new map includes data from Food Secure Canada (northern asset mapping work that was completed in 2012 and updated in 2018), University of Saskatchewan (Arctic as a Food Producing Region project), Yukon Government (community garden/food security projects funded under the Growing Forward 1 and 2 programs), online Gardening Directory for Whitehorse, Inuit Tapiriit Kanatami (Nuluaq Mapping Project), and Food First Foundation (list of current funded school-food programs).

Definitions of Key Attributes

Climate Change Themes

While many climate change activities could relate and contribute to northern food systems, the two maps remain separate and the entries in each distinct (i.e. found only in one of the two inventories). The purpose of the project is to mobilize knowledge around climate change adaptation and further characterize adaptation, which relates to the food system. However, similar to the food system, the themes characterizing climate change action are interrelated and the term adaptation is often used broadly to describe climate change action, as it relates to

adapting, or changing according to the current challenges facing the North. In a research sense, the categories most used to describe climate change action are three-fold, monitoring, mitigation and adaptation. Each entry in the inventory was coded according to these three themes, favouring a primary code and then secondary themes, as they applied.

1) **Monitoring** - refers to the actions taken to <u>understand</u> our changing climate and its impacts (i.e. watching our climate and environmental systems); some examples include: ecological and environmental land monitoring programs, wildlife cameras, weather stations, research on climate change impacts (related to animal species, water, air, human, etc.)

2) **Mitigation** - refers to the actions taken to reduce the <u>severity</u> of climate change (i.e. dealing with the root causes); some examples include: renewable energy projects, sustainable waste management programs, greenhouse gas emission targets (policies), and public education on reduction of carbon footprints

3) **Adaptation** - refers to the actions taken to <u>limit our vulnerability or adjust to</u> the impacts of climate change (i.e. not necessarily dealing with root causes of those impacts); some examples include*:* community-based [food security/water/fire/emergency] strategies], flow management in rivers/streams, youth on-the-land programming and education, infrastructure and land fortification projects (to decrease vulnerability of roads/buildings/community from flooding, permafrost melt, wildfires, etc.).

Northern Food System Themes

The food system is a complex system with many interrelated parts. For the purposes of capturing the key components and categorizing the main activities, eight themes were used to describe the northern food system. Each asset was coded with a primary theme; secondary themes, if applicable were also attributed.

1) **Production and Harvesting** – entails any activity involved in the planting, growing, raising/rearing, and harvesting of food, including traditional hunting/gathering/fishing/trapping, large scale commercial activities and small-scale urban and rural agriculture; examples include gardening/greenhouse growing, farming, non-agricultural food production, fisheries, etc.).
   Note: Programs that serve traditional or locally grown food were not coded as production/harvesting unless they had a growing and harvesting component as part of their programming.

2) **Transportation** – refers to the activities involved in the transport of food through the supply chain, usually from farm/processing facilities/wholesale to retail outlets and transport systems of distribution to people's homes; examples include air, marine or road shipping companies, off-road motorized vehicle transport such as snowmobile or quad which are often used in hunting/trapping activities as well as formal transport programs, which distribute food to wider community (i.e. meals on wheels programs).
   Note: This category does not include individual transport to access the grocery store or traditional foods, unless the distribution point for these transportation services is stated to serve/is accessible to the wider community (for example, if there is a community hunt where food is then shared to a community freezer). Mobile abattoir services and meals on wheels were coded with transportation as a secondary theme. Large corporations like Walmart and Loblaws who are involved in shipping up large amounts of food are also coded

as having transportation as a second theme. Some farms that transport their food to market were also coded as having a secondary theme of transportation.

3) **Processing and Storage** – involves the process of adding value or altering raw food stuffs to refine/preserve the ingredients, including preparation of food (i.e. cooking) and baking; other examples include traditional processing methods like smoking fish, cold storage, canning, jarring, and commercial meat packing.

> *Note: Entities that prepare cooked/processed meals were coded primarily as consumption but had processing as a secondary theme; this included community meals or programming where hot food was prepared in house and served (snack programs where food is served either raw or pre-processed was not coded as processing).*

4) **Distribution and Exchange** – includes activities/entities where one can access/exchange food to take home; examples include retail markets, farmers' markets, emergency food/food banks, institutional purchasing, direct consumer-producer relationships, and non-market avenues (i.e. food sharing), and regional networks, etc.).

> *Note: Entities that serve cooked/processed meals were coded primarily as consumption but had processing as a secondary theme. While distribution enables consumption, only those places or initiatives that offer a space for people to consume the food were coded as consumption.*

5) **Consumption** – refers to where food is prepared for in house consumption and eaten as well as the enabling factors to consumption such as provision of food vouchers and income-based solutions to food insecurity; examples include food safety, school-food programs, community meals, primary food establishments (restaurants), etc.

6) **Food Skills, Knowledge and Culture –** includes activities/entities whose main aim is the passing on of knowledge/skills as well as the focus on the cultural aspects surrounding food; examples include training/courses, research projects, and harvest camps where provisioning skills/traditional values are passed on and ceremony is practiced.

7) **Food System Coordination, Policy and Networks** – refers to the complex activities surrounding the coordination and governance of the food system, including policy, funding and networking activities; examples include producer/hunting & trapping associations, hunter support programs, capacity-building/information sharing networks, entities involved in food sovereignty, food justice & food security advocacy, community and regional food strategies & policies, funding programs, and government departments involved in food and agriculture, etc.).

8) **Food Waste** – refers to the act of diverting, reusing and managing organic waste; includes composting, zero waste initiatives/campaigns, food rescue programs, etc.).

Other Attributes
The inventory captured a broad range of assets, each with their own unique leadership and funding structures, partnerships, and activities, among other attributes. The following definitions outline some of the key attributes that are used to describe each entry.

- **Type of initiative/service/entity***:* The type of initiative/service/entity pertains to the classification of the entry according to its primary theme area (*as defined above*). In the mapping application, the 'type' category was used to attribute a colour-coded map marker to each asset, according to that primary theme but secondary 'type' codes were also attributed to each asset to capture

secondary themes as well. The filter function allows one to summarize the inventory according to both primary and secondary themes combined.

- **Structure:** The structure refers to the governance structure of the initiative/service/entity. The following are different structure types that were used to describe each asset:

    ⇒ **Informal/ad-hoc initiative/service/entity** – refers to any asset, which is led by community members/informal groups.

    ⇒ **Community/non-governmental organization initiative/service/entity** – refers to local or outside non-governmental organizations (NGOs) who hold non-profit status or are considered charities.

    ⇒ **Government-led initiative/service/entity** – includes all levels of government (municipal, territorial, federal, and First Nations, Métis or Inuit, including tribal councils).
    > *Note: There are some government programs, which may be '[Territory/Regional]-Wide' or 'Pan-Northern' in scope, but are offered and delivered at the community level by partner organizations, like NGOs. In some cases, these programs can be catered and guided by the local organizations that run them, but the overarching governance structure is still broadly government-defined and so these are considered distinct from a purely community-based, non-governmental organization-led and developed initiative.*

    ⇒ **Business (sole proprietor, partnership, cooperative, or corporation)** – includes "every trade, occupation, profession, service, or venture carried on with a view to profit" as defined by Yukon Government's Corporate Affairs; it involves incorporated or non-incorporated business entities and activities, sole-proprietor, partnerships, cooperatives, and corporations; partnership refers to a "general partnership, limited partnership and an LLP" as it relates to business structure (2019).

    ⇒ **Network** – refers to a group of people connected in a formal way to exchange knowledge or information, lead an activity or learn a skill in both professional or social circumstances; networks also include clubs, coalitions and consortiums.

    ⇒ **Research organization initiative/service/entity** – includes academic institutions who perform research; research entities may be based inside or outside of the study regions, however their research must be conducted in one of the study regions.

    ⇒ **Partnership** *(captured in the climate change inventory only)* – entails entities or activities where there are multiple parties, who have agreed to join together formally to deliver a set of established activities. In the case of this inventory, the partnership structure was closely related to the host attribute.
    > *Note: The partnership structure is only included in the climate change inventory because of the nature in which the inventory was created from an already established dataset with prescribed attributes. The two inventories are not meant to be used to compare to each other but each have their own attributes which best suit their overarching themes and the associated activities/assets captured. There are many assets captured in the climate change inventory that describe having partners, however, not all entries were coded as an official partnership unless the nature of the partnership was clearly identified by the survey participant or identifiable by other available information.*

- **Category:** The category code was not originally captured as part of the survey but was introduced in the analysis stage to outline the general category that could be used to describe the main

activity of each asset. While related to the structure, the category is a higher-level code to describe the type of asset (i.e. to describe the main activity of each initiative/service/entity). The following eight categories were used to classify each asset:

⇒ **Policy/strategy** – describes any activity, which outlines a set of ideas or a plan of action in specific instances that has been adopted or agreed upon by a group of people, business organization, government, or political party.

⇒ **Research** – refers to activities, which include either the careful or diligent search about, studious inquiry or examination of or general collection of information in order to draw conclusions about a particular topic.

⇒ **Funding or subsidy**– entails programs or entities where the main activity is to provide money for a particular purpose and are often delivered by an organization or government.

⇒ **Program** – refers to a set of structured/routine activities/services with a long-term aim; includes educational activities such as training, workshops, courses, and classes whether stand-alone or as part of broader programming.

⇒ **Service/Tool** – includes activities, which fulfill a very targeted, specified need and are offered and/or delivered on demand; includes a one-time service or tool as well as utility, transport and communications services**.**
    Note: A service usually fulfills a specific specified need over a short period of time; if regular services are offered as part of structured activities, this was coded as a program.

⇒ **Event/Campaign** – refers to a stand-alone event or campaign; examples include harvest camps/fairs, nutrition campaigns and community meals that are not part of wider/more formal programming, even if they tend to happen on a regular basis.

⇒ **Network** – are defined as groups of people connected in a formal way, for specified means (often sharing and skills-building); as is the case for strucutre, networks also include clubs, coalitions and consortiums.

⇒ **Entity** – is a thing/being with a distinct and independent existence.

• **Host:** The host refers to who leads/offers the program and performs main activities. Often this is similar to the contact organization but not in all cases; in particular, contact organization and host organization may be different when the initiative/service/entity is classified as a partnership.

• **Reach:** Reach refers to where the asset's activities are applicable throughout the study region and beyond if the location of the host is based in the North. In some cases, southern-based hosts were included, provided they involved local, northern-based collaborations or have a regional office/storefront based in the North. For example, research projects which are led by southern research institutions in one or more of the study regions, are included only if local partnerships could be ascertained. Federal policies or programs are included if there is on-the-ground action within regional offices or local host organizations based in the North, whose target area is northern. Entities whose reach is broad, such as for large supermarkets such as Save on Foods or Superstore, were included if they have a local store based in the North, even though their 'reach' is national.

Notes: In the case where audiences and applicability were broad (for example, for an online tool or service), the asset was posted to the communities where best available evidence existed to determine that the initiative was active or had been active in that community at some point in time or that the community had participated in the wider initiative. In the cases where this information was not available, the listing was only posted to the place where the initiative/service/entity is centrally located, provided it exists within the study area. Only those assets or activities that were based in or launched out of the North were included, despite there being many initiatives/services/entities based in the South, which might be relevant or applicable to the North (unless as stated above, these southern hosts had northern partners or northern-based offices). For example, a business that does work in the North but is based solely in the South was not included unless there was evidence that the service was being used in that northern community. Assets which can act as resources but which may or may not be captured on the map, will be included somewhere on AICBR's website on a resource page applicable to the project.

Not all programs with the same name were attributed to the same reach and categories. For example, Meals on Wheels is considered a global initiative but not all Meals on Wheels programs are created and governed the same way. Thus, for each entry, the reach was evaluated based on the specific structure and host information available, looking specifically at whether it was centrally governed and applicable across wide regions or whether it was just based and developed in one community. In some cases, these programs are a community-level initiative, while in other jurisdictions they are governed more uniformly and are thus coded as [Territory/Region]-Wide.

⇒ **Community-Level** – refers to assets, which are purely locally based and initiated and while they could be relevant to other communities, are not offered on a wider scale.

⇒ **[Territory/Region]-Wide** (*i.e. Yukon-Wide, NWT-Wide, Nunavut-Wide, Nunatsiavut-Wide, and Nunavik-Wide*) – refers to assets, which are applicable and available on a wider scale. Some assets coded as [Territory/Region]-Wide (for example, Yukon-Wide), may actually be more sub-regional but in order to simplify the coding and make it consistent with other inventories, a higher scale of labeling was favoured.

⇒ **Pan-Northern** – refers to North America's North (includes North of 60, provincial North as well as Alaska); includes assets, which are active in multiple communities who are geographically spread out across North America.

⇒ **Circumpolar** (*only used in climate change inventory*) – includes Northern Canada, Alaska and other circumpolar countries.

⇒ **National** – refers to Canadian-level assets.

⇒ **International** – International refers to any assets, which are applicable beyond Canada and Alaska; includes southern US-based companies and corporations.

A number of additional descriptive attributes were captured in the data collection but were not examined as part of this stage of the analysis. They include details on target groups, seasonality, timeframe, volunteer structure, and cost attributed to each initiative/service/entity. The additional attributes are listed below.

• **Target groups:** In the food systems inventory, the survey specifically captured details about target group. This was done to better characterize each asset and their intended audience. The following target groups were used in describing each asset:

Note: The target groups we were examining included general as well as special interest groups who might be more vulnerable to food insecurity or have limited access to traditional foods/cultural pursuits or to participate in growing activities. These groups include people living with low income, youth, people living with disabilities, prenatal/postnatal women (may also include their partners and families), as well as seniors. The coding for target group was completed with the user of the map in mind, opting for more target groups checked off rather than fewer; particular attention was paid on the special interest groups, unless specific eligibility requirements were stated in the description. For example, food banks whose main target group is low-income individuals were also coded as serving families, adults, pre/postnatal, seniors, and those living with disability, including targeting the whole community for donations. This method of coding may result in an overestimate of programs serving key target groups and thus for future research and policy analysis purposes, further investigation on these codes may be necessary in order to draw the most valid conclusions about gaps in programming areas.

⇒ **Whole-community/general public** – refers to having no specific target or applicable to the whole community.

⇒ **Pre-school children** - defined as children aged 1-4 years old.

⇒ **Children** – defined as children aged 5-12 years old.

⇒ **Youth** - defined as youth aged 13-19 years old.

⇒ **Adults** – are persons 19-65 years of age.

⇒ **Elders/seniors** – are persons above 65 years of age.

⇒ **Families** – refers to family-oriented assets, which do not target specific individuals within the family but target the family as a whole.

⇒ **Pre/postnatal** – included women who were either pregnant or had given birth within the last 2 yrs.

⇒ **Women/girls-only**

⇒ **Men-only**

⇒ **People living on low income** – refers to self-identified measures of low income by the survey participant or based on public data related to the target group.

⇒ **People living with disabilities** – includes behavioural, mental, physical disabilities or those whose immune systems are compromised due to chronic illness or disease.

Results and Discussion

The following results are a snapshot of the key attributes defined above. The measures and discussion highlight areas of interest about the status of both climate change and food systems assets in the Yukon. Due to the scope of future activities as part of this project being limited to the Yukon, this is where the emphasis was placed. In the case of the northern food systems inventory analysis, only summary measures of key attributes are included of other northern regions. The analysis focuses on providing high-level summary statistics in order to better understand the scope and breadth of the inventory. The focus of this analysis is strength, or asset-based, and where possible some gaps were identified. This work is intended to lay the foundation of better understanding of what is going on across the territory (and beyond) so that

more effective, targeted and sustainable food systems initiatives can be developed as a response to climate change, which build off of existing promising initiatives, resources and current knowledge and strengths.

The tables, graphs and figures below classify all assets (initiatives, services and entities) captured in the data collection, distinguished by current status, primary theme areas, structure, reach, strengths, and challenges. The climate change inventory is shown first with all measures discussed, followed by the northern food systems inventory. The scope of the two inventories covers slightly different communities due to what was defined in the pre-existing inventories. Key differences are that in the food systems inventory, Keno, Mount Lorne and Marsh Lake are included (Marsh Lake and Mount Lorne are consolidated into Whitehorse Area) whereas in the climate change inventory, they are not. Discussion on strengths and challenges was also only analyzed as part of the food systems inventory analysis as there was not enough data collected on these measures to accurately describe commonalities in the climate change inventory.

Climate Change Inventory - Tables, Graphs and Figures

The following two-way frequency table shows the number of assets captured in each community based on current status. Current status was established by using best available data from internet searches and content from the surveys. Informal networks such as social media groups or marketplaces were always coded as current because information about the number of active users was not readily available. In some case such as for one-off events/campaigns or research projects, entries were only coded as current if information could be found that the activities were ongoing.

TABLE 1A. NUMBER OF ASSETS ACCORDING TO CURRENT STATUS AND COMMUNITY (CLIMATE CHANGE INVENTORY MAP)

Community	Current Status				Population[1]
	Current	Not Current	Unknown	Total	
Beaver Creek	2	3	-	5	111
Burwash Landing Area[2]	7	6	1	14	107
Carcross	12	4	-	16	506
Carmacks	1	2	2	5	564
Dawson City	13	8	3	24	2,323
Faro	3	1	1	5	413
Haines Junction	3	5	2	10	960
Mayo	6	4	1	11	514
Old Crow	10	11	8	29	265
Pelly Crossing	1	6	1	8	387
Ross River	-	4	1	5	405
Tagish	-	1	-	1	275
Teslin	3	5	1	9	521
Watson Lake	1	4	-	5	1,497

Whitehorse Area[3]	13	15	3	31	31,527
Yukon (total)	75	79	24	178	40,483

1 - All population numbers are from the Yukon Bureau of Statistics' June 2018 Quarterly Population Report, which bases estimates on census data, adjusted for undercoverage using all relevant Yukon Government administrative data. Available at - http://www.eco.gov.yk.ca/stats/pdf/populationQ2_2018.pdf. Population of unorganized areas are assigned to the nearest community. 2 - Burwash Landing Area includes community of Destruction Bay. 3 - Whitehorse Area includes City of Whitehorse and surrounding area so to remain comparable to other geographical area estimates defined by Statistics Canada.

In the climate change inventory, a total of 178 assets were captured, many of which (n=79, 44%) are coded as not current, 42% (n=75) were found to be current and 13% (n=24) were unknown; this is because many of the captured assets are one-off research projects. 'Not current' assets are included in the inventory as the main goal of the asset mapping initiative is to connect people and communities and inspire future action, thus the map also acts as a sort of repository for past work that remains relevant today and can act as a foundation for future research in communities. It acts to mobilize historical and on-the-ground knowledge to promote collaboration and avoid duplication of past work.

As mentioned above, the inventory work captured a mix of community-level, Yukon-wide, National, International, and Pan-Northern assets, which describe their reach.

TABLE 2A. NUMBER OF ASSETS ACCORDING TO PRIMARY THEME AND REACH (CLIMATE CHANGE INVENTORY)

Reach	Primary Theme			Total
	Adaptation	**Mitigation**	**Monitoring**	**Total**
Community-Level	37	58	20	115
Yukon-Wide	41	4	8	53
Pan-Northern	6	3	1	10
Total	84	65	29	178

The majority of the 178 Yukon climate change assets were community-level (115 assets, or 65% of total) and the rest were a mix of Yukon-wide (53 assets, or 30%) and pan-northern (10 assets, or 6%). Climate change assets were categorized into three themes as previously defined. Almost half of all assets (47%) captured were considered adaptation, followed by 37%, which were categorized as mitigation and 16%, monitoring activities/assets (as depicted in Chart 1A below).

Interestingly when the different themes were broken down according to reach, most of the mitigation (89%) and monitoring (69%) activities which were captured in the inventory were community-level in reach (i.e. locally developed and based and not offered on wider scale); among adaptation assets, 49% were Yukon-wide in reach, while 44% were community-level. The percentage of all community-level assets (n=115) that were mitigation was 50%, versus 32% adaptation and 17% monitoring. Community-level mitigation activities included a mix of renewable energy projects and feasibility studies and energy efficiency upgrades to government buildings and other community infrastructure. The fact that climate change's impacts are local, it

is important that local capacities be strengthened to act and adapt. It is promising to see a large percentage of locally based and developed initiatives seeking to address climate change.

CHART 1A. PERCENTAGE OF ASSETS ACCORDING TO PRIMARY THEME AREA (CLIMATE CHANGE INVENTORY – YUKON)

Total Yukon - Primary Themes

16%

47%

37%

- Adaptation
- Mitigation
- Monitoring
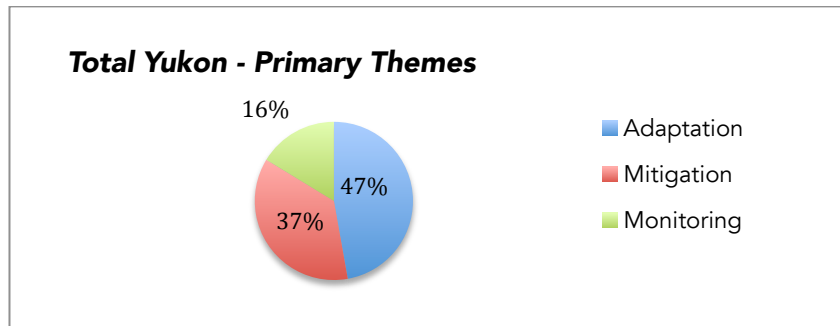
While the above tables and chart depict assets categorized by their primary theme only, 24% had cross cutting activities, which related to one or more secondary themes. The online map captures all initiatives according to themes regardless of whether primary or secondary categorization, thus the totals depicted on the map will appear to be different from the table/chart highlighted above. The following chart 2A shows the percentage of assets according to both primary and secondary themes. The percentages are similar to those with just primary themes, however the key difference is that more monitoring activities (24% versus 16% in Chart 1A) were captured when analyzed by both primary and secondary themes.

CHART 2A. PERCENTAGE OF ASSETS ACCORDING TO PRIMARY AND SECONDARY THEMES (CLIMATE CHANGE INVENTORY - YUKON)

Total Yukon - Primary/Secondary Themes

24%

46%

30%

- Adaptation
- Mitigation
- Monitoring
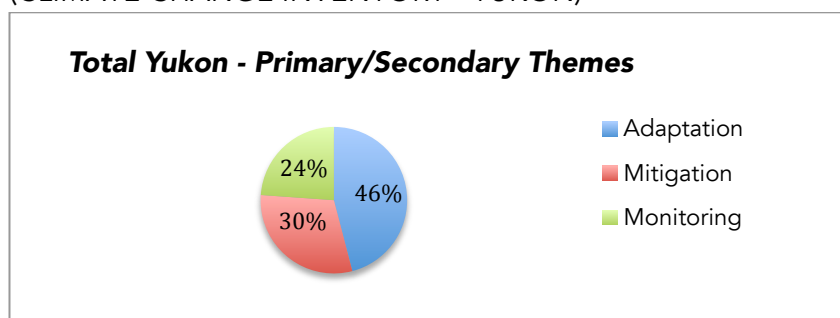
Exploring the percentage of assets within each community gives a sense of where current strengths related to climate change action are and where more work could be done. The following charts depict the breakdown of primary theme according to each community.

CHART 3A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – BEAVER CREEK)

Beaver Creek - Primary Themes

- Adaptation
- Mitigation
- Monitoring

40% 40%

20%
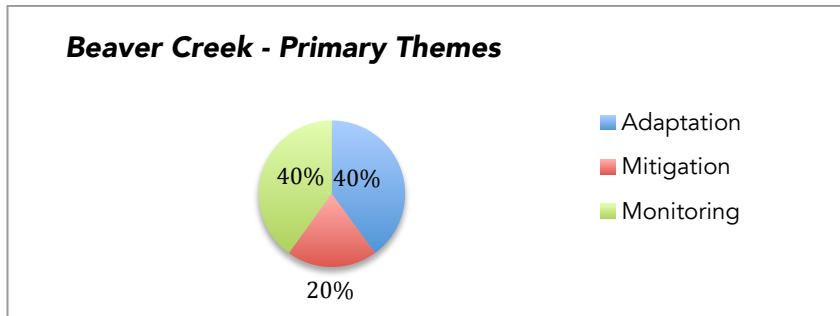
In Beaver Creek (pop. 111), five assets were captured, which mostly focused on research. Of all the assets, 40% were adaptation focused and 40% monitoring focused. One solar array was installed in the community and was captured as a mitigation asset.

CHART 4A. PERCENTAGE OF CAPTURED ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – BURWASH LANDING AREA)

Burwash Landing Area - Primary Themes

21%

- Adaptation
- Mitigation
- Monitoring

29%

50%
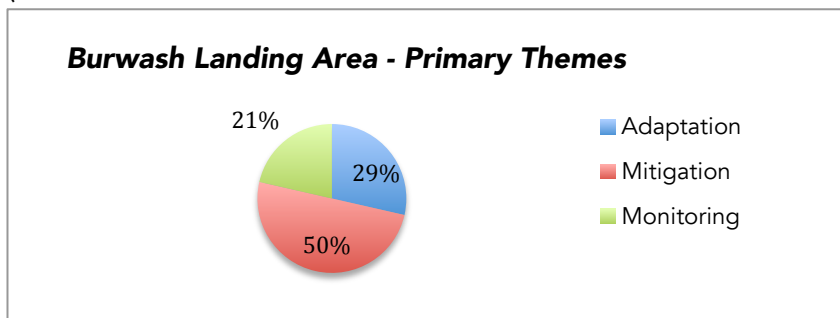
In Burwash Landing Area (pop. 107), which includes the surrounding community of Destruction Bay, 14 assets were captured in the inventory. Half of the assets were mitigation, which included renewable energy projects such as wind, biomass and geothermal projects as well as one feasibility study. The adaptation activities made up 29% of the total assets captured and included vulnerability assessments of the Alaska Highway, hazard mapping and adaptation strategizing. The 21% monitoring assets included monitoring of key species such as moose, salmon and community contaminants.

CHART 5A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – CARCROSS)

Carcross - Primary Themes

19% 19%

- Adaptation
- Mitigation
- Monitoring

62%
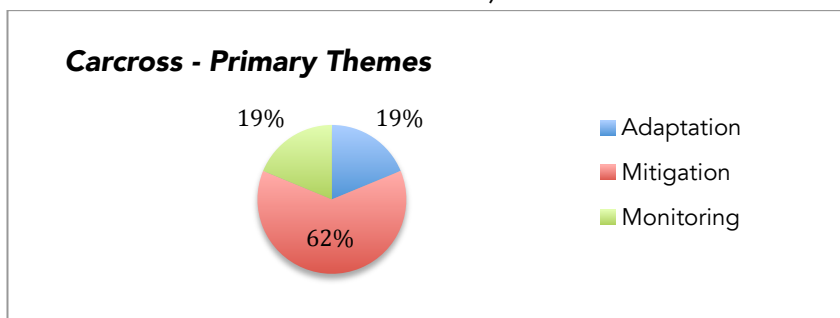
Of the 16 assets captured in Carcross (pop. 506), the majority (62%) were mitigation, whereas monitoring and adaptation activities both made up 19% of total community assets in the inventory. Mitigation activities included biomass, micro hydro, wind and solar projects, as well as good energy upgrades. Monitoring assets included participation in the Indigenous Observation Network, ecological monitoring and contaminant monitoring. Adaptation activities included adaptation strategizing, youth mentoring and land stewardship projects and programs.

CHART 6A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – CARMACKS)

Carmacks - Primary Themes

- Adaptation
- Mitigation
- Monitoring

40% 40%
20%
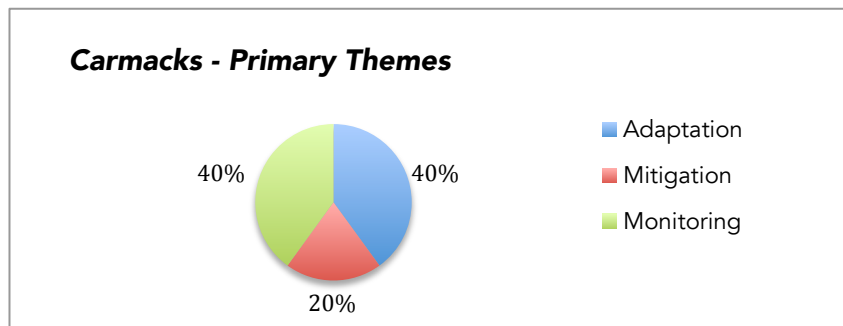
Carmacks (pop. 564) had five assets captured in the community inventory; adaptation and monitoring accounted for 40% each of the total assets and 20% were mitigation. The community has an emergency preparedness plan and has researched traditional land use to ensure the health of the ecosystem and spur conservation efforts and adaptation. Two years in a row, Little Salmon Carmacks First Nations has monitored Victoria Creek watershed to explore cumulative effects of mining and climate change on the water output and volume. For mitigation, the community has undergone an energy audit and plan delivered by Energy Solutions, which can help to identify areas where energy upgrades can be made in community.

CHART 7A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – DAWSON CITY)

Dawson City - Primary Themes

- Adaptation
- Mitigation
- Monitoring

4%
46% 50%
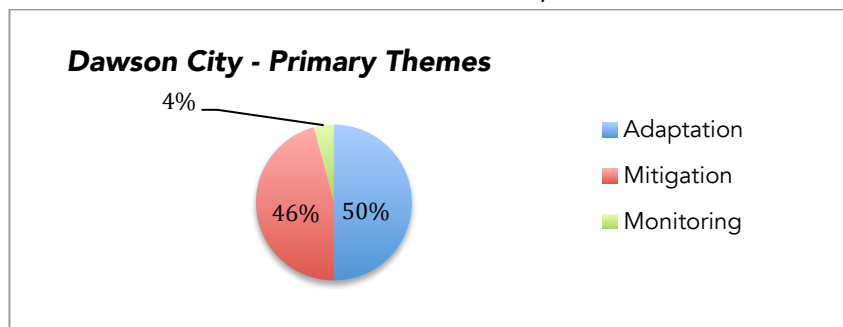
In Dawson City (pop. 2323), 24 total assets were collected in the inventory process. These were almost evenly split between adaptation (12 assets, or 50%) and mitigation (11 assets, or 46%) theme areas, with one monitoring asset (i.e. contaminant monitoring), accounting for 4% of total assets. Some of the adaptation activities included a fire or flood plan, including a youth fire

explorer program, hazard mapping, hydrological response assessment along the Dempster highway, and some climate change adaptation strategizing. Mitigation entities and initiatives included biomass woodchip boiler and landfill biomass planning, solar array installations, recycling and free store, as well as a repair café, plastic bag reduction program, and greenhouse gas reduction planning within the City of Dawson's procurement practices, among others.

CHART 8A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – FARO)

Faro - Primary Themes

- Adaptation
- Mitigation
- Monitoring

20%
80%
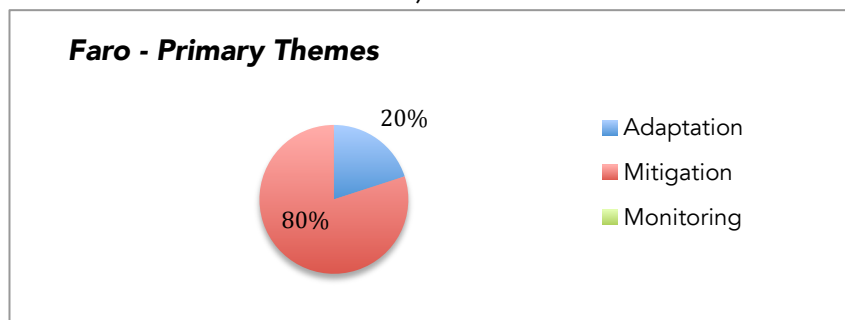
A total of five assets were captured in Faro (pop. 413), four of which (80%) were mitigation-related and one (20%) adaptation (i.e. hazard mapping). The mitigation projects included good energy upgrades (i.e. light fixture replacement and new LED street lights) as well as an energy audit and plan; there is also a recycling centre in the community. No monitoring assets were found in the inventorying process when examining primary themes.

CHART 9A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – HAINES JUNCTION)

Haines Junction - Primary Themes

- Adaptation
- Mitigation
- Monitoring

10%
30%
60%
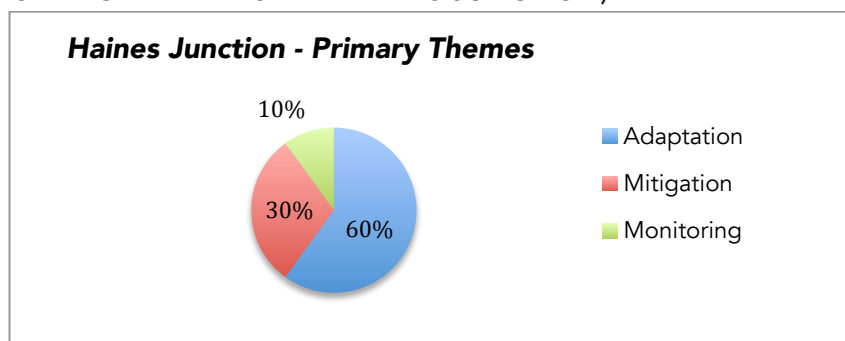
During the inventorying of Haines Junction (pop. 960) area assets, 11 were captured; just over half (55%) relate to adaptation, which included vulnerability assessments of key infrastructure, a traditional knowledge water strategy, research on sustainable forest management, scenario planning for new wildlife species, and exploring trends and projections for adaptation planning. The three mitigation assets were solar array installation, a geothermal heat exchange project and energy upgrades (i.e. LED light replacement). The community has also mapped out traditional land use and is monitoring how it has and continues to change due to climate change.

CHART 10A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – MAYO)

Mayo - Primary Themes

- Adaptation
- Mitigation
- Monitoring

9%
46%
45%
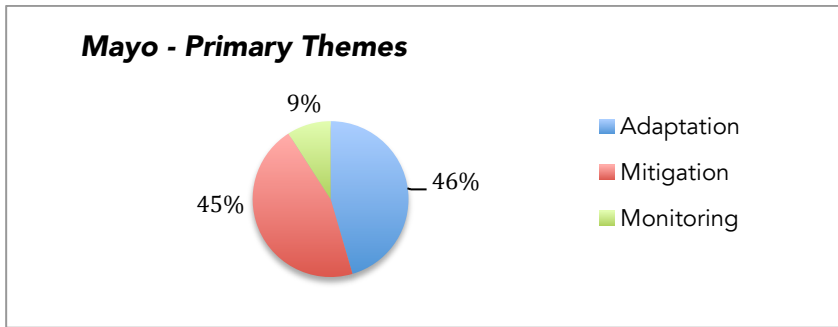
In Mayo (pop. 514), 11 assets were captured; five assets (45.5%) were adaptation, five (45.5%) were mitigation and one (9%) was monitoring. Adaptation activities included community adaptation planning, hazard mapping, climate change trends and projections, and a feasibility study on how traditional alder tree seeds could be used for mine reclamation. Mitigation actions included energy efficiency upgrades to the Na-Cho Nyak Dun government house, a recycling centre, solar array installation, and an energy audit. The monitoring project is an ongoing water balance and volume project, exploring changes from mining activity and climate change over time.

CHART 11A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – OLD CROW)

Old Crow - Primary Themes

- Adaptation
- Mitigation
- Monitoring

28%
48%
24%
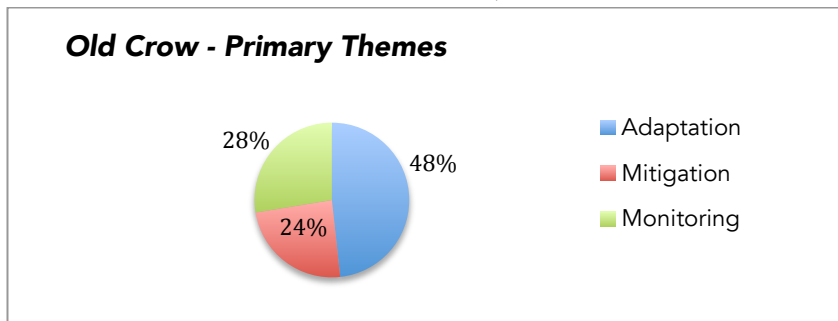
In Old Crow (pop. 265), 48% assets (n=14) were adaptation, 28% (n=8) monitoring and 24% (n=7) mitigation. Adaptation actions included exploring fish and climate change monitoring, protected area initiatives, risk assessment, traditional land use study, land use plan implementation, permafrost studies, and hazard mapping, among others. The community is monitoring Chinook through a sonar program as well as Dall's sheep, mapping permafrost and assessing hydrology, and participating in other community-based monitoring activities. Some examples of mitigation activities include the implementation of a solar array with storage capacity and associated promotional video, a biomass project, wind assessments, streetlight bulb conversion and a community energy plan.

CHART 12A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – PELLY CROSSING)

Pelly Crossing - Primary Themes

25%   37%

38%

- Adaptation
- Mitigation
- Monitoring
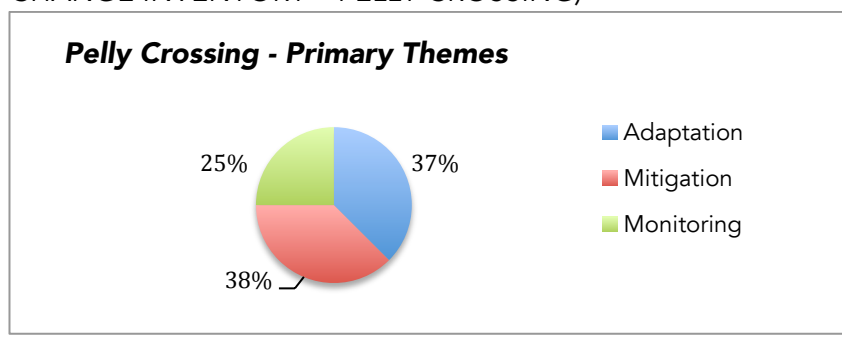
There were eight assets captured in Pelly Crossing (pop. 687); adaptation (37% *37.5% rounded down to the nearest percent in the pie chart above*) and mitigation assets (38% *37.5% rounded up to the nearest percent*) accounted for three each and monitoring for two (25%) assets. The community has looked at the health effects from climate change as well as combining Indigenous Knowledge and Western science in climate change adaptation strategies, and conducted hazard mapping. Mitigation activities include plans to install solar arrays in 2019 in the community and testing micro hydro potential and wind energy. The community's monitoring activities included an ethno-botanical study exploring climate change's impacts on medical plants as well as a community-based monitoring project exploring contamination and human health risks of climate change. Both these monitoring activities incorporated Indigenous knowledge.

CHART 13A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – ROSS RIVER)

Ross River - Primary Themes

20%

80%

- Adaptation
- Mitigation
- Monitoring
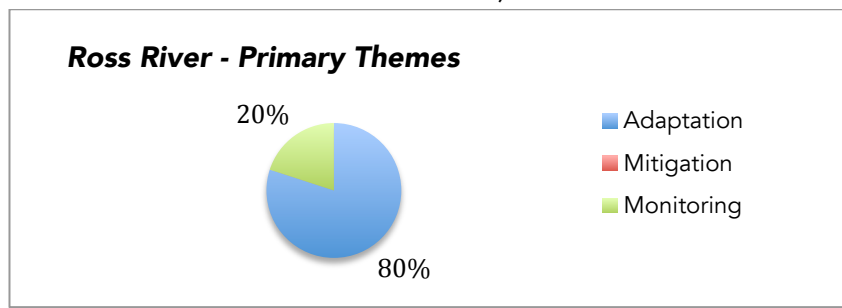
In Ross River (pop. 405), main assets pertained to adaptation (n=4, 80%), with one monitoring (20%) asset. The monitoring asset looked at climate change's impact on traditional plant species, which included the development of a database and corresponding map depicting sensitive areas to help with resource planning. Adaptation projects included research into caribou and their cultural significance to the Ross River Dena, which was also produced into a film; other activities included hazard mapping and permafrost studies. No mitigation assets were captured as primary themes.

**CHART 14A.** PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – TAGISH)

Tagish - Primary Themes

- Adaptation
- Mitigation
- Monitoring

100%
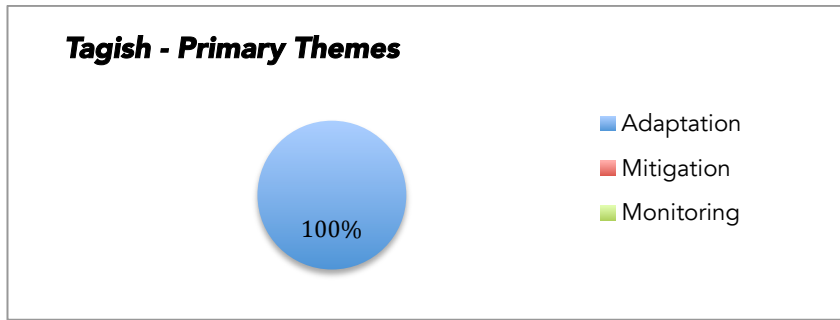
The sole asset captured in Tagish (pop. 275) was a climate change adaptation project combining Indigenous knowledge and public health into community contaminant and monitoring. This project is a Yukon-wide project spanning multiple communities across the territory (research was also conducted in Beaver Creek, Burwash Landing, Carcross, Dawson City, and Pelly Crossing).

CHART 15A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – TESLIN)

Teslin - Primary Themes

- Adaptation
- Mitigation
- Monitoring

33%

67%
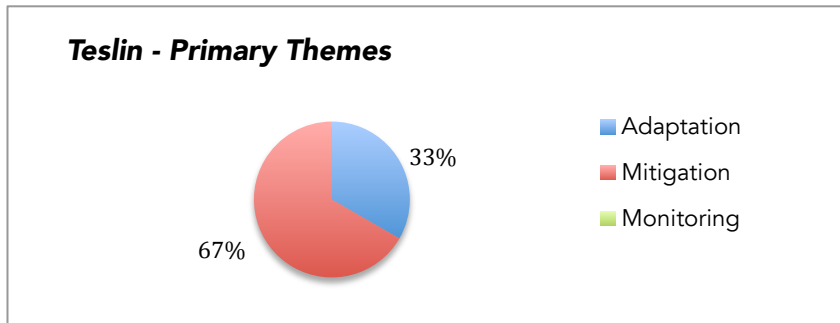
The inventorying in Teslin (pop. 521) gathered six mitigation and three adaptation assets (67% and 33% of total community assets, respectively). The community has installed a biomass boiler and biofuel system, upgraded municipal building lights to LED and assessed hydropower opportunities in the traditional territory of the Teslin Tlingit Council; Teslin also transfers heat from the Skating Arena to the in-floor heating system at the Recreation Centre and has participated in an energy audit and plan. Adaptation measures include exploring forest vulnerability to climate change and Mountain Pine Beetle predictions, as well as other climate change trends and projections.

CHART 16A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – WATSON LAKE)

Watson Lake - Primary Themes

20%

80%

- ■ Adaptation
- ■ Mitigation
- ■ Monitoring
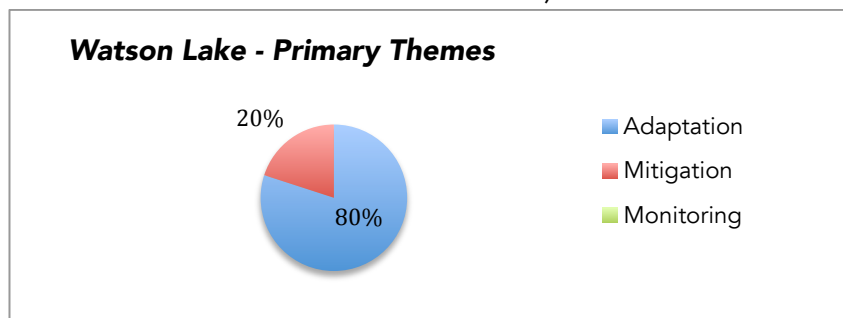
Adaptation initiatives accounted for 80% (n=4) of all assets (n=5) caught in the inventory in Watson Lake (pop.1497). These initiatives included moose harvest monitoring and implications that climate change has on traditional food security, a green asset management plan, Mountain Pine Beetle research as well as climate change trends and projections. The sole mitigation project captured (accounted for 20% of assets) was a feasibility study to explore hydro potential in the Kaska traditional territory. No monitoring assets were collected as primary themes in Watson.

CHART 17A. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (CLIMATE CHANGE INVENTORY – WHITEHORSE AREA)

Whitehorse Area - Primary Themes

16%

19%

65%

- ■ Adaptation
- ■ Mitigation
- ■ Monitoring
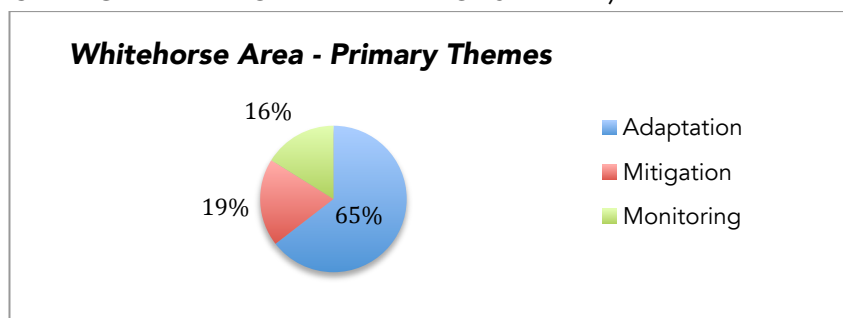
The majority of assets captured in the Whitehorse area (pop. 31,527) were adaptation (n=20, 65%), whereas 19% were mitigation (n=6) and 16% monitoring (n=5). Some adaptation activities included climate change risk assessment, permafrost studies, salmon summits and practitioner forums for adaptation experts, Mountain Pine Beetle research, wildfire risk assessment, knowledge mobilization projects around the impacts of climate change on food security, and youth training. Mitigation initiatives and entities included energy efficient new housing construction as well as other studies exploring possible energy efficiency upgrades (including a diesel energy controller for ensuring increased efficiency of diesel generators); the monitoring assets included permafrost, hydrological and ecological monitoring.

The inventory captured a wide span of 'types' of assets, which were later categorized in the analysis. Table 3A below provides an overview of the number of assets captured by category.

TABLE 3A. NUMBER AND RELATIVE FREQUENCY OF ASSETS ACCORDING TO CATEGORY (CLIMATE CHANGE INVENTORY)

Category	# (%) Assets
Research	72 (40%)
Entities	36 (20%)
Services	22 (12%)
Program	22 (12%)
Policy/Strategy	15 (8%)
Event/Campaign	9 (5%)
Funding	1 (1%)
Networks	1 (1%)
Total	178 (100%)

The most common category of asset was research (n=72, or 40% of all assets), followed by entities (n=36, or 20%), then services (n=22, or 12%) and programs (n=22, or 12%). Research assets included research activities conducted to better understand climate change and its effects as well as monitoring initiatives and feasibility studies. Ongoing monitoring that is part of wider programming or contributes to ongoing decision-making was captured as part of the program category. Entities captured were mainly in the form of energy upgrades to infrastructure and renewable energy projects. Services mainly included one-time energy audits, energy assessments, hazard mapping or other tool/resource creation.

The structure of each asset was captured to provide further clarity on who is involved in climate change initiatives in the Yukon. Structure refers to the leadership and governance structure of the asset.

TABLE 4A. NUMBER AND RELATIVE FREQUENCY OF ASSETS ACCORDING TO STRUCTURE (CLIMATE CHANGE)

Structure	# (%) Assets
Partnership	95 (53%)
Government	66 (37%)
Community/NGO	8 (4%)
Business	4 (2%)
Research Organization	3 (2%)
Other	2 (1%)
Networks	-
Informal/Ad-hoc	-
Total	178 (100%)

Note: 'Other' includes councils or management boards, which didn't fit into the other categories

Over half the assets captured involve partnerships (n=95, 53%). Almost all assets listed some type of partner, however not all cases where there were partners listed was the structure led by a partnership, as what constitutes a partners is often defined subjectively.

CHART 18A. BREAKDOWN OF STRUCTURE BASED ON WHO IS INVOLVED (CLIMATE CHANGE INVENTORY - PARTNERSHIPS)

Partnerships

- First Nations — 25%
- Municipal — 4%
- Territorial — 21%
- Federal Government — 1%
- Private Business — 7%
- Local Research Organization — 16%
- Outside Research Organization — 14%
- Community/NGO — 6%
- Informal/Ad-hoc — 1%
- Network
- Other — 5%
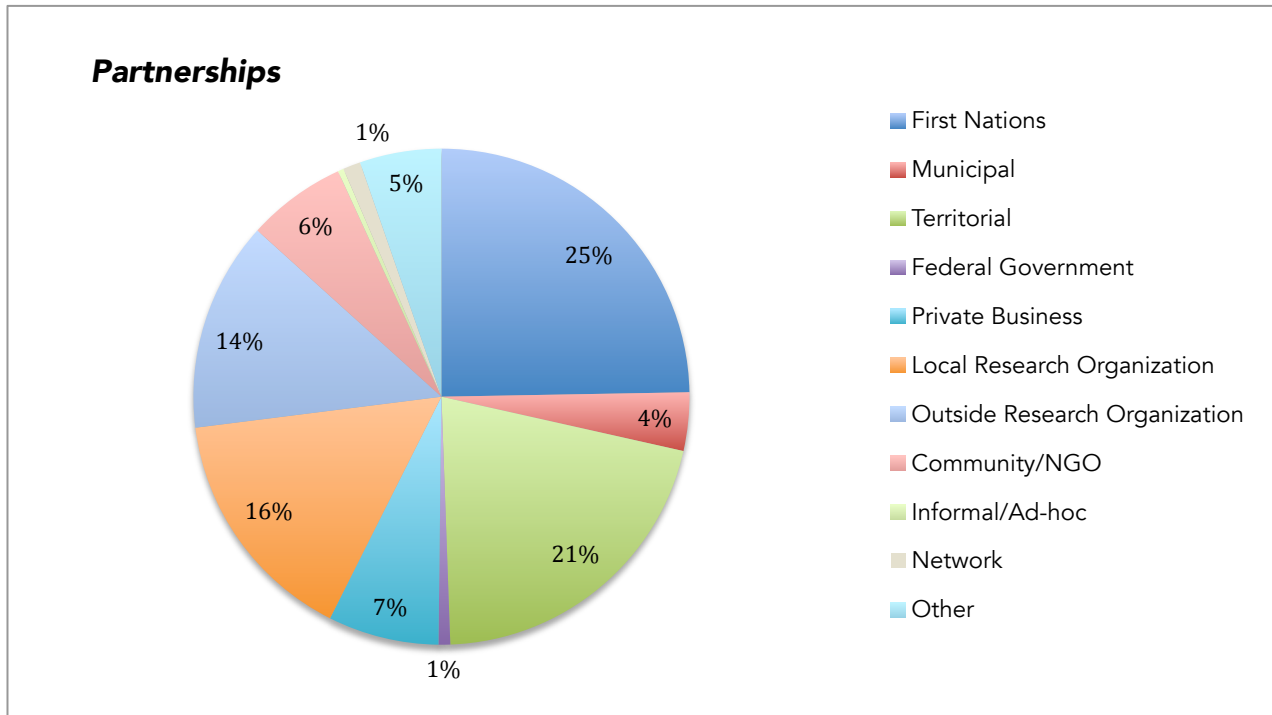
Note: Partnership involving 'Other' included Yukon Land Use Planning Council, International Council of First Nations, Government of British Columbia, Arctic Athabaskan Council, and the Porcupine Caribou Management Board

Chart 18A above demonstrates who was most often involved in partnerships; 25% of partnerships involved First Nations governments, 21% involved the territorial government, 16% of partnerships involved a local research organization, while 14% involved an outside research organization.

In the cases where the initiative was led by a research organization, as shown in Chart 19A below, 100% of assets were led by local research organization (i.e. the Yukon College). Government-led initiatives were mostly led by First Nations governments (55%), followed by the territorial government (30%) and then municipal government (15%).

CHARTS 19Ai-Aii. BREAKDOWN OF STRUCTURE BASED ON WHO IS INVOLVED (CLIMATE CHANGE INVENTORY – i. RESEARCH ORGANIZATIONS AND ii. GOVERNMENT SECTIONS)

Research Organizations

- Local — 100%
- Outside

Government Sectors

- First Nations — 55%
- Municipal — 15%
- Territorial — 30%
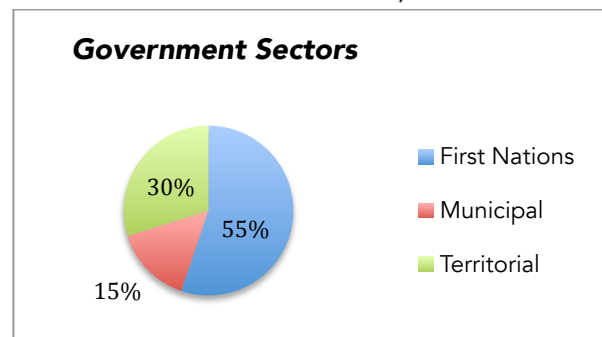
Northern Food Systems Inventory - Tables, Graphs and Figures

The following tables, charts and figures summarize the Northern Food Systems Inventory, with a focus on the Yukon. Information on other northern regions is included for some attributes to highlight some of the key strengths and potential resources, which may help facilitate learning and information sharing across the North.

TABLE 1B. NUMBER OF ASSETS ACCORDING TO CURRENT STATUS AND COMMUNITY (NORTHERN FOOD SYSTEMS INVENTORY MAP – YUKON)

Community	Current Status			Total	Population[1]
	Current	Not Current	Unknown		
Beaver Creek	7	1	1	9	111
Burwash Landing Area[2]	14	3	-	17	107
Carcross	13	2	-	15	506
Carmacks	19	2	8	29	564
Dawson City	63	2	3	68	2,323
Faro	9	-	-	9	413
Haines Junction	22	3	-	25	960
Keno	3	-	-	3	20
Mayo	12	1	-	13	514
Old Crow	8	3	4	15	265
Pelly Crossing	10	1	2	13	387
Ross River	9	-	2	11	405
Tagish	8	1	-	9	275
Teslin	12	1	6	19	521
Watson Lake	11	-	2	13	1,497
Whitehorse Area[3]	162	8	11	181	31,527
Yukon (total)	382	28	39	449	40,483

1 - All population numbers (except for Keno) are from the Yukon Bureau of Statistics' June 2018 Quarterly Population Report, which bases estimates on census data, adjusted for undercoverage using all relevant Yukon Government administrative data. Available at: http://www.eco.gov.yk.ca/stats/pdf/populationQ2_2018.pdf. Population of unorganized areas are assigned to the nearest community. Population statistics for Keno come from 2016 Census (Statistics Canada). Available at: http://tinyurl.com/y5rx4ael. 2 - Burwash Landing Area includes community of Destruction Bay. 3 - Whitehorse Area includes City of Whitehorse and surrounding area (as well as the community of Marsh Lake and Mount Lorne) so to remain comparable to other geographical area estimates defined by Statistics Canada.

In the food system inventory (Yukon-region), a total of 449 assets were captured, the majority of which (85%) are current; 6% of the captured assets were not current and 9% were unknown. The following table shows the captured assets in each region, based on current status.

TABLE 2B. NUMBER OF ASSETS ACCORDING TO CURRENT STATUS AND REGION (NORTHERN FOOD SYSTEMS INVENTORY MAP – ALL REGIONS)

Region	Current Status				Population[1]
	Current	Not Current	Unknown	Total	
Yukon	382	28	39	449	40,483
NWT	205	2	170	377	44,445
Nunavut	115	2	45	162	38,396
Nunavik	17	2	9	28	2,617
Nunatsiavut	25	1	6	32	12,088
All Regions	744	35	269	1048	138,029

1 – Population estimates for Yukon are same as previous tables above. NWT estimates are derived from Government of NWT's Bureau of Statistics, 2018 fourth quarter report. Available from: https://www.statsnwt.ca/population/population-estimates/. Nunavut estimates come from Government of Nunavut's 2018 third quarter report. Available from: https://www.gov.nu.ca/sites/default/files/nunavut_and_canada_population_estimates_statsupdate_third_quarter_2018.pdf. Population estimates for Nunatsiavut and Nunavik are derived from Statistics Canada in 2011 (Aboriginal Peoples Fact Sheets). Available from: https://www150.statcan.gc.ca/n1/en/catalogue/89-656-X.

Across the entire northern food system inventory (all regions), a total of 1048 assets were captured, of which 744 (71%) were current, 35 (3%) were not current and 269 (26%) were unknown. A total of 449 assets were found in the Yukon, 377 in NWT, 162 in Nunavut, 28 in Nunavik, and 32 in Nunatsiavut. Regional comparison of food system assets should be cautioned against due to the fact that each region is unique, context is highly important and data collection methods were not consistent across regions (i.e. the inventory was built from a number of merged datasets from previously collected research with more outreach capacity in the Yukon). These numbers are only meant as a snapshot of assets captured across the North and any programming or policy should be built from a regional- or community-based perspective, paying particular attention to each region's current realities and strengths.

The following tables show the breakdown of the Northern and Yukon assets according to reach (Table 4B also shows reach based on primary theme area).

TABLE 3B. NUMBER OF ASSETS ACCORDING TO REACH AND REGION (NORTHERN FOOD SYSTEMS INVENTORY – ALL REGIONS)

Region	Reach					
	Community-Level	[Territory/Region]-Wide	Pan-Northern	National	International	Total
Yukon	359	71	4	13	2	449
NWT	121	209	15	13	19	377
Nunavut	68	48	22	-	24	162
Nunavik	5	1	14	-	8	28
Nunatsiavut	19	2	6	1	4	32
Total	572	331	61	27	57	1048

Over half (55%, n=572) of the northern food systems assets were community-level in reach, followed by territory/region-wide assets making up 32% (n=331), while the remaining had a mix of pan-northern (6%, n=61), international (5%, n=57) and national (3%, n=27) reach.

TABLE 4B. NUMBER OF ASSETS ACCORDING TO PRIMARY THEME AND REACH (NORTHERN FOOD SYSTEMS INVENTORY – YUKON)

Reach	Primary Theme								
	Theme1	Theme2	Theme3	Theme4	Theme5	Theme6	Theme7	Theme8	Total
Community-Level	98	-	6	47	104	80	17	7	359
Yukon-Wide	8	-	-	-	18	21	24	-	71
Pan-Northern	-	-	-	1	-	-	3	-	4
National	-	-	-	7	1	5	-	-	13
International	1	-	-	1	-	-	-	-	2
Total	107	0	6	56	123	106	44	7	449

Note: Theme1=Production/Harvesting; Theme2=Transportation; Theme3=Processing/Storage; Theme4=Distribution/Exchange; Theme5=Consumption; Theme6=Food Skills/Knowledge/Culture; Theme7=Food System Coordination/Policy/Networks; Theme8=Food Waste

Of the 449 Yukon food systems assets, 359 (80%) of them were considered community-level; while 71 (16%) applied Yukon-wide, 4 (0.9%) were pan-northern, 13 (3%) were national in reach and 2 (0.4%) were considered international assets that applied to the North. All of the international assets in the Yukon were entities (companies) whose reach was international but who have bases/locations in the territory. National assets were a mix of national companies, such as Save On Foods and Loblaws supermarkets, and national programs such as Canadian Prenatal Nutrition Program. These assets reach across the country but are based and delivered locally. Across the entire Yukon inventory, 123 assets (27%) had a consumption component (i.e. theme 5 in the tables 2B and 3B) as their primary theme, followed by 107 assets (24%, *23.7% rounded to nearest percent*), which had a production/harvesting component (i.e. theme 1 in the tables 2B/3B) and 106 assets (24%, *23.5% rounded to nearest percent*) were considered food skills, knowledge or culture (i.e. theme 6 in the tables). The most common consumption assets included community meals, restaurants and child/youth or elder programming with a meal component. Production/harvesting assets were mainly farming and gardening entities and community harvests/hunts. Main assets with a 'food skills, knowledge and culture' component included family/youth culture/harvest camps (these were coded primarily as theme 6, with secondary theme of production, processing, among others due to the fact that the main goal of many of these camps was to pass on key harvesting and cultural knowledge), programming or courses with an educational or skills building goal (in the areas of nutrition, healthy eating, food safe or cooking) and research projects.

Total Yukon - Primary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste
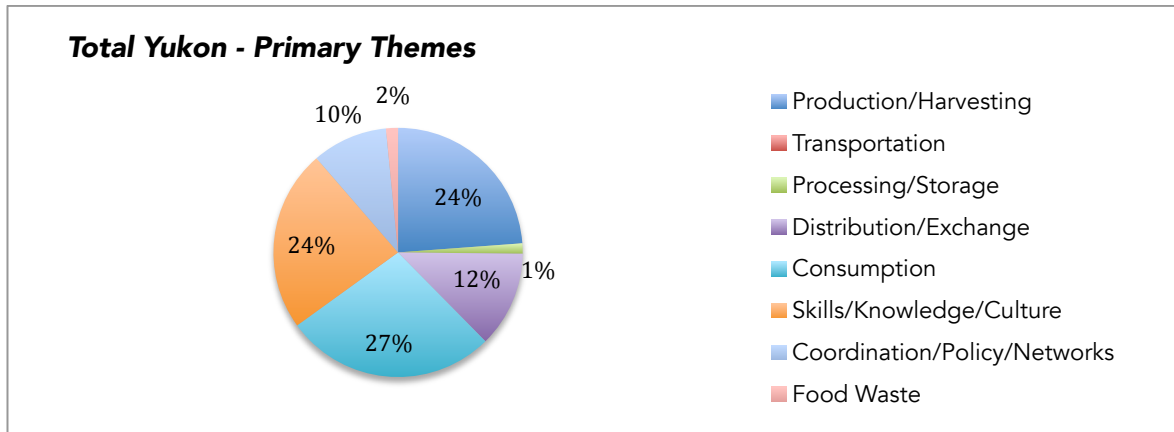
While consumption, production/harvesting and food skills, knowledge and culture were the top three most common primary themes, processing/storage (6 assets, or 1%) and food waste (7 assets, or 1%) were both among the least common. Distribution/exchange (n=56) accounted for 12% of assets and food system coordination/policy/networks (n=44) accounted for 10%. No assets were coded as having transportation as a primary theme. However, processing/storage, food waste and transportation were common secondary themes. The following chart depicts percentage of assets according to both primary and secondary themes.

CHART 2B. PERCENTAGE OF ASSETS ACCORDING TO PRIMARY AND SECONDARY THEMES (NORTHERN FOOD SYSTEMS INVENTORY - YUKON)

Total Yukon - Primary/Secondary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste
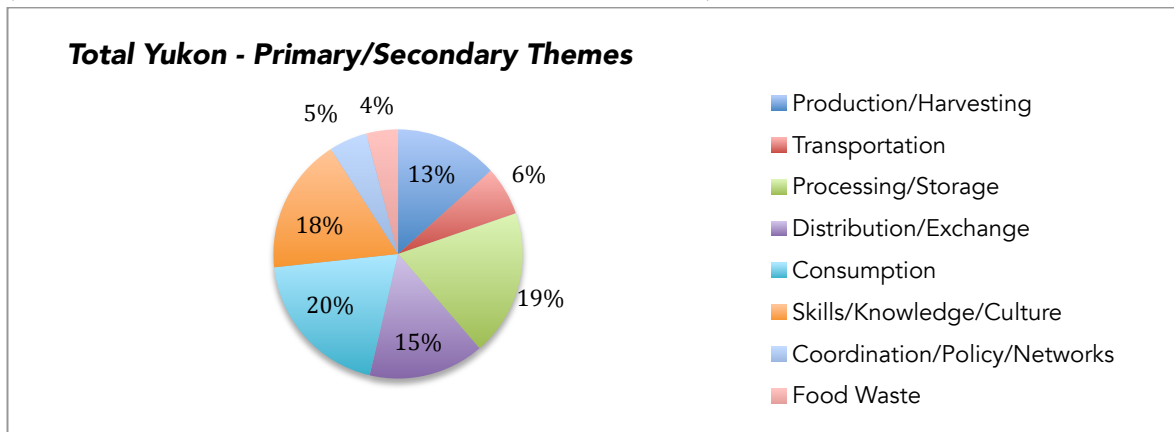
Chart 2B shows how when analyzed based on crosscutting themes, many assets saw an increase in their prevalence. It appears that 19% of food systems assets captured had some processing/storage-related activities (compared to only 1% when looking at only primary theme), 6% involved transportation (compared to 0% in Chart 1B) and 4% food waste (compared to 2%). The remaining themes saw a reduction in their prevalence in the Chart 2B, however consumption still remained a dominant theme.

During the analysis of food waste assets, a number of (n=17) community transfer stations, municipal facilities, or landfills were captured in the original scan of assets, however were removed from the inventory as they did not include an organic waste disposal or compost program. Food waste programs were only included on the inventory if their main goal was to reduce food waste or dispose of it in environmentally sustainable ways. This is an area where further policy development and programming could assist. Communities where there was no organic program in their waste disposal entities include Johnson's Crossing, Beaver Creek, Burwash Landing, Carcorss, Carmacks, Destruction Bay, Haines Junction (i.e. Champagne), Keno, Mayo, Marsh Lake, Old Crow, Tagish, Pelly Crossing, Ross River, and Stewart Crossing.

Table 5B shows each region's assets and what main activities were the gathered in the eight theme areas.

TABLE 5B. NUMBER OF ASSETS ACCORDING TO PRIMARY THEME AREA AND REGION (NORTHERN FOOD SYSTEMS INVENTORY MAP – ALL REGIONS)

Region	Primary Theme								
	Theme1	Theme2	Theme3	Theme4	Theme5	Theme6	Theme7	Theme8	Total
Yukon	107	0	6	56	123	106	43	7	449
NWT	35	2	-	40	69	139	91	1	377
Nunavut	9	1	5	81	31	10	25	-	162
Nunavik	3	-	-	8	1	3	13		28
Nunatsiavut	3	-	2	3	16	1	7	-	32
All Regions	157	3	13	186	240	259	180	9	1048

Note: Theme1=Production/Harvesting. Theme2=Transportation. Theme3=Processing/Storage. Theme4=Distribution/Exchange. Theme5=Consumption. Theme6=Food Skills/Knowledge/Culture. Theme7=Food System Coordination/Policy/Networks. Theme8=Food Waste

On the broader northern inventory (n=1048) the top five most common primary theme areas were 'food skills, knowledge and culture at 259 assets (25% of total inventory), consumption at 240 assets (23%), food systems coordination, distribution and exchange (18%), policy and networks at 180 assets (17%), followed by production/harvesting at 157 assets (15%). Across the different regions, the dominant theme areas in the Yukon and Nunavut were both consumption (n=124, or 28% of all Yukon assets and n=81 assets, or 50% of al Nunavut assets); NWT and Nunatsiavut's main theme areas were both food skills, knowledge and culture (n=139, or 37% of all NWT assets and n=16, or 50% of all Nunatsiavut assets); whereas in Nunavik the most common assets were food system coordination, policy and networks (n=13, or 46% of all Nunavik assets).

The following section breaks down the composition of assets according to primary theme areas by Yukon community.

CHART 3B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – BEAVER CREEK)

Beaver Creek - Primary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste
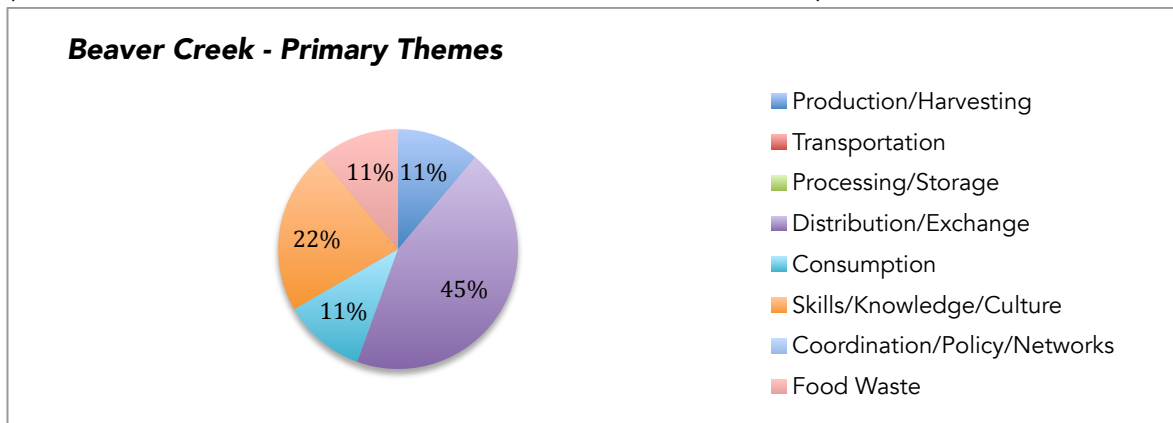
In Beaver Creek, 45% of assets (n=4) were classified as distribution/exchange, followed by 22% food skills/knowledge/culture (n=2) and 11% for production/harvesting (n=1), food waste (n=1), and consumption (n=1), respectively. Distribution/exchange assets included an RV park and motel with food available for purchase, 1202 Motor Inn with convenience store, which also offers home delivery and fresh produce box program from Save On Foods in Whitehorse, as well as a Meals on Wheels program. Related to food skills/knowledge/culture, there are traditional culture camps held each spring and late summer and a prenatal program in the community. The remaining assets included community meals for elders (consumption), B-Train food salvage (food waste), which salvage flipped B-Trains of food and distribute to the community, and a community greenhouse and garden (production/harvesting) led by the White River First Nation.

CHART 4B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – BURWASH LANDING AREA)

Burwash Landing Area - Primary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste
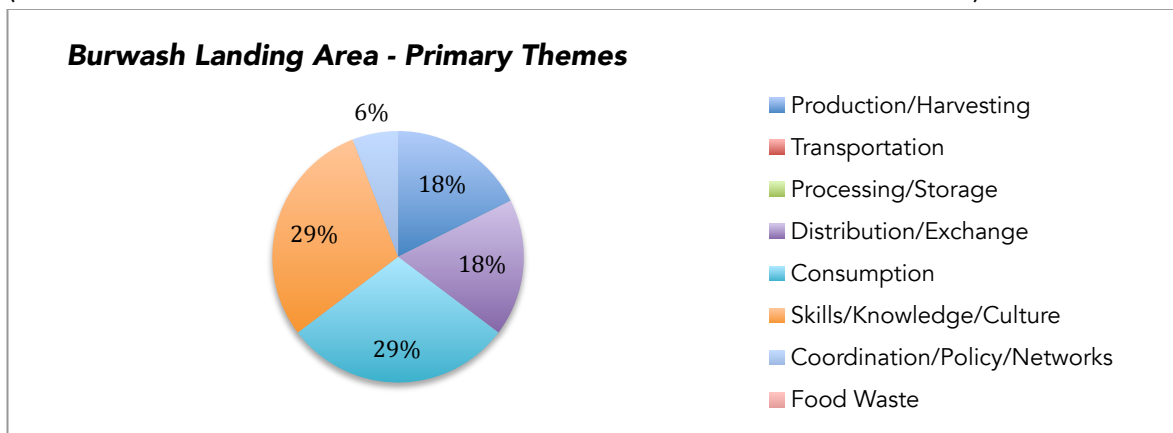
Consumption (n=5) and food skills/knowledge/culture (n=5) themes accounted for 29% of the assets captured in Burwash Landing area, respectively, followed by distribution/exchange (n=3) and production/harvesting (n=3) accounting for 18% each. Consumption activities included community dinners and lunches, a restaurant, and school/afterschool snack and meal programs. Food skills/knowledge/culture assets included various harvest camps, a fisheries research study

which merged traditional and scientific knowledge and a prenatal program. Related to distribution/exchange, Kluane First Nation explored traditional food sharing practices as part of a wider community-based research project called Nourishing Our Future which also included the development of a food security strategy (i.e. a food system coordination/policy/networks asset); there is also a community convenience store and café as well as a Meals on Wheels program. Production and harvest activities included bison hunting and harvesting activities and a Kluane First Nation-run greenhouse.

CHART 5B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – CARCROSS)

Carcross - Primary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste
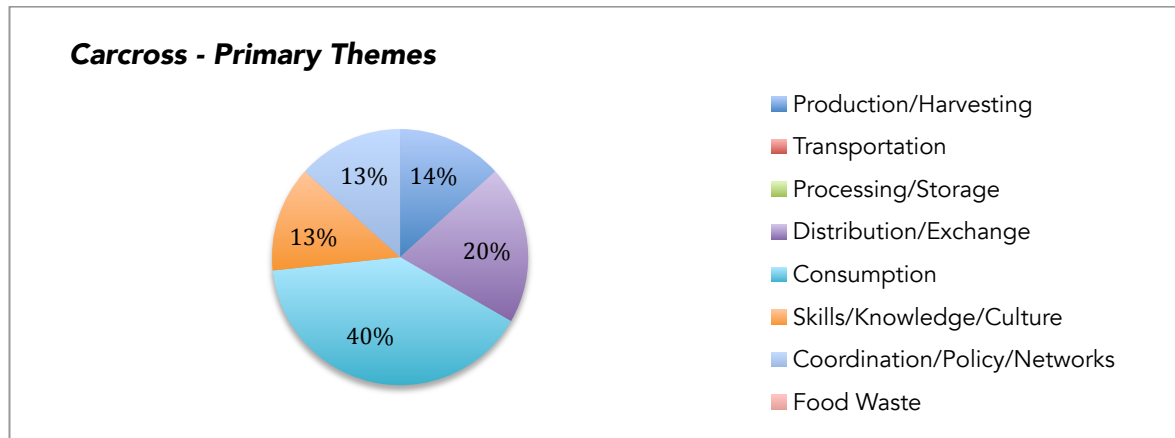
In Carcross the dominant theme area was consumption (n=6) accounted for 40% of all community assets. These assets were a couple restaurants and a café, health and wellness promotion through fruit baskets at the Carcross Tagish First Nation government office, Elder's breakfast and other youth and Elder programming, where people gather and eat together. Distribution/exchange (n=3) accounted for 20% of the community assets, which included farm produce and egg donations from the farm, a convenience store and produce market at the Carcross First Nation farm. Production/harvesting activities (which accounted for 14% of assets) included the farm and a research study exploring thawing permafrost's impact on agriculture. The community also offers the Canadian Prenatal Nutrition Program (CPNP) as well as food skills courses and classes through the Yukon College community campus as part of their food skills/knowledge/culture assets (n=2, or 13% of all community assets). Similarly, 13% of assets were related to food system coordination/policy/networks and included participation in the online farm products guide and a Yukon food systems study.

CHART 6B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME
(NORTHERN FOOD SYSTEMS INVENTORY – CARMACKS)

Carmacks - Primary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste

4%
22%
37%
7%
30%
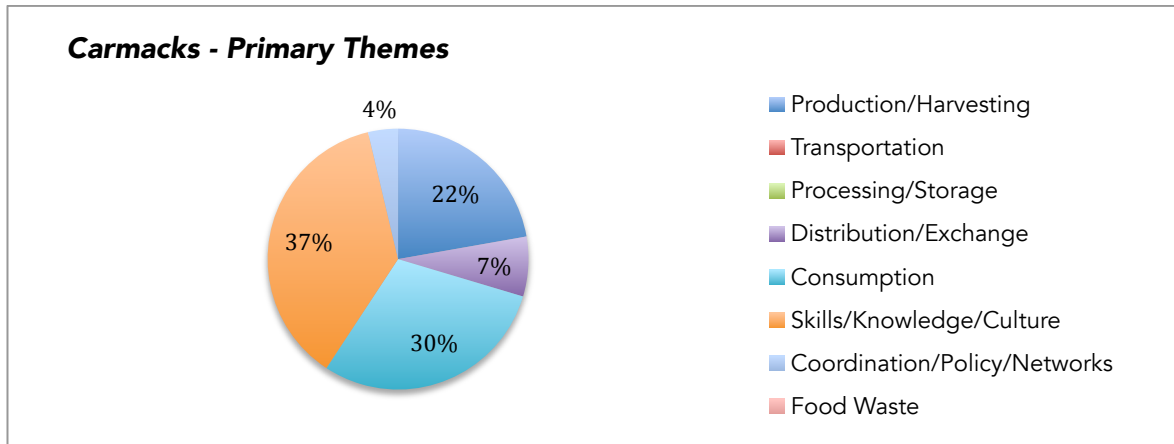
A total of 10 food skills/knowledge/culture assets (37%) were gathered in Carmacks. These included a number youth, family and community gatherings and camps, including a Northern Tutchone gathering (i.e. the May Gathering) which is hosted by the three Northern Tutchone communities (Mayo, Carmacks and Pelly Crossing), a prenatal program, cooking classes, and the occasional food safe and Master Gardening courses. Consumption accounted for 30% of the community assets and included community meals, a campground with a food stand, restaurant, meal and snack supplements at the daycare, Elders program and an afterschool food program providing healthy snacks. Production/harvesting was the next most dominant theme (n=8, or 22%), which included fishing and traditional harvesting activities, aunties and uncle retreats, medicinal plant research and corresponding action plan to sustain traditional medicines, a greenhouse and community farm, and summer local food market. Some of the remaining assets included a grocery and general store, Meals on Wheels program and participation in the Yukon Farm Products Guide (online).

CHART 7B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME
(NORTHERN FOOD SYSTEMS INVENTORY – DAWSON CITY)

Dawson City - Primary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste

2%
9%
22%
29%
32%
6%
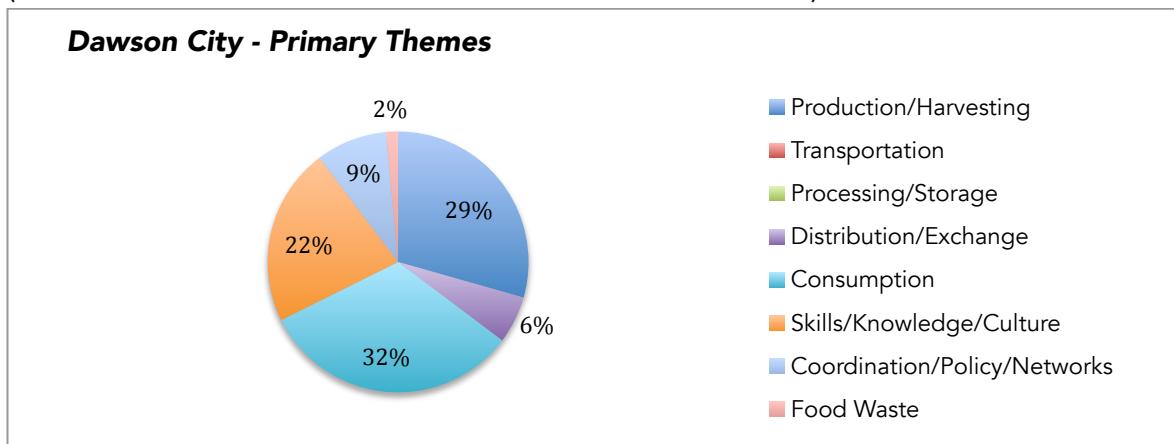
In Dawson City, 22 (32%) of the assets captured pertained to consumption, 20 (29%) assets were related to production/harvesting and 15 (22%) were food skills/knowledge/culture assets. The remaining assets were food system coordination/policy/networks (n=6), distribution/exchange (n=4), and food waste (n=1). Consumption assets mainly included restaurants, production/harvesting assets included a number of farms, research on thawing permafrost and agriculture and building food sustainability in the wake of climate change, and local chum fisherman. The community runs a number of different harvest and family camps, including first trapper camp, men's camp (and women's camp), farm camp, and first hunt camp, cooking club, and prenatal programs, and gardening/growing workshops, to name a few food skills/knowledge/culture assets.

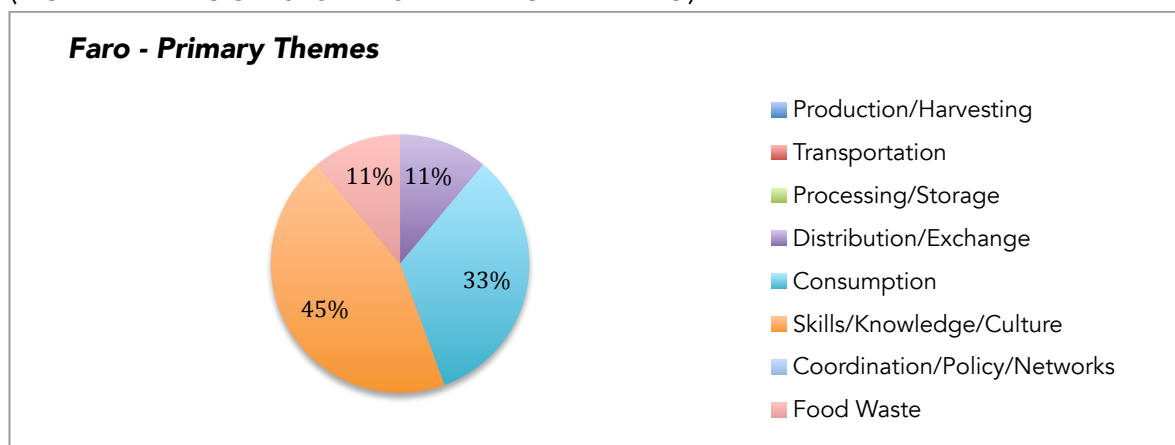**CHART 8B.** PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – FARO)

Faro - Primary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste

Faro's main themes were food skills/knowledge/culture (n=4, or 45% of all assets), consumption (n=3, or 33%), followed by one distribution/exchange (a general store) and one food waste asset (organics bins and landfill accepting organics), accounting for 11% each. The food skills/knowledge/culture assets included cooking skills and nutrition education held at the school, food preservation workshops and food skills courses led by Yukon College at the Faro community campus and Kids in the Kitchen program. The consumption activities included one restaurant and recreational programming which regularly serves food.

CHART 9B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – HAINES JUNCTION)

Haines Junction - Primary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste

In Haines Junction, 40% of captured assets were consumption related (n=10). These included a number of restaurants and food establishments in and around the community and an Elders lunch program. Food skills/knowledge/culture (n=7) was the second most predominant theme accounting for 28% of all community assets. These assets included cooking and food skills classes, family health supports, youth programs, and a greenhouse project. At 12%, production/harvesting assets were the next most common, which included documenting and mapping traditional medicines, the Spruce Cottage Farm and research on thawing permafrost's impacts on agriculture (which was a project spanning multiple communities). Distribution/exchange also accounted for 12% of all community assets.

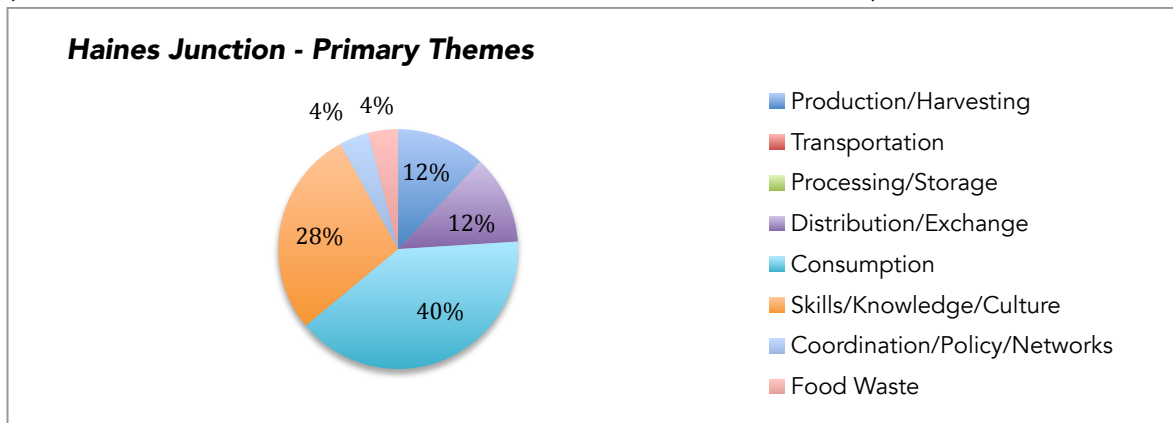**CHART 10B.** PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – KENO)

Keno - Primary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste

All assets in Keno were considered consumption-related. These were the Keno City Hotel and snack bar and the Sourdough Roadhouse Bar and Grill. No other formal or informal assets were captured in Keno.

CHART 11B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – MAYO)

Mayo - Primary Themes
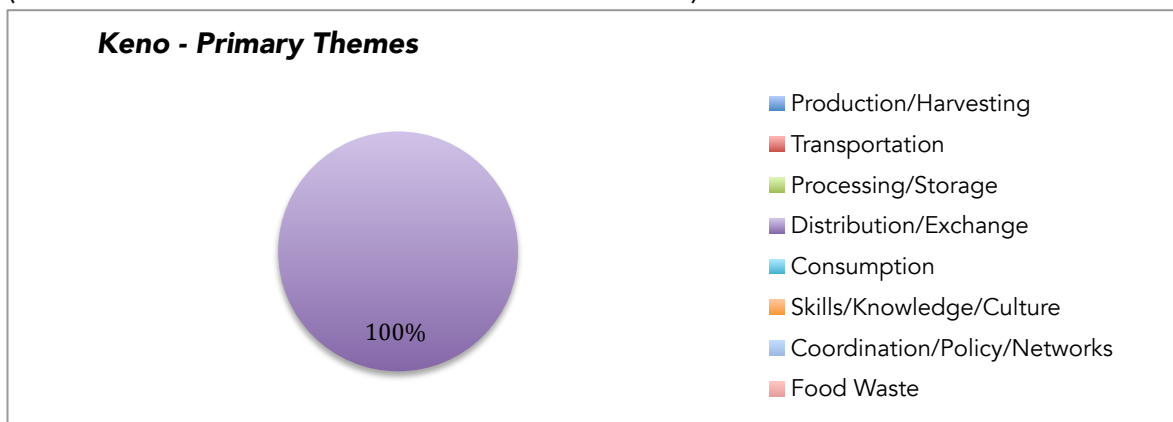

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste
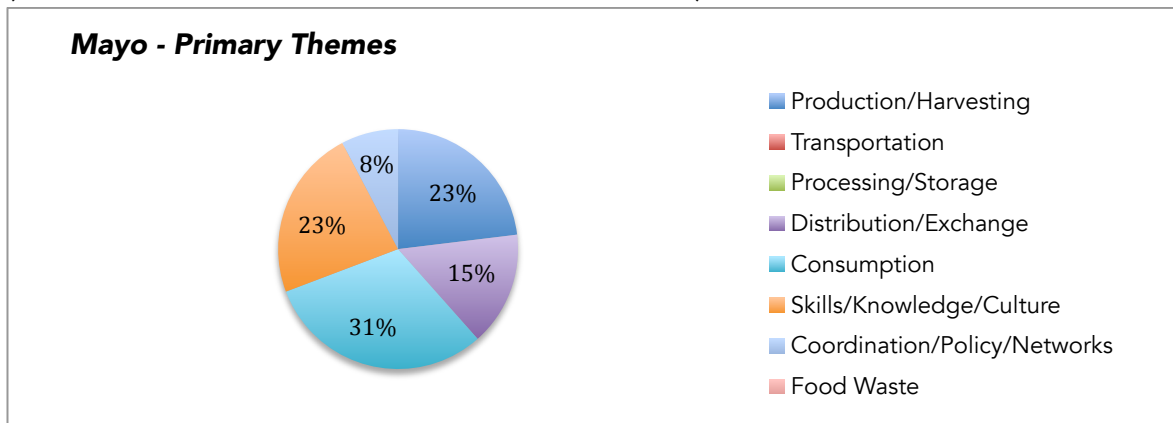
Mayo's main asset themes were consumption (n=4, or 31%), food skills/knowledge/culture (n=3, or 23%) and production/harvesting (n=3, or 23%). Consumption asset examples included community dinners and three food establishments including a pizzeria, café and lodge along the North Klondike Highway. Food skills/knowledge/culture assets included food skills courses such as food safe offered at the Yukon College community campus; the First Nation of Na-Cho Nyak Dun (NND) in Mayo also participates in the May Gathering as one of the three Northern Tutchone communities, and also runs a prenatal program. In terms of production/harvesting activities and assets, one farm was captured in the area, the community was also apart of the wider permafrost study exploring its thawing effects on agriculture, and NND has a crop box, hydroponic growing system. There were two distribution/exchange assets captured (which accounted for 15% of total assets collected), including a local community market and grocery store. The community also is listed on the Yukon Farm Products Guide, which is included on the map as a food system coordination/policy/networks theme asset (accounting for 8% of the community inventory).

CHART 12B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – OLD CROW)
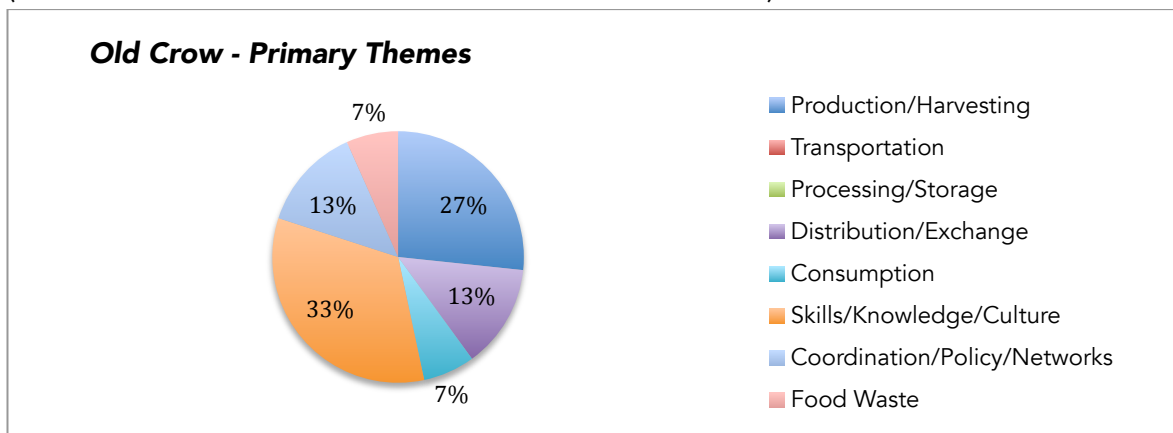
Old Crow - Primary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste

In Old Crow, 31% of assets had a primary theme of food skills/knowledge/culture (n=5); these included an addiction awareness week, which has a healthy eating component, spring culture camp, Kids in the Kitchen program, and food skills program and courses offered at the Yukon College community campus. Production/harvesting assets (n=4) accounted for 27% of the community inventory in Old Crow. These assets included a community garden and greenhouse, indoor gardening projects (i.e. tower gardens) and both a hunting and a salmon camp. The food system coordination/policy/networks assets (n=2) and distribution/exchange (n=2) each accounted for 12.5% *(*rounded in the pie chart above to nearest percentage)*. These activities included a documentary film project on keeping traditional knowledge as a means for survival in the wake of climate change and a community-based climate change adaptation planning project related to building community self-sufficiency. For consumption (n=1, or 7%), a hot lunch program is served at the school three times a week and contains donated traditional foods; as for food waste, which account for one asset in the community (7% of all assets), there is a gassifier facility that accepts organics. Given the remote, fly-in/fly-out nature of the community, all organic and non-organic waste is currently burned. While not a primary theme, the Old Crow Retail Cooperative donates food nearing the end of its shelf life to local growers as well as school and community dinners as a food waste reduction initiative.

CHART 13B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – PELLY CROSSING)
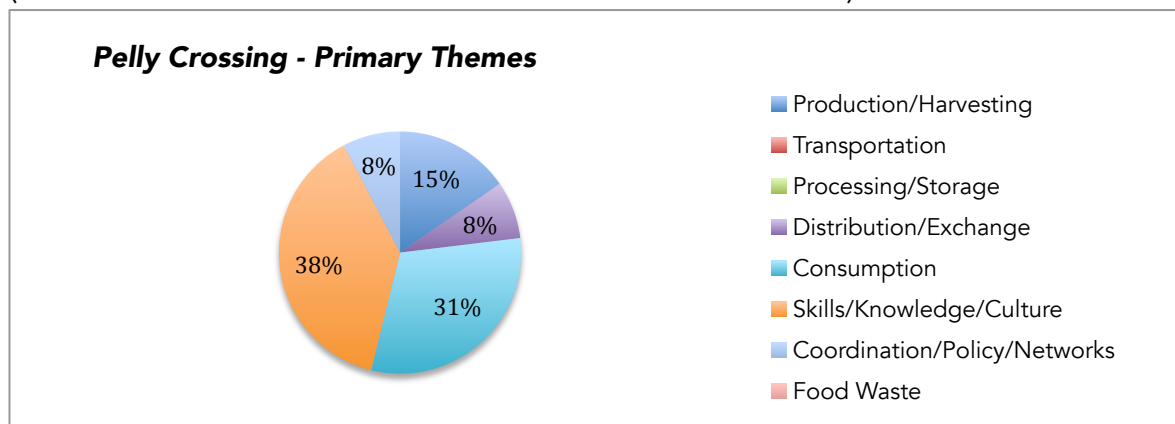
Of the most common assets captured in Pelly Crossing, 38% were considered food skills/knowledge/culture assets (n=5), 31% consumption (n=4) and 15% production/harvesting (n=2); there was one food system coordination/policy/networks asset and one distribution/exchange asset (both accounting for 8% of all assets). The food skills/knowledge/skills assets in the community include the May Gathering, hunting and traditional skills camps, a climate change adaptation project focused on maintaining traditional skills and knowledge for youth mental wellness, cooking classes as part of high school programming, and Yukon College's Master Gardener course offered on occasion at the community campus. Consumption assets include a breakfast program at Eliza Van Bibber school, a girl's night out program which brings youth together for socialization and food, and a fast food

stand; the Selkirk First Nation Health Department also provides a number of programs/services which relate to food access (i.e. consumption). As for distribution/exchange assets in the community, there is one community convenience store selling mostly pre-packaged food. The Selkirk First Nation runs a community garden project, which includes two greenhouses and there is also one ranch in the area that sells market vegetables in Pelly and surrounding communities.
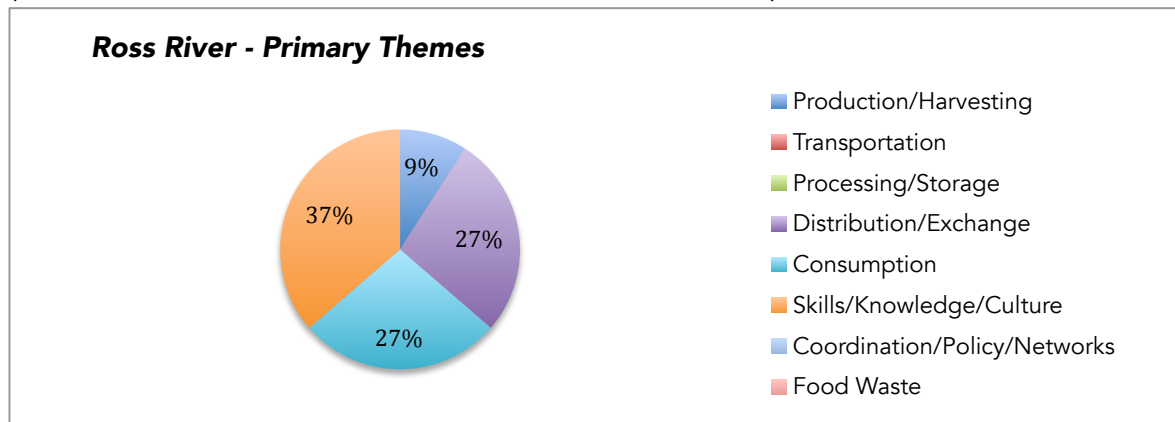
CHART 14B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – ROSS RIVER)

In Ross River, food skills/knowledge/culture-themed (n=4) assets accounted for 37% of all community assets, followed by both consumption (n=3) and distribution/exchange (n=3) which both accounted for 27%. The food skills/knowledge/culture assets included harvest camps, a diabetes prevention program where participants enjoy a lunch together and learn about healthy eating, Yukon College food skills courses such as food safe, and food education through the school and afterschool programming (reading labels, healthy foods, using local foods, cooking, food safe, and meal planning). The Ross River Dena Council regularly hosts community meals (i.e. consumption themed), the school runs a snack and meal program at the school and the Hope Centre provides a space for after school programming where healthy snacks are provided. Distribution/exchange assets in the community include a general store, Meals on Wheels Program and a traditional food donation program whereby hunters and community harvesters can donate traditional foods to the Margaret Thompson Centre's Wellness Department who distributes them to single mothers, elders and those in need. Ross River also has a community garden and greenhouse (i.e. production/harvesting), which acts as a learning space for the community to learn about growing healthy food; fresh produce is also donated to community meals and shared with community throughout the summer.

CHART 15B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – TAGISH)
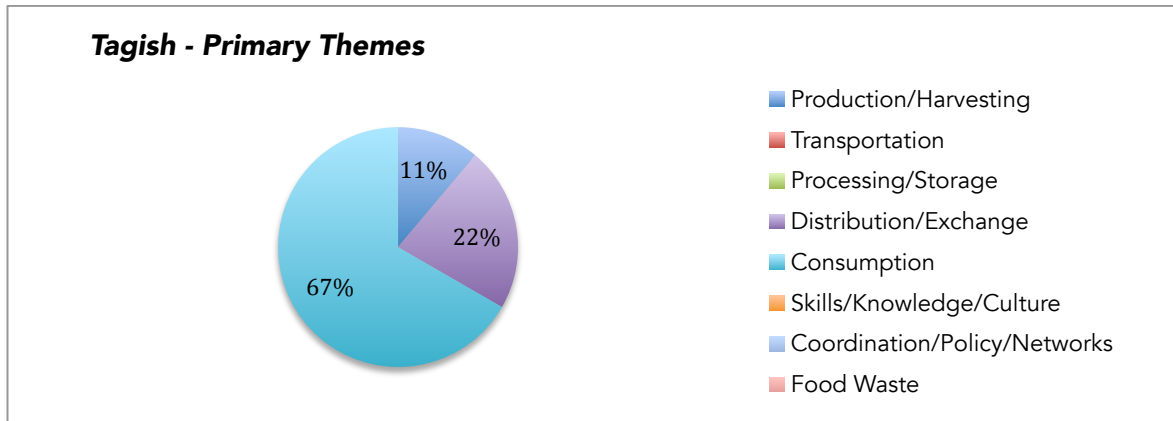
Most of the community assets captured in Tagish pertained to the consumption theme (n=6, or 67% of all assets). These included pancake breakfasts hosted at the Tagish Community Centre as well as a number of community restaurants (n=5). Distribution/exchange-related assets include a convenience store and community market whose goal it is to promote locally crafted and produced products, increase local food security and facilitate educational opportunities through promotion of local agriculture. The research project that explored the effects of thawing permafrost on agriculture also took place in the southern lakes region, and therefore was captured as a production asset for the community.

CHART 16B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – TESLIN)

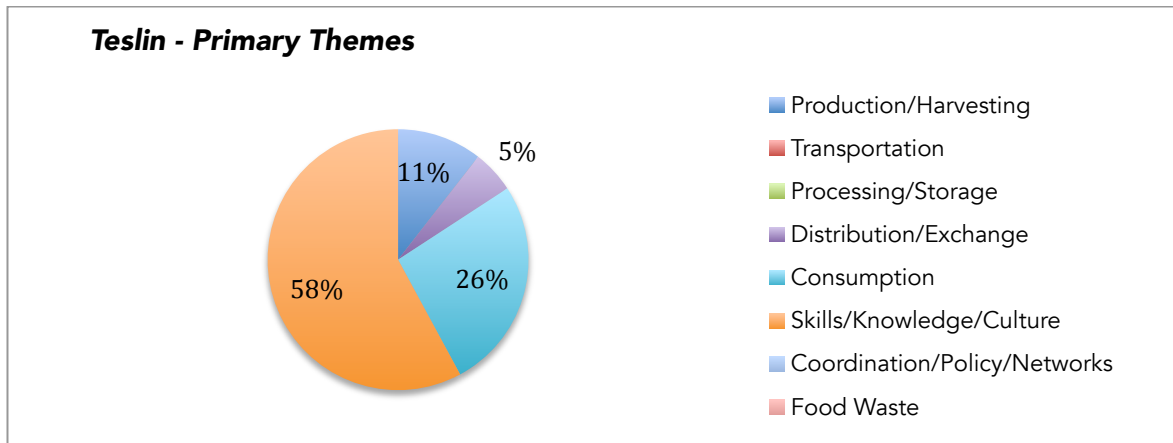In Teslin, the top primary themes were food skills/knowledge/culture (n=11, or 58% of all community assets) and consumption (n=5, or 26%). The remaining assets were production/harvesting (n=2, or 11%) and distribution/exchange (n=1, or 5%). Food skills/knowledge/culture assets included a number of harvest and culture camps throughout the year, traditional processing and preservation workshops with kids, utilizing salmon from Taku River Tlingit First Nation in Northern BC, food skills courses and classes (i.e. food safe) offered

through the Yukon College's community campus, Canadian Prenatal Nutrition Program, Kids in the Kitchen, and the Ha Kus Teyea Celebration, which brings together inland and coastal Tlingit people together to celebrate culture and share traditional foods. Consumption activities include community luncheons and meals, school breakfast, lunch and snack program at the school and two restaurants. Teslin has a community greenhouse and garden and since Teslin is part of the southern lakes region included in the thawing permafrost/agriculture study, this asset was also posted on the community inventory. The Teslin Tlingit Council-led Meals on Wheels Program was captured as the sole distribution/exchange asset.
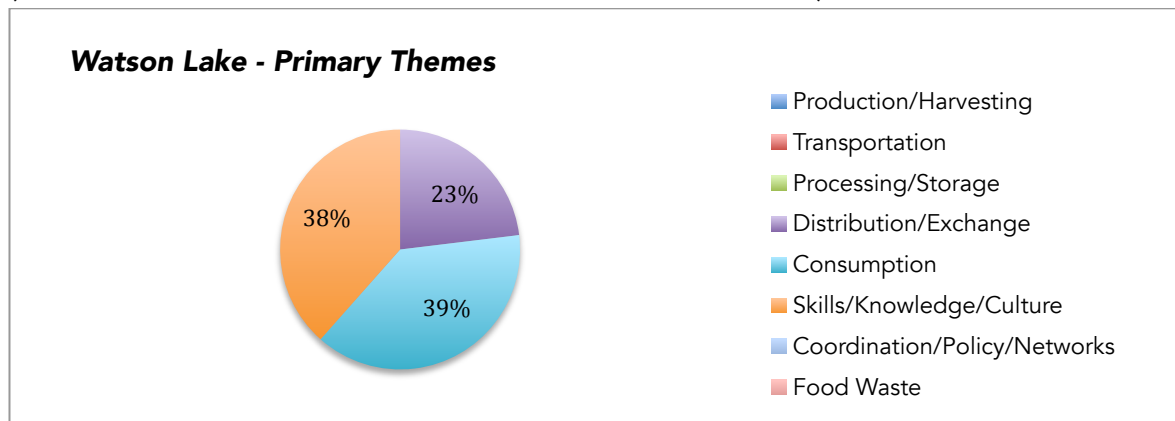
CHART 17B. PERCENTAGE OF ASSETS BY COMMUNITY ACCORDING TO PRIMARY THEME (NORTHERN FOOD SYSTEMS INVENTORY – WATSON LAKE)

Watson Lake - Primary Themes

- Production/Harvesting
- Transportation
- Processing/Storage
- Distribution/Exchange
- Consumption
- Skills/Knowledge/Culture
- Coordination/Policy/Networks
- Food Waste

The community of Watson Lake's main themes included consumption and food skills/knowledge/culture assets accounting for 38.5% each (rounded up in the above pie chart). These were a mix of entities and programs such as the Watson Lake Food Bank and Society, one restaurant, school food programs (breakfast, snack and lunches) served at the elementary and secondary schools, and a Girl's Night Out program (all consumption assets); for food skills/knowledge/culture assets, the community runs a Go Girls program which includes balanced eating education, Canadian Prenatal Nutrition Program, food skills courses and classes offered at Yukon College's community campus in Watson Lake, and the Kids in the Kitchen Program. Various other programming is offered out of the Family Centre, including a community kitchen and various mother and parental supports related to infant and young child health and nutrition. The three distribution assets (accounting for 23%) include two convenience stores and one supermarket. No other asset classes were coded as primary themes.
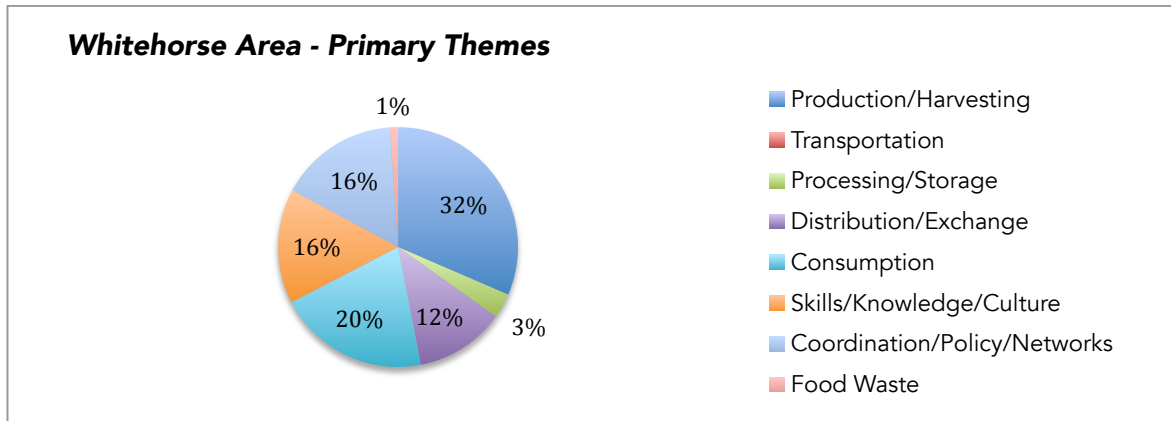
In the Whitehorse Area, 181 total assets were captured in the community inventory. These were a mix of production/harvesting (n=57, or 32%), consumption (n=37, or 20%), food skills/knowledge/culture (n=28, or 15.5% *rounded up in above pie chart*), food system coordination/policy/networks (n=29, or 16%), and distribution/exchange (n=22, or 12%). Processing/storage assets (n=6) accounted for 3% of all community assets while only 1% of assets had food waste as a primary theme (n=2). A total of 34 farms and 16 gardens (including community gardens) were captured as part of production/harvesting; remaining production/harvesting assets included seed library, research projects involving agriculture, fisheries, and a school bison hunt, where grade 7 students at Elijah Smith Elementary spend a week on the land learning to hunt bison and set fish nets; the harvested food is then processed and used to prepare a community meal at the school. Some example consumption-themed assets included Bannock and Bone Broth programs at the Whitehorse General Hospital, a number of non-governmental agencies serving free food to vulnerable populations, Canadian Prenatal Nutrition Program, school food programming, community luncheons and meals, as well as 75 restaurants within Whitehorse city limits. Distribution/exchange assets included a local summer gardener market, Farmers Market, produce club, food bank, a number of groceries and supermarkets, and Meals on Wheels Programs.

Food skills/knowledge/culture examples include gardening, cooking and food skills courses, workshops and classes, research on strengthening the local food system, culture and youth camps, and entities such as the Ledge and Bridge Café, which trains clients of Challenge who live with disabilities to prepare food and help run a catering business. Many entities, funding programs, research projects, policies, networks, and services were captured under the food system coordination/policy/networks theme in the Whitehorse Area. Some examples include guides on where to locate free food in Whitehorse, gardening, farming and food networks and groups, non-governmental organizations who work closely within the food system (i.e. Yukon Food for Learning, Yukon Anti-Poverty Coalition, Yukon Agriculture Branch, and Potluck Food Coop to name a few), and local policies and strategies which pertain to agriculture and local

food. Processing/storage entities included four butcher shops, a mobile abattoir and farm gate sales of raw honey. In terms of food waste there is a compost facility in Whitehorse and modified transfer station at Mount Lorne, which have organics programs.

Table 6B provides an overview of the assets based on category to provide an overview of the types of assets and activities going on across the North related to food systems.

TABLE 6B. NUMBER OF ASSETS ACCORDING TO REGION AND CATEGORY (NORTHERN FOOD SYSTEMS – ALL REGIONS)

Category	Region					
	Yukon	NWT	Nunavut	Nunavik	Nunatsiavut	Total
Program	112	129	9	-	-	250
Entities	208	91	100	12	23	434
Funding	5	74	9	1	-	89
Networks	13	5	28	-	-	46
Services	24	-	1	-	1	26
Research	22	10	13	15	8	68
Event/Campaign	58	67	-	-	-	125
Policy/Strategy	7	1	2	-	-	10
Total	449	377	162	28	32	1048

Entities were the most common category of asset found in the inventory (n=434, or 41% of all assets), followed by programs (n=250, or 24%), then event/campaigns (n=125, or 12%). Entities included farms, gardens/greenhouses, organizations and governments who are active in the food system. Programs included educational and skills building programs such as prenatal programming, healthy eating, cooking and other food skills development. Events and campaigns captured harvest and hunting camps, nutritional campaigns and other one-off events that are not part of wider community programs. Broken down according to region, entities were most prevalent categories amongst regional assets in the Yukon, Nunavut and Nunatsiavut. Research was the most common category in Nunavik whereas programs were most common amongst NWT assets.

In exploring structural aspects of each asset (i.e. leadership and governance structure), the following table shows more on who is involved. The categorizations are slightly different in the food systems inventory are slightly different than those in the climate change inventory. This is because the options were chosen to be in alignment with previous inventory work.

TABLE 7B. NUMBER OF ASSETS ACCORDING TO REGION AND STRUCTURE (NORTHERN FOOD SYSTEMS – ALL REGIONS)

Structure	Region					
	Yukon	NWT	Nunavut	Nunavik	Nunatsiavut	Total
Government-led	424	178	228	15	2	1
Business (sole proprietor, partnership, cooperative, corporation)	311	154	58	71	10	18
Local Research Organization	18	17	1	-	-	-
Outside Research Organization	11	1	1	5	3	1
Community/non-governmental organization	231	85	77	44	13	12
Networks	8	7	1	-	-	-
Informal/Ad-hoc	35	6	4	25	-	-
Other	10	1 *(i.e. Social Enterprise)*	7 *(i.e. Funding Collaborative)*	2 *(i.e. Social Enterprise)*	-	-
Total	1048	449	377	162	28	32

Across the entire northern inventory, 41% of assets were government-led (n=424). The food systems map did not break down government based on sectors but common sectors were First Nations and territorial governments as well as some federal assets. The second most common structure was business-led (n=311), which accounted for 30% of all northern asset structures. Community or non-governmental organization-led assets (n=231) were the third most common at 22%. In NWT and Yukon, the breakdown of structures paralleled the wider northern assets (i.e. being most commonly government-led, with 40% in Yukon and 60% in NWT); while the asset structures in Nunavut (n=71, 44%) and Nunatsiavut (n=18, 56%) were more commonly business-led; versus in Nunavik, where there was a higher percentage of community/NGO-led assets (n=13, 46%).

A key component of the inventory work is to explore factors that make assets successful and to start to identify some common features and possible indicators to explore promising practices more fully. During the community survey process, participants were asked to describe some successes of their initiative, service or entity. A total of 152 assets in the Yukon food systems inventory described some sort of success factors. These were coded and analyzed and then the top five were summarized in the following graph.

GRAPH 1B. TOP 5 STRENGTHS IN DECENDING FREQUENCY (NORTHERN FOOD SYSTEMS INVENTORY – YUKON)
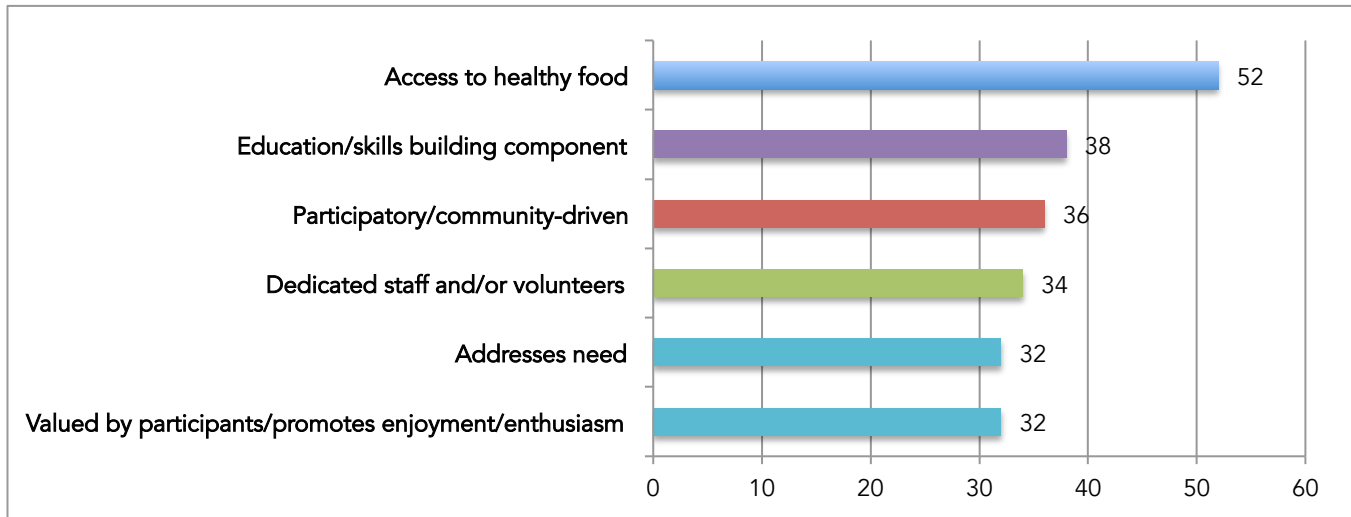
The top most common success factor was that the initiative, service or entity provided access to healthy food (n=52); a total of 14 entries out of the inventory stated that the asset provided local food, while 19 entries stated that there was access to traditional foods in particular. The second most common success factor was that the asset provided educational or skills building opportunities (n=38) that were deemed valuable. For example, common education and skills building components that were taught included nutrition, healthy eating, cooking, and traditional harvesting skills. The third most common success factor was that communities are involved/guiding and supporting the activities or programming (i.e. participatory). The fourth most common asset success factor was that there were dedicated staff and/or volunteers (n=34). Similarly, two additional asset strengths were identified that staff were trusted and consistent. There were two fifth most common asset strengths; the first was that participants valued the initiative, service or entity or that participants received enjoyment; the second was that the initiative, service or entity addressed a need in the community (n=32). Related to this strength, 10 assets were found to reduce barriers or fill a gap in particular. Common gaps and barriers were transportation, limited alternative options available and childcare needs. Another 10 assets targeted vulnerable population in particular, which is related to addressing a need in the community. Vulnerable populations included youth at risk (of homelessness and coming into contact with the law), seniors (especially least mobile seniors), those living with disabilities, and people living on low-income.

The following list includes some other success factors worth mentioning.
- Participants are interested/promotes enjoyment and enthusiasm in participants (n=32)
- Health promotion (n=29)
- Builds community – brings people together (n=19)
- Accessible to all/whole-of-community focused (n=13)
- Culturally appropriate/historical connections/community relevant (n=9)
- Provides opportunity for socialization (n=10)

- Consistent/stable funding (n=9)
- Increased access to growing (n=9)
- Sharing food (n=8) and giving back to community through donated local or traditional foods (n=4)

GRAPH 2B. TOP 5 CHALLENGES IN DECENDING FREQUENCY (NORTHERN FOOD SYSTEMS INVENTORY – YUKON)
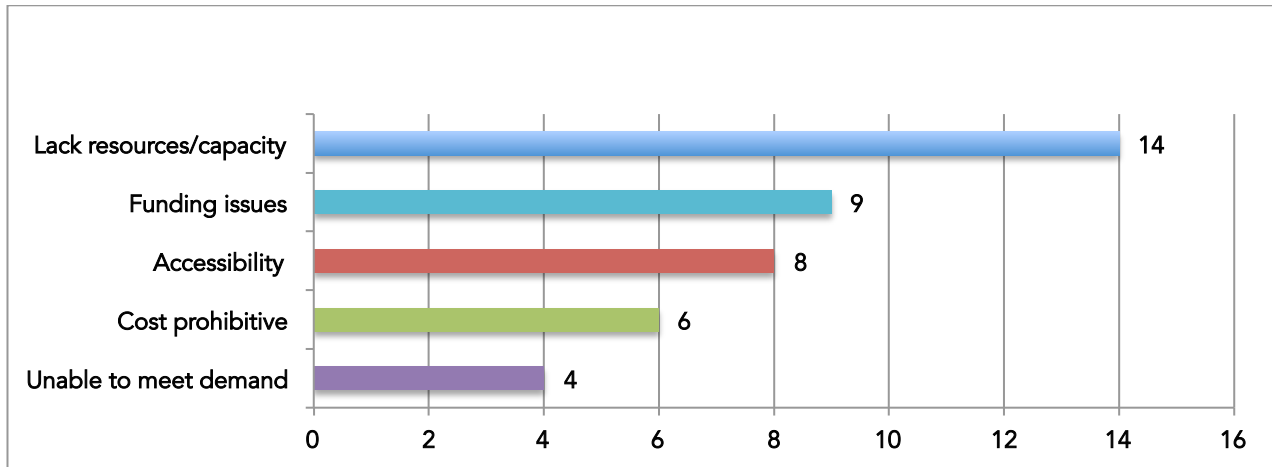
A total of 41 challenges were stated in the inventory survey (out of 449 assets); the question of challenges was not mandatory as part of the survey and some participants may not have been comfortable expressing challenges due to the public nature of the inventory map, thus there is a large gap in information pertaining to this attribute. The top five challenges among those that were stated were a lack of resources (non-financial) and capacity (n=14); funding issues (n=9) (i.e. limited or lack of enough, stable funding); accessibility issues (n=8) (i.e. due to poor, isolated location, reliance on southern supply, lack of transportation and technical assistance options, and arduous processes or restrictive policies being prohibitive); cost prohibitive (n=6) (i.e. high labour, operational or transportation costs, which impacted ability to remain competitive in a small, remote market); and an inability to meet current demand (n=4). Some other challenges included a need for more community engagement (n=3) (i.e. including lack of funding to do engagement), poor quality (i.e. produce) (n=3), unpredictability/unreliability (n=3) (i.e. mostly due to weather challenges and capacity issues), and theft and vandalism (n=3).

In analyzing the common challenges and successes, it appears that challenges were mainly external and successes were determined more internally. For example, a number of the main successes are attributable to the content of the initiative, service or entity (i.e. it's valued, it's needed, it has an educational component, it provides access to healthy food) or it is related to the way in which it is developed and/or delivered (i.e. it is participatory or has dedicated staff and volunteers). Contrary to this, the challenges that were captured in the inventory seem to relate less to content and structure and more to external context issues such as lack of funding, resources and capacity, accessibility (for example being in a poor location), inability to meet current demand, or high costs associated with delivery of the initiative/upkeep of the asset. Thus when designing successful interventions, it is important to look at the greater structural, systems-

level issues that impact individual activities/entities in addition to specific content details of the intervention.

Crosscutting Initiatives/Services/Entities

As climate change and northern food security are so intertwined, there are a number of assets that were captured pertaining to both inventories. For example, a research study exploring climate change's effect on traditional food systems is crosscutting; it applies to climate change monitoring and adaptation as well as traditional food systems. For the sake of clarity and to avoid duplication of records, crosscutting assets were individually assessed and attributed to the inventory map that most related to the activities therein. Both climate change and food systems are complex and interrelated, thus the intention to separate the mapping of assets between the two issues is meant to provide an easily distinguished view of the many activities going on across the territory in order to better understand our complex food system, adapt to climate change's impacts on food security and promote asset development based on current strengths identified.

Strengths

The key strengths of the asset inventories are that they are broad encompassing, built off of existing knowledge bases, including knowledge of youth as well as practitioners, and emphasize strengths and challenges, while addressing a need for knowledge mobilization, and emphasizing community-level assets, both formal and informal. In developing the survey and collecting the inventory data, an emphasis was placed on filling gaps in current knowledge. By attempting to gather a wide scope of all asset types that relate to climate change and food systems and consolidating them in one place as part of two online tools, this allows for greater mobilization of knowledge to communities, the public, practitioners, and policy makers in order to contribute to collective action. As outlined in the literature scoping review and vocalized by partners in the Yukon and beyond, there is a specified need for building a more comprehensive, consolidated picture of what is going on across communities. This is why the mapping project placed a particular emphasis on collecting community-level information, seeking out examples of community-driven projects and including informal/ad-hoc activities or assets that are meeting the needs of communities.

The approach taken throughout this project so far has been strength-based, where there is interest in finding out what is working so that communities can build off of it, utilizing current resources, personnel and other assets in the community, while also learning about other opportunities that may be helpful. During outreach activities and knowledge dissemination so far surrounding the mapping tools, there has been a lot of positive feedback about the potential utility of these maps. The future phases of this project are meant to further this promotion so that communities know about the maps and start using them; through this iterative outreach, additional assets that were missed in the original data collection will be collected so that the map remains relevant and reflective of current realities. The online nature of the two inventory maps means that they are 'living tools', which can easily be updated and managed.

Limitations

Given the broad nature of the inventories, where assets included everything from research projects, to entities, to policies and services, as well as current and past initiatives, it made the analysis process challenging. Particularly, different asset categories and structures should be evaluated separately in order to accurately pull out strengths. Thus, the analysis focused on pulling out more general themes of all success factors, which were stated in the inventory rather than doing a comparative analysis across categories. There is also a lack of data in the climate change inventory to identify enough common themes, thus only the food system inventory was analyzed for common strengths.

Another limitation is that the majority of the outreach to validate and build off of existing inventories was limited to the Yukon, even though the study region for the northern food systems inventory was extended to the three territories and Inuit self-governing regions. Only limited validation in terms of which assets were current could be performed. This is seen in the fact that the current status of a significant number of assets in the study regions outside of Yukon were deemed unknown. Thus, in the food systems map, it appears that Yukon has significantly more food systems assets in comparison to other regions. As each region was largely built off of existing information shared with the study team and its partners and only internet searching was completed to validate non-Yukon assets, performing any real comparisons across regions should be cautioned against. The intention of the map is not to compare which territory or region has more assets but to draw attention to areas where our current state of knowledge is and develop further partnerships in order to build a more comprehensive tool to share information and learn from what others are doing.

The map is also not a complete reflection of all that is and has been going on across the Yukon and the North related to climate change and food systems (past and present); it is not 100% exhaustive. However, it is still useful as a collection of diverse assets for the intention of mobilizing knowledge across the North.

Recommendations for Further Research

Due to the limitations in scope of this asset inventory-mapping project, there are a number of possible future research areas to be recommended. Within the existing scope and state of the inventory, it would be interesting to further compare attributes according to unique assets, i.e. more community-level assets. A number of tools, programs, services, policies, and research studies were applicable across each territory, nationally, pan-northerly, and internationally, however were based in communities. As there is an identified need and a call from northerners to support more northern-driven and developed initiatives, services, entities (Butler Walker, Kassi, Van Bibber, Friendship, Pratt, Alatini, Johnson, Alfred, Alfred, Kluane First Nation Lands, Resources and Heritage Department, and Kluane First Nation Youth and Elders,

2017), it would be particularly interesting to understand the various 'special ingredients' for community-level assets in particular. Another attribute worth further investigation is target groups, as this might be useful for further characterizing adaptation and drawing more in-depth policy recommendations and conclusions around current assets. It is recommended that an online resource database or listing be created, which would include resources such as funding, services and research specifically which might not be represented on the map due to the fact that the assets were deemed outside of the study scope.

In terms of further research and work, it would be beneficial to explore gaps and emphasize program development in theme areas such as food waste assets and transportation, which were found to be the least prevalent in the inventory. Also, conducting more outreach and validation on the northern assets outside of Yukon would help to ascertain which of the existing entries are current and which are not. As the North is so broad and diverse, it would also be ideal for each region to lead the exploration, outreach and promotion of the northern food system inventory for their region in specific, thus to strengthen internal capacity and knowledge mobilization within and between territories and regions. The 'North', means different things to different people, depending on where one is situated. For the purposes of scoping this project, the North pertains to the three territories and Inuit self-governing regions of Nunatsiavut and Nunavik. However, there are many areas of the provincial North and Alaska where there are very similar challenges with climate change and food security and interesting things to learn from what is going on there.

The map is a living tool and is only as good as it is kept up to date. Exploring partnership with other organizations doing mapping to identify some shared measures and processes will help to strengthen the foundation, utility and relevancy of the map. Exploring structure and partnership attributes as part of social network analysis would also be of value. Partnerships and greater collaboration would also allow for broader sharing and dissemination of the information and conclusions evolving out of the work.

Conclusion

Mapping food systems and climate change assets is a way to build a more comprehensive picture of the many diverse activities and assets and start to identify strengths in the Yukon and across the North from which to build upon. It also becomes a repository of the "who, what and when" around these assets, so to connect the public, practitioners and policy makers to opportunities, knowledge and resources in communities. The intended audience for the map is community. The map is a tool for connection first and foremost; connecting people to information; connecting communities to each other and to organizations; connecting policy makers and funding agencies to promising programs; and connecting community-level practitioners and programmers to resources. It should be stated however, that it is communities who need to define their needs. A map can identify our current gaps in knowledge but it cannot

define needs in and of itself. This must be community-driven. While performing a gap analysis and making policy recommendations is not the intent of the asset mapping project, it is useful to have a high level understanding of where work is being done and what more may be needed in addition to identifying common success factors more generally; thus, this report acts as a summary of key findings and it is the team's hope that more research can be done to further explore the breadth of data compiled in these inventories.

As the map is a foundation, it should also be a platform from which to launch other knowledge mobilization products and tools, which build off of the map to communicate knowledge, help to identify resources, engage with community around their needs, and highlight community stories to inspire action. During the second phase of this project, further outreach to communities is planned in order to fulfill these knowledge mobilization needs and start to identify where the priorities are for future climate change adaptation and food system development.

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Appendices

Appendix A. Community Survey – Northern Food Systems Inventory

Link to online survey: https://arcg.is/0vWmOH

BACKGROUND:
- This survey is used to collect information on food security and food systems initiatives, services and entities in the Yukon, NWT, Nunavut, Nunatsiavut, and Nunavik.

- The answers to the survey will be used to generate an online asset inventory mapping tool which will inform people about the many activities going on and the organizations/industries involved whose work relates to our food.

- The information from the survey will be developed into a dynamic map that looks like the following Map: https://www.aicbr.ca/healthy-living-inventory/ (The map will go live with the map by December 2018.)

WHY BUILD A MAP?
Developing a clearer picture of our northern food system will help the general public, programmers, organizations, governments/policy makers, and businesses, among others, share information on food security and food systems activities, but also strengthen networks/partnerships and identify strengths and opportunities for further action. The map is part of an initiative by the Arctic Institute of Community-Based Research in collaboration with Food Secure Canada: www.aicbr.ca | foodsecurecanada.org
For more information on this initiative, please email, info@aicbr.ca

STEPS TO DO THE SURVEY:
1. List your **food system** initiative/service/entity (*see THEME definitions below*).

2. Answer the applicable questions about the initiative/program/entity.

3. Please enter all initiatives/programs/entities you are aware of, by filling in the survey for each separately.

4. Provide a contact person and contact information, if applicable.

THEMES - We are categorizing food system initiatives in the following themes:
1. Production and Harvesting (including community-level/self-provisioning and commercial activities/services/entities, traditional hunting/fishing/gathering/trapping activities, gardening/greenhouse growing, agricultural production/farming, non-agricultural food production, fisheries, etc.)

2. Transportation (including air, marine and road transportation)

3. Processing and Storage (including value-added, traditional processing methods, storage, and preserving)

4. Distribution and Exchange (including retail markets, farmers' markets, emergency food/food banks, institutional purchasing, direct consumer-producer relationships, and non-market avenues (i.e. food sharing), and regional networks, etc.)

5. Consumption (including preparation, access, quality, food safety, school-food programs, etc.)

6. Food Skills, Knowledge and Culture (including Indigenous food systems knowledge and food provisioning skills, research and education related to food, nutrition & agriculture, harvest camps, workshops, food ceremony, etc.)

7. Food System Coordination, Policy and Networks (including producer/hunting & trapping associations, hunter support programs, regional distribution hubs, capacity-building/information sharing networks, entities involved in food sovereignty, food justice & food security, community and regional food strategies & policies, funding programs, and decision-making bodies, etc.)

8. Food Waste (including composting, zero waste programs/campaigns, food rescue programs, etc.)

---COMMUNITY SURVEY--

1. **I have read the information above and consent to participating in this survey. I understand that I do not need to share any information that I do not feel comfortable or confident with and can withdraw my participation at any time. *Required**
   ☐ Yes
   ☐ No

2. **I agree to share the information I provide. I understand that all information I choose to share is to be included in an online, public inventory mapping tool. I understand that I can opt out of answering any of the following questions that I do not wish to be included on the online map**. ***Required***
   ☐ Yes
   ☐ No

3. **What is the name of the initiative/service/entity? *Required**

4. **Please enter a short description of the initiative/service/entity**

5. **Who offers the initiative/service/entity? (If applicable)**

6. **Please identify the community/ies that the initiative/service/entity applies to.*Required**. *Please write the community name (if the initiative/program/entity applies to multiple communities, please list all community names, separated by comma(s).*

7. **Where is the initiative/service/entity located in the community?.** *Please write down the address of the main location of the study (this is required to set the location point on the map)*

8. **Focus: Which of the following themes best describes the focus of the initiative/service/entity?** *Please* choose ONLY ONE primary theme that best describes your initiative/program/entity (if secondary themes apply, please tick them off in question 6.).
   ☐ Production and Harvesting
   ☐ Transportation
   ☐ Processing and Storage
   ☐ Distribution and Exchange
   ☐ Consumption
   ☐ Food Skills, Knowledge and Culture
   ☐ Food System Coordination, Policy and Networks
   ☐ Food Waste

9. **If applicable, identify a second focus area from the list below**

- ☐ Production/Harvesting
- ☐ Transportation
- ☐ Processing
- ☐ Distribution/Exchange
- ☐ Consumption
- ☐ Food Skills/Knowledge/Culture
- ☐ Coordination/Policy/Networks
- ☐ Food Waste

10. **Type of initiative: Which of the following best describes the structure of your initiative/service/entity**
- ☐ Informal/Ad-hoc Community initiative
- ☐ Community/Non-governmental Organization initiative
- ☐ Government initiative or program
- ☐ Business (sole proprietor, partnership, cooperative)
- ☐ Research Institute
- ☐ Network
- ☐ Other (please explain)

11. **Is the initiative/service/entity run by volunteers?**
- ☐ Yes
- ☐ No
- ☐ Unknown

12. **Is there a cost to participate in the initiative/service/entity? (if applicable)**
- ☐ Yes
- ☐ No
- ☐ Unknown

13. **Is there a specific target population? (Please select only the main target group(s) that this initiative/service/entity applies to.**
- ☐ Whole community/general public
- ☐ Pre-school children (aged 1-4)
- ☐ Children (aged 5-12)
- ☐ Youth (aged 13-19)
- ☐ Adults
- ☐ Elders/Seniors
- ☐ Families
- ☐ Pre/Postnatal
- ☐ Women/Girls only
- ☐ Men only
- ☐ Low income individuals
- ☐ People living with disabilities
- ☐ Other (Please specify)

14. **Which time frame does the initiative/service/entity take place?**
- ☐ Weekdays (days)
- ☐ Weekdays (evenings)
- ☐ Weekends
- ☐ Holidays
- ☐ Other (please specify)

15. **Which season does the initiative/service/entity take place?**
   ☐ Year-round
   ☐ Summer
   ☐ Fall
   ☐ Spring
   ☐ Winter
   ☐ School-year

16. **Who funds the initiative/service/entity? (If applicable)**

17. **Who are the key partners that the host of the initiative/service/entity collaborates with? (If applicable)?** Please list partners, separated by comma

18. **When did the initiative/service/entity start?**

19. **When will the initiative/service/entity end? (If applicable)** If there is an end-date, please specify; if ongoing, state 'Ongoing'.

20. **If the initiative/service/entity is ending, can you share why?**

21. **What do you see as key successes about this initiative/service/entity?**

22. **In your experience what have been the main challenges of establishing and sustaining this initiative/service/entity?**

23. **Who can be listed on the inventory map as a contact for more information?** Please specify (First Name, Last Name, Organization/Affiliation) separated by commas

24. **C**ontact Website. Please provide the contact or host organization/entity's website (if applicable).

25. **Contact Telephone.** Please use format [###-###-####] of the contact organization/entity's phone number.

26. **Contact Email.** Please provide the contact organization/entity's email address.

27. **I wish to be contacted for follow-up as part of this survey.**
   ☐ Yes
   ☐ No

Appendix B. Community Survey – Yukon Climate Change Inventory

Link to online survey: https://arcg.is/15Snfn

BACKGROUND:

- This survey is used to collect information on climate change initiatives/services/entities in the Yukon.

- The answers to the survey will be used to generate an online asset inventory mapping tool which will inform people about the many activities going on and the organizations/industries involved whose work relates to our climate and environment.

- The map that will be developed will look like this and will go live March 2019.

The mapping initiative is part of the work of the Arctic Institute of Community-Based Research. For more information on this initiative, please email, info@aicbr.ca

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THEMES: Collecting INFO ON Climate change activity (could be initiative, service or entity) in the following themes:

1. **Climate Change Monitoring** - *Refers to the actions taken to understand our changing climate and its impacts (i.e. watching our climate and environmental systems)*. So*me examples include:* ecological and environmental land monitoring programs, wildlife cameras, weather stations, research on climate change impacts (related to animal species, water, air, human, etc.)

2. **Climate Change Mitigation** - *Refers to the actions taken to reduce the* severity *of climate change (i.e. dealing with the root causes); some examples include:* renewable energy projects, sustainable waste management programs, greenhouse gas emission targets (policies), public education on reduction of carbon footprint

3. **Climate Change Adaptation** - *Refers to the actions taken to limit our vulnerability or adjust to the impacts of climate change (i.e. not necessarily dealing with root causes of those impacts); some examples include:* community-based [food security/water/fire/emergency] strategies, flow management in rivers/streams, youth on the land programming and education, infrastructure and land fortification projects (to decrease vulnerability of roads/buildings/community from flooding, permafrost melt, wildfires, etc.).

---COMMUNITY SURVEY---

1. **I have read the information above and consent to participating in this survey. I understand that I do not need to share any information that I do not feel comfortable or confident with and can withdraw my participation at any time. *Required**
   ☐ Yes
   ☐ No

2. **I agree to share the information I provide. I understand that all information I choose to share is to be included in an online, public inventory mapping tool. I understand that I can opt out of answering any of the following questions that I do not wish to be included on the online map**. ***Required**
   ☐ Yes
   ☐ No

3. **What is the name of the initiative/service/entity? *Required**

4. **Please enter a short description of the initiative/service/entity**

5. **Who offers the initiative/service/entity? (If applicable)**

6. **Please identify the community/ies that the initiative/service/entity applies to.*Required**. *Please write the community name (if the initiative/program/entity applies to multiple communities, please list all community names, separated by comma(s).*

7. **Focus: Which of the following themes best describes the focus of the initiative/service/entity?** *Please* choose ONLY ONE primary theme that best describes your initiative/program/entity (if secondary themes apply, please tick them off in question 6.).
   ☐ Monitoring
   ☐ Mitigation
   ☐ Adaptation

8. **If applicable, identify a second focus area from the list below**
   ☐ Monitoring
   ☐ Mitigation
   ☐ Adaptation

9. **Type of initiative: Which of the following best describes the structure of your initiative/service/entity**
   ☐ Non-Governmental Organization initiative/service/entity
   ☐ First Nations Government initiative/service/entity
   ☐ Municipal Government initiative/service/entity
   ☐ Yukon Government initiative/service/entity
   ☐ Federal Government initiative/service/entity
   ☐ Business (sole proprietor, partnership, cooperative)
   ☐ Local Research Organization
   ☐ Outside Research Organization
   ☐ Informal/Ad-hoc
   ☐ Partnership (please identify)
   ☐ Other (please explain)

10. **Who funds the initiative/service/entity? (If applicable)**

11. **Who are the key partners that the host of the initiative/service/entity collaborates with? (If applicable)?** Please list partners, separated by comma

12. **When did the initiative/service/entity start?**

13. **When will the initiative/service/entity end? (If applicable)** If there is an end-date, please specify; if ongoing, state 'Ongoing'.

14. **If the initiative/service/entity is ending, can you share why?**

15. **What do you see as key successes about this initiative/service/entity?**

16. **In your experience what have been the main challenges of establishing and sustaining this initiative/service/entity?**

17. **Who can be listed on the inventory map as a contact for more information?** Please specify (First Name, Last Name, Organization/Affiliation) separated by commas

18. **Contact Website**. Please provide the contact or host organization/entity's website (if applicable).

19. **Contact Telephone.** Please use format [###-###-####] of the contact organization/entity's phone number.

20. **Contact Email.** Please provide the contact organization/entity's email address.

21. **I wish to be contacted for follow-up as part of this survey.**
☐ Yes
☐ No