

Government of Northwest Territories  
Gouvernement des Territoires du Nord-Ouest

# Northwest Territories Innovation Action Plan

Plan d'action pour  
l'innovation aux territoires  
du nord-ouest

Le présent document contient  
la traduction du message du  
ministre et du résumé.





# Minister's Message

In the Northwest Territories (NWT), innovation comes in many forms. To a commercial grower, it could be designing a greenhouse irrigation system that reduces water usage by collecting rainwater. For a traditional artist it could mean embracing digital technology to create and promote traditional products on brand new platforms.

Innovation can leverage the North's competitive edge and unique geographic advantages, like the Inuvik Satellite Station Facility. Polar orbiting satellites use cutting-edge technology to collect real-time data for things like climate change monitoring, resource development, and scientific research.

With certainty, we know Northerners are innovative. The Innovation Action Plan provides a framework to capture and grow the innovation and ideas of NWT residents in a way that will foster economic growth and diversification across our regions; and provide a corner stone for the advancement of a Knowledge Economy in our territory.

# Message de la ministre

Aux Territoires du Nord-Ouest (TNO), l'innovation prend de nombreuses formes. Pour un producteur commercial, il peut s'agir de la conception d'un système d'irrigation de serre qui réduit la consommation d'eau en recueillant l'eau de pluie. Pour un artiste traditionnel, cela peut signifier l'adoption du numérique pour créer et promouvoir des produits traditionnels sur de toutes nouvelles plateformes.

L'innovation peut tirer parti de l'avantage concurrentiel et des avantages géographiques uniques du Nord, comme la station-relais pour satellites d'Inuvik. Les satellites en orbite polaire utilisent une technologie de pointe pour collecter des données en temps réel, notamment pour la surveillance du changement climatique, l'exploitation des ressources et la recherche scientifique.

Nous savons avec certitude que les résidents du Nord sont innovateurs. Le Plan d'action pour l'innovation fournit un cadre permettant de favoriser l'innovation et de développer les idées des résidents des TNO de manière à permettre la croissance et la diversification économiques dans nos régions et à fournir une pierre angulaire pour l'avancement d'une économie du savoir dans notre territoire.

# Executive Summary

The Innovation Action Plan is the GNWT's plan to develop innovation and the related Knowledge Economy sector in the Northwest Territories. While recognizing the natural resource sector and all levels of government will continue to be important economic drivers for the Northwest Territories (NWT), the Government of Northwest Territories (GNWT) also recognizes the need to further develop and diversify the economy. The Department of Industry, Tourism and Investment (ITI) led development of the Action Plan in association with various GNWT departments. The vision of the Innovation Action Plan is

*An economy that is prosperous, diversified, advanced, connected, and still rooted in the NWT's unique history, culture and environment.*

Innovation is key to economic competitiveness, productivity, employment growth, and a major contributor to quality of life. The focus of the Action Plan is on accelerating the rate of innovation across all sectors (not just the technology sector) and potential new sectors for the benefit of residents, communities, governments, industry, and other stakeholders.

The NWT can leverage its existing strengths to develop innovation in both large and niche industries. The natural resource sector is well established and has made significant progress in technology development, adoption, and capacity building. The Indigenous and traditional knowledge held by Indigenous people provides opportunities to strengthen research, improve decision-making, and support innovation. Aurora College's transformation into a polytechnic university will provide significant opportunities and resources to expand research, education, and training. The NWT's northern location offers important research and development opportunities in areas like cold weather testing,

satellite technology, climate change and more. Internet connectivity is improving, and capabilities are expanding in areas such as research, business and entrepreneurial support.

However, we still face some significant challenges. The current NWT technology sector, a major contributor to innovation occurring in other sectors, is very small. Although improvements are underway, there are continuing challenges related to internet connectivity and support for business development. The base of entrepreneurs is small. Access to markets and skilled workers is limited.



Overcoming these constraints and building an economy of innovation will be a long-term process, as detailed in the Performance Measurement section below. As such, the Action Plan outlines an incremental, focused, and scalable approach. **Five key pillars have been identified on which the Action Plan will focus.** Under each pillar, a series of goals and actions are identified below.

## Strategic Pillars

### Pillar 1 – Collaboration:

A culture of innovation is fostered through increasing collaboration in the Knowledge Economy.

### Pillar 2 – Skilled Worker Development and Attraction:

The NWT's communities, industries and institutions have access to the NWT-based skilled labour they need.

### Pillar 3 – Research, Development and Commercialization:

The NWT is recognized as a region that values and supports discovering, developing, and commercializing knowledge.



### Pillar 4 – Entrepreneur and Business Development:

The NWT's rate of business establishment and development is accelerating.

### Pillar 5 – Connectivity:

NWT residents are connected with each other and with the wider world.

*Under each of the strategic pillars, we have defined a series of goals and actions to accomplish each pillar. These are described in detail in the Action Plan section.*



# Sommaire

Le Plan d'action pour l'innovation est le plan du gouvernement visant à développer l'innovation et le secteur économique du savoir connexe aux Territoires du Nord-Ouest. Tout en affirmant que le secteur des ressources naturelles ainsi que tous les ordres du gouvernement continueront de stimuler l'économie des Territoires du Nord-Ouest, le gouvernement reconnaît également qu'il est nécessaire de favoriser et de diversifier l'économie. Le ministère de l'Industrie, du Tourisme et de l'Investissement (MITI) a dirigé l'élaboration du Plan d'action en collaboration avec divers ministères. Le cadre conceptuel du Plan d'action est le suivant :

« Une économie prospère, diversifiée, avancée, connectée et toujours solidement implantée dans l'histoire, la culture et l'environnement uniques des Territoires du Nord-Ouest. »

L'innovation est la clé de la compétitivité économique, de la productivité et de la croissance de l'emploi tout en contribuant grandement à la qualité de vie. Le Plan d'action se concentre sur la façon d'accélérer le nombre de projets novateurs dans tous les secteurs (pas uniquement celui de la technologie) et les nouveaux secteurs potentiels en faveur des résidents, des collectivités, des administrations, des entreprises et d'autres acteurs.

Les Territoires du Nord-Ouest peuvent tirer parti de leurs forces actuelles pour développer l'innovation au sein des grandes entreprises et des entreprises de créneau. Le secteur des ressources naturelles est bien implanté et a fait d'importants progrès dans le développement, l'adoption et le renforcement de la capacité en matière de technologie. Le savoir autochtone et traditionnel des peuples autochtones permet de renforcer la recherche, d'améliorer la prise de décisions et de soutenir l'innovation. La transformation du Collège Aurora en université polytechnique permettra d'offrir des occasions et des ressources importantes afin d'enrichir la recherche, l'enseignement et la formation. La situation nordique des Territoires du Nord-Ouest en fait un laboratoire important pour la recherche et

le développement, notamment en matière d'essais en milieux froids, de satellites et d'espace ou de changements climatiques. La connexion Internet s'améliore et les capacités augmentent dans des domaines comme le soutien à la recherche, aux entreprises et à l'entrepreneuriat.

Toutefois, des enjeux importants se posent. Principal contributeur à l'innovation dans les autres secteurs des Territoires du Nord-Ouest, le secteur technologique actuel est très petit. Bien que des améliorations soient en cours, il existe toujours des difficultés concernant la connexion Internet et le soutien à l'expansion des entreprises. Les entrepreneurs sont peu nombreux. L'accès aux marchés et à des travailleurs qualifiés est limité.



Mettre en œuvre une économie de l'innovation en surmontant ces contraintes constituera un long processus, comme l'illustre la section ci-dessous sur la mesure des résultats. En conséquence, le Plan d'action décrit une approche progressive, ciblée et évolutive.

**Le Plan d'action s'appuiera sur cinq piliers essentiels.** Une série d'objectifs et de mesures se rapportant à chacun des piliers est présentée ci-dessous.

## Piliers stratégiques

### Pilier 1 – Collaboration:

Une collaboration accrue dans l'économie du savoir encourage une culture d'innovation.

### Pilier 2 – Perfectionnement et recrutement des travailleurs qualifiés:

Les collectivités, industries et établissements des TNO ont accès à la main-d'œuvre qualifiée et basée aux TNO dont ils ont besoin.

### Pilier 3 – Recherche, développement et commercialisation:

Les TNO sont reconnus comme une région qui valorise et soutient la découverte, le développement et la commercialisation des connaissances.



### Pilier 4 – Développement des entrepreneurs et des entreprises:

Augmentation du taux de création et d'expansion d'entreprises aux TNO.

### Pilier 5 – Connexion:

Les Ténos sont liés entre eux et avec le reste du monde.

*Nous avons défini une série d'objectifs et de mesures à prendre pour chacun des piliers stratégiques. Ils sont décrits en détail dans la partie sur le plan d'action.*



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# Introduction

The NWT has long relied on natural resources and government as the primary drivers of the local economy. While there continues to be significant mineral, oil and gas potential, the size of the natural resource sector has declined significantly in recent years (e.g., the sector accounted for 24% of territorial gross domestic product (GDP) in 2020, down from 39% in 2017).<sup>1</sup> The three diamond mines, which have been the largest contributors to NWT GDP, have moved beyond their peak production. Two of the three mines are expected to close over the next decade.

According to the NWT Bureau of Statistics, public administration accounted for about 18% of GDP in the NWT in 2020 and 27% of direct employment. Including other economic sectors which are primarily government-funded (e.g., healthcare, social services, and education), it is estimated that over 40% of those employed in the NWT work for a public sector employer.<sup>2</sup>

The GNWT recognizes the need to further develop and diversify the NWT economy, create jobs, and improve community resiliency by capturing untapped development potential in sectors including, but not limited to, tourism, agriculture and the knowledge economy. Towards that end, the GNWT committed to working “with a broad range of partners to create a Knowledge Economy Action Plan.”

A Knowledge Economy exists where technology and information create new efficiencies across society. The foundation of a Knowledge Economy is generally considered to be an environment that enables residents, businesses, governments and organizations to realize economic prosperity from the creation and sharing of their knowledge and ideas. The World Bank identifies three key elements in creating a Knowledge Economy: education, an innovation system and an information infrastructure<sup>3</sup>, where the resulting knowledge-based goods and services are the product of the economy.

The Innovation Action Plan addresses both the Knowledge Economy and innovation at large. It assesses the current situation, and lays out a vision and strategy, including key pillars, specific goals and actions for accelerating the rate of innovation. It also outlines a performance measurement strategy for tracking the progress made.

The engagement process included an online survey of 39 stakeholders from business, government and other organizations, eight two-hour virtual focus groups involving a total of 66 participants, 16 interviews with key stakeholders, and meetings with representatives from a cross-section of GNWT representatives. The themes, commentary and information generated through the engagement process were compiled in the Northwest Territories Innovation Strategy: What We Heard report.<sup>4</sup>

This paper outlines several goals for developing a Knowledge Economy which have been identified by multiple GNWT departments after significant research and reflection. Each goal includes proposed actionable items the GNWT can take to forward the Knowledge Economy initiative.

<sup>1</sup> <https://www.statsnwt.ca/economy/gdp/>

<sup>2</sup> <https://www.statsnwt.ca/labour-income/labour-force-activity/>

<sup>3</sup> <https://openknowledge.worldbank.org/bitstream/handle/10986/6853/411720PAPER0Kn101OFFICIAL0USE0ONLY1.1.pdf?sequence=1&isAllowed=y>

<sup>4</sup> [https://www.ntassembly.ca/sites/assembly/files/td\\_615-192.pdf](https://www.ntassembly.ca/sites/assembly/files/td_615-192.pdf)

# Situational Analysis

## The importance of innovation

Innovation involves the discovery, development, sharing and application of knowledge for the economic benefit of communities, industry, government and other organizations. Innovation is the process through which economic or social value is extracted from knowledge – by creating, diffusing, and transforming ideas – to produce new or improved products, services, and processes.<sup>5</sup> Many concepts can be closely associated with innovation such as primary research, applied research and development (R&D), Indigenous,

traditional and local knowledge, technology development, transfer and adoption, business start-up and scaling, evidence-based decision-making, and many more.

Innovative economies often develop through partnerships involving government, industry, and academia and provide benefits to all sectors of the economy. Innovation is key to competitiveness, productivity, economic growth, employment and quality of life.<sup>6</sup> Robert Solow, the 1987 Nobel laureate in economics, demonstrated that innovation is the primary driver of economic growth.<sup>7</sup> Since then, governments at all levels have prioritized supporting innovation in their jurisdictions, through strategic investments. Over the longer-term, innovation will grow and diversify the economy, reduce the impacts of economic cycles and create a more environmentally sustainable economy.

## Drivers of innovation

The rate of innovation tends to be higher in economies that invest in research, development, and commercialization, have a strong base of supported entrepreneurs, ready access to capital, skilled workers and supporting infrastructure. Innovation is also supported by leadership, networks, and partnerships between and within industry, educational institutions and others. Government programming designed to accelerate innovation typically focuses on one or more of these factors.



<sup>5</sup> Conference Board of Canada, *Innovation Report Card 2021*, June 28, 2021. <https://www.conferenceboard.ca/focus-areas/innovation-technology/innovation-report-card>

<sup>6</sup> Innovation, Science and Economic Development Canada, *Building a Nation of Innovators*, [https://www.ic.gc.ca/eic/site/062.nsf/eng/h\\_00105.html](https://www.ic.gc.ca/eic/site/062.nsf/eng/h_00105.html)

<sup>7</sup> Council of Canadian Academies, *Innovation and Business Strategy: The Expert Panel on Business Innovation*, <https://cca-reports.ca/wp-content/uploads/2018/10/2009-06-11-innovation-report-1.pdf>



## Innovation in the NWT

The NWT possesses important elements on which it can build a more innovative economy including:

### Natural Resource Sector

The natural resource sector maintains opportunities to leverage the resources, opportunities and challenges facing the natural resource sector to further develop an innovative economy (e.g., through remediation projects, drone technology, remote-sensing applications, and re-purposing infrastructure for research and technology innovation projects).

### Indigenous and Traditional Knowledge

The traditional knowledge held by the Indigenous people of the NWT presents opportunities to strengthen and support research and innovation.

### Northern Location

The northerly location and cold climate of the NWT provide significant research and development opportunities in areas like cold climate research (e.g., auto testing, material testing, winter mining, permafrost research), satellite research and data exchange/downloads, and climate change research.



### ■ Entrepreneurial Spirit

The establishment of makerspaces (design and creation studios) in Yellowknife and Inuvik has provided increased access to innovative opportunities. Organizations like the National Research Council (NRC), Futurpreneur and EntrepreNorth also support these and similar efforts that contribute to the NWT's reputation as a research hub.

### ■ Research and Education

The NWT is currently a hub for research. The transformation of Aurora College to a polytechnic university is expected to create significant opportunities to expand research and education. A legislative framework for post-secondary education will help develop further educational programming for NWT students.

### ■ Satellite and Space Sector

Continued development of the Inuvik satellite station facility and the Aurora College Western Arctic Research Centre have created a research community "hub" and facilitated international partnerships.

Overall, the NWT is still in an early stage of development with respect to building an innovative economy. Some of the challenges include:

### ■ Small Technology Sector

The technology sector is important not only as an economic sector but also as a contributor to innovation occurring in other economic sectors. In 2020, Information and Communication Technology (ICT) accounted for about 2.1% of GDP in the NWT, as compared to 3.7% in Yukon and 4.4% for Canada overall.<sup>8</sup>

### ■ Connectivity

Although improvements are being made, there are continuing challenges related to internet connectivity, in terms of availability, reliability, bandwidth and costs.

### ■ Small Base of Entrepreneurs and Skilled Workers

The presence of well-paying jobs in government and the resource sector is viewed as a disincentive to entrepreneurial and new business development. There is a need to create more of an entrepreneurial culture and an environment that is supportive for businesses (e.g., by providing infrastructure, access to financing and professional development resources, and other programs to support businesses).

### ■ Capacity for Research and Development

Due to a variety of factors, the NWT tends to have problems accessing equipment, innovation funding, financial supports, and physical infrastructure.

The Innovation Action Plan addresses these challenges directly with Pillars, Goals and Actions designed to mitigate NWT challenges and develop NWT's unique strengths.



<sup>8</sup> Statistics Canada. Table 36-10-0402-01 Gross domestic product (GDP) at basic prices, by industry, provinces and territories (x 1,000,000).



# Mandate, Vision, Mission, Principles

## Mandate

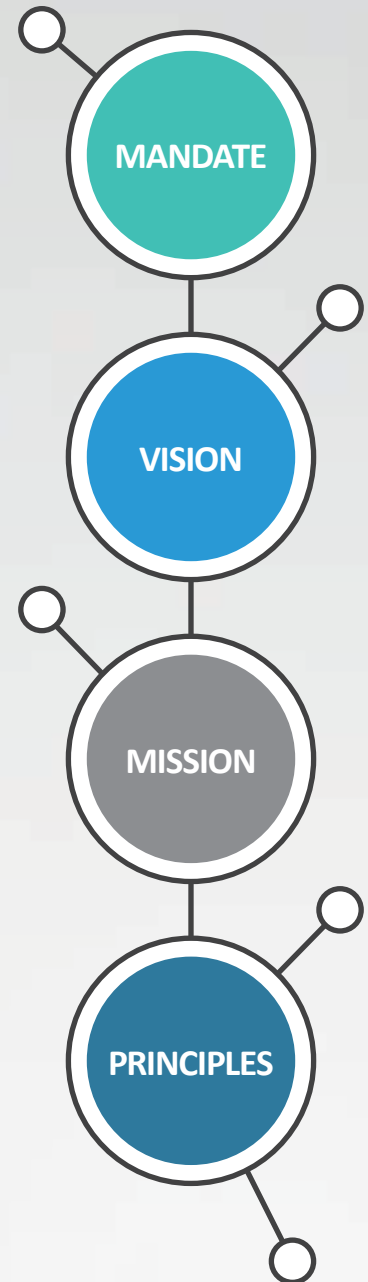
“The GNWT has committed to accelerating innovation as a means to promote further development and diversification of the economy, create jobs and improve community resiliency.”

## Vision

“An economy that is prosperous, diversified, advanced, connected and still rooted in the NWT’s unique history, culture and environment.”

## Mission

“Accelerate the discovery, development, sharing and application of knowledge that improves the economic prosperity of NWT residents, industry, governments and other stakeholders.”



## Principles

- **The focus is on accelerating innovation across all sectors.** An innovation action plan that focuses on accelerating the acquisition, sharing and application of knowledge, including the capacity to learn, innovate, and utilize knowledge and technology, can generate economic impacts across all sectors of the economy.
- **The benefits of innovation will accrue to NWT residents, industries, Indigenous governments and other stakeholders and align with the history, culture, environment, potential and resources of the NWT.** Initiatives will be designed, first

and foremost, to benefit those living in the NWT and support its communities and businesses in retaining and developing knowledge, skills, and economic benefit.

- Recognizing many levers that accelerate innovation lie beyond its direct control, **the GNWT will lead development while placing high priority on working with key partners.** The GNWT is well-positioned to take the lead but will work in close collaboration with key partners including Indigenous governments and organizations, industry, the federal government and other key stakeholders.
- **The approach will be focused, achievable, incremental, and scalable with a clear set of priorities regarding the actions to be implemented.** Developing an innovative economy is a long-term process. Stakeholders recommended an incremental approach, that is realistic, given the available resources, barriers, time frame, and capacity of the NWT. The action plan will be dynamic with the results monitored on an ongoing basis.



# Strategic Pillars, Goals and Actions

Reflecting the results of the engagement process and other research, five key pillars were identified on which the Action Plan will focus. These pillars, accompanying success statements, as well as specific goals and actions are provided in the table below.

## Pillar 1. Collaboration:

A culture of innovation is fostered through increasing collaboration in the Knowledge Economy.

- **Goal 1.1:** Work with NWT residents, businesses, governments and organizations in developing the Knowledge Economy;
  - o Action 1: Support development of a strong industry association.
  - o Action 2: Support development of physical spaces and experiential learning centres.
  - o Action 3: Integrate innovation as an important component of Regional Economic Development Plans (REDP).
  - o Action 4: Foster communication and collaboration between innovation ecosystem participants through collaborations, events and other mechanisms.
- **Goal 1.2:** Raise the profile of innovation and the importance of an innovative economy.
  - o Action 1: Promote innovation and the dissemination and adoption of new knowledge and technology through improved communications.
  - o Action 2: Establish an Innovation Prize for the NWT.

## Pillar 2. Skilled Worker Development and Attraction:

The NWT's communities, industries and institutions have access to the NWT-based skilled labour they need.

- **Goal 2.1:** Further incorporate STEM (science, technology, engineering and math) skills through the JK-12 system;
  - o Action 1: Promote Science, Technology, Engineering, and Math (STEM) curriculum throughout Junior Kindergarten to grade twelve (JK-12) to increase the number of students pursuing advanced STEM-related courses at the high school level, in preparation for opportunities in the workforce.
  - o Action 2: Provide training that supports the use of new technologies.
- **Goal 2.2:** Align the post-secondary education system with innovation needs of the economy;
  - o Action 1: Transform Aurora College into a polytechnic university.
  - o Action 2: Partner with employers to involve them with education and training.
  - o Action 3: Align post-secondary programs with industry needs.
  - o Action 4: Support micro-credential programs that provide skills or certifications.
  - o Action 5: Further incorporate Indigenous, traditional and local knowledge into post-secondary education.
- **Goal 2.3:** Attract workers by positioning the NWT as a great place to live and work.
  - o Action 1: Implement attraction programs targeted at skilled workers.
  - o Action 2: Address factors, particularly housing, that constrain the attraction and retention of skilled knowledge workers.

## Pillar 3. Research, Development and Commercialization:

The NWT is recognized as a region that values and supports discovering, developing and commercializing knowledge.

- **Goal 3.1:** Expand research activities in the NWT;
  - o Action 1: Strengthen and promote the NWT as a location for targeted research.
  - o Action 2: Promote Indigenous, traditional, and local knowledge in research programs.
  - o Action 3: Support further development of domestic research capabilities.
- **Goal 3.2:** Facilitate research in the NWT;
  - o Action 1: Enhance pathfinding services for private, public, academic, and non-government organizations.
  - o Action 2: Simplify research license approval processes.
  - o Action 3: Improve data management practices and repositories.



- **Goal 3.3:** Support private sector research, development and commercialization.
  - o Action 1: Increase access to funding and other financial supports for research, development and commercialization.
  - o Action 2: Assess the feasibility of establishing an innovation or technology centre to support business R&D and commercialization activities.
  - o Action 3: Facilitate connections between the natural resource sectors and other sectors.

## Pillar 4. Entrepreneur and Business Development:

The NWT's rate of business establishment and development is accelerating.

- **Goal 4.1:** Expand the entrepreneurial base in the NWT;
  - o Action 1: Support youth entrepreneurship training.
  - o Action 2: Increase access to entrepreneur mentorship programs.
  - o Action 3: Leverage the NTNP Business Stream program.
- **Goal 4.2:** Strengthen access to the business supports needed by entrepreneurs and businesses;
  - o Action 1: Improve business development agencies' communication and collaboration.
  - o Action 2: Provide pathfinding support that helps connect entrepreneurs to available programs, funding and other supports.

- **Goal 4.3:** Support the marketing of goods and services by northern producers.
  - o Action 1: Strategic use of government procurement.
  - o Action 2: Support development of regional brands, platforms, marketing tools and other supports.

## Pillar 5. Connectivity:

Residents of the NWT are connected with each other and with the wider world.

- **Goal 5.1:** Foster improved connectivity, resiliency and affordability of internet services in all NWT communities;
  - o Action 1: Support improvements in connectivity.
  - o Action 2: Encourage improvements in unlimited data packages and reduction of internet prices.
- **Goal 5.2:** Support business and communities in using the new connectivity.
  - o Action 1: Enhance training for business and residential internet users.
  - o Action 2: Provide support to businesses in the digitization of their operations.



# Action Plan

## Pillar 1: Collaboration

### Context

Innovative economies are those that have been successful in creating a culture of innovation, and an environment in which residents, communities, governments, industry and non-profit organizations recognize and value the importance of innovation. They work together to support research and innovation, which provides creative solutions to key issues, extracts economic and social value from knowledge and promotes economic development and diversification.

Through the engagement phase for this initiative, comparatively low levels of collaboration were found on innovation activities between and within government, industry, communities, researchers and educators in the NWT. NWT entities such as the GNWT's departments and agencies, various research organizations, academia, industry and the federal government can work together more collaboratively by regularly sharing and collaborating on ideas, perspectives and initiatives.

### Success Statement, Goals and Actions

The success statement for collaboration is "A culture of innovation is fostered through increasing collaboration in the knowledge economy". The goals below focus on raising the profile of innovation and working with NWT residents, businesses, governments and organizations in developing the Knowledge Economy and growing the economy through innovation.

***Goal 1.1: Work with NWT residents, businesses, governments and organizations in developing the Knowledge Economy.***

### Actions associated with this goal include:

- Action 1: Support development of a strong industry association.** In conjunction with the Chamber of Commerce, a strong industry association can play an important role in championing innovation and promoting development of the tech sector, representing the industry in that process, and implementing activities related to advocacy, outreach, program development and industry networking. The GNWT will support a strong industry association that can share information and best practices while representing this industry at key tables to ensure that policies, programs, procurement and spending support innovation.
- Action 2: Support development of physical spaces and experiential learning centres.** Innovation activity benefits from access to physical spaces and experiential learning centres (e.g., coworking spaces, makerspaces, and innovation hubs) that foster participation and collaboration. The GNWT will continue to partner with organizations that will create physical spaces and experiential learning centres that foster innovation throughout the NWT. These types of spaces range from simple office co-location to equipped makerspaces and elaborate innovation hubs. They can host community activities, local training, and social events that highlight community successes. Such spaces bring together people with different backgrounds, skills and expertise, foster collaboration, provide a focus for business development activity, and facilitate access to mentorship, training,

support services, technical resources and equipment, and investment to help businesses get established and grow.

Makerspaces exist in Inuvik (INNOVATE Centre for Arts, Crafts and Technology) and Yellowknife (Makerspace YK). INNOVATE has been developed and administered as part of Aurora College and provides members with access to tools for 3D-printing, laser cutting, screen printing and computer-aided design, among others. Makerspace YK brings entrepreneurs and other “makers” together, building the community around hands-on learning, shared space, and skills-building, and offers a variety of equipment and support. Labs, research centers, testing facilities, field stations and other associated research infrastructure also need support.

## GNWT Support

ITI has provided funding, through the Support for Entrepreneurs and Economic Development (SEED) program, to some of these organizations to assist with start-up and expansion costs. ITI will continue to work with the federal government and other GNWT departments to fund and support other makerspaces where there is strong demand.

- **Action 3: Integrate innovation as an important component of Regional Economic Development Plans (REDP).**

ITI is developing a series of REDPs which will help establish regional priorities, including priorities related to innovation, and guide and coordinate GNWT actions and innovation-related investments.

- **Action 4: Foster communication and collaboration between innovation ecosystem participants through collaborations, events and other mechanisms.** Events such as hackathons have proven very effective in engaging local residents on key issues or challenging problems that governments need to address. These events allow researchers, programmers, private companies and other stakeholders work collaboratively to solve a specific problem. The GNWT will fund events that promote innovation and have stakeholders work collaboratively together, including potentially collaborating with Environment and Natural Resources’ regional labs or remote research stations.





Another important tactic is to facilitate the sharing of information. The GNWT's Open Government Policy encourages the exchange of information and data within the territory, increasing the potential for both industry and various levels of government to employ that information in innovative ways. Initiatives such as tele-medicine, community government training programs, geospatial data delivery, and improved access to information to accelerate research are a small number of the innovations released to date.

***Goal 1.2: Raise the profile and importance of innovation in the economy.***

A critical first step towards building a more innovative economy will be to raise awareness of the importance of innovation and the potential benefits of a more innovative economy for communities, industry, governments, and others. Governments often play a key role in raising awareness of the importance of innovation, through communication, events, prizes, training and workshops, and facilitating hands-on exposure to new technologies.

**Actions associated with this goal include:**

- **Action 1: Promote innovation and the dissemination and adoption of new knowledge and technology through improved communications.** A communication campaign is needed to raise awareness of the importance of innovation and contribute to developing a culture of innovation. Stakeholders explained that, without clear communication, public support and buy-in will suffer, particularly in areas outside of Yellowknife. Communications could include legislature talks, regular seminars, and press events featuring research teams.
- **Action 2: Establish an Innovation Prize for the NWT.** An Innovation Prize will encourage entrepreneurs to develop and complete their ideas. A two-year pilot NWT Manufacturing Innovation and Technology Contribution starting in 2020 has proven successful in raising the profile of innovation in the territory and encouraging the development of innovative products, services, and solutions. ITI will evaluate the outcomes and continuation of this program.





## Pillar 2: Skilled Worker Development and Attraction

### ■ Context

The ability of NWT residents to benefit from the rapidly evolving global economy will be dependent, in part, on the effectiveness of education and training programs in preparing people to participate in the innovation economy, and in part, on the ability to retain these workers. By equipping NWT youth with digital, science and technology literacy, math, research, programming and coding skills as well as an improved technological understanding, the NWT will be better positioned to participate in a technology-based and digitally-oriented economy and navigate online information. Further, the federal government, through its *Task Force on Northern Post-Secondary Education*<sup>9</sup> can be a partner in developing education in the NWT.

### Federal Support

The NWT will benefit from a range of federal government programs to encourage young Canadians to further develop their STEM skills such as CanCode (Innovation, Science and Economic Development Canada), the ChooseScience digital campaign to encourage more young women to consider a career in STEM roles, and NSERC's Young Innovators and Promo Science Campaigns.

### ■ Success Statement, Goals and Actions

The success statement for building capacity and attracting labour is “The NWT’s communities, industries and institutions have access to the skilled labour they need”. The goals below focus on further incorporating STEM skills through the JK-12 system, better aligning the post-secondary education system with the innovation needs of the economy, and attracting workers by positioning the NWT as a great place to live and work. This will ensure skilled labour is built and grown in the territory where possible while also attracting people to the NWT when those skills are not present.

#### **Goal 2.1: Further incorporate STEM skills through the JK-12 system**

The ability of students to pursue post-secondary education and engage in the economy of the future is directly related to the skills and knowledge they gain through the JK-12 system. The jobs of the future will increasingly require Science, Technology, Engineering and Mathematics (STEM) skills.

Given lower connectivity rates in Indigenous communities, digital skills may not be able to develop proficiently. Several recent studies highlighted the importance of better preparing Indigenous youth for the digital economy. A national study by the Canadian Council for Aboriginal Business, found that over one-third of jobs held by Indigenous workers are at risk of elimination, as data, robotics and advanced technologies drive transformational change.<sup>10</sup> An RBC Future Launch survey found nearly two-thirds of jobs held by Indigenous workers are at risk of a skills overhaul, less than 25% of households in First Nations communities have access to high-speed internet, and Indigenous youth are less confident in their digital

<sup>9</sup> <https://www.rcaanc-cirnac.gc.ca/eng/1603480211800/1603480251430>

<sup>10</sup> <https://www.thestar.com/business/2020/07/06/one-third-of-indigenous-workers-in-jobs-facing-automation-threat-report-says.html>

literacy skills compared to non-Indigenous youth. It is important to narrow the gap with respect to STEM skills between secondary school graduates in the NWT and those in the rest of Canada, and providing students with greater opportunities to learn new skills and technologies, and access related training and career opportunities. The Department of Education, Culture and Employment recently released the new Skills 4 Success Action Plan 2021-2025 which recognizes the importance of STEM to the workforce. The adult and post-secondary education and skills training system will need to be both innovative and adaptive to changing labour market demands.

#### Actions associated with this goal include:

- **Action 1: Promote Science, Technology, Engineering, and Math (STEM) curriculum throughout Junior Kindergarten to grade twelve (JK-12) to increase the number of students pursuing advanced STEM-related courses at the high school level, in preparation for opportunities in the workforce.**<sup>11</sup> As more and more organizations look to innovate, modernize and grow, the demand for people who can fill STEM-related jobs will only increase.<sup>12</sup> More needs to be done to prepare JK-12 students as well as students who have exited the secondary education system for the current labour market.

The NWT can also leverage other resources to better prepare its students. For example, the federal government has established a range of programs to encourage young Canadians to further develop their STEM skills such as CanCode (Innovation, Science and Economic Development Canada), the ChooseScience digital campaign to encourage more young women to consider a career in STEM roles, and NSERC's Young Innovators and Promo Science Campaigns. Further, Western Arctic Moving

Pictures, a Yellowknife-based non-profit, produces, supports, showcases and promotes film, video, and digital media throughout the Northwest Territories – a valuable resource for students entering or interested in similar disciplines.<sup>13</sup>

- **Action 2: Provide training that supports the use of new technologies.** As connectivity improves, training for internet users, including students, will need to be expanded in the NWT to facilitate internet education, the flow of information, and greater participation in the digital economy.

#### *Goal 2.2: Align the post-secondary education system with the innovation needs of the economy*

The challenge is to expand the capacity of the post-secondary education system and better align post-secondary programs with the innovation needs of the economy. The Department of Education, Culture and Employment (ECE) is leading work to strengthen and expand the NWT post-secondary education system. The NWT Post-Secondary Education Strategic Framework 2019-2029 is guiding efforts to increase access to quality post-secondary education opportunities in the NWT.

<sup>11</sup> [https://www.ece.gov.nt.ca/sites/ece/files/resources/2022\\_-\\_03\\_-\\_s4s\\_action\\_plan\\_2021-2025.pdf](https://www.ece.gov.nt.ca/sites/ece/files/resources/2022_-_03_-_s4s_action_plan_2021-2025.pdf)

<sup>12</sup> ISED, *The Government of Canada and STEM*, <https://ised-isde.canada.ca/site/choose-science/en/government-canada-and-stem>

<sup>13</sup> <https://wamp.ca/>

**Actions associated with this goal include:**

- **Action 1: Transform Aurora College into a polytechnic university.** Polytechnic programs provide skills intensive, technology-based, practical training for in-demand jobs. Program and curriculum decisions are made in close collaboration with industry, ensuring graduates attain skills that are relevant to the current job market. They combine the practical approach of a college education and the depth of study usually associated with a university program.
- **Action 2: Partner with employers to involve them with education and training.** If employers want to influence development of the next generation of workers, they need to get involved. Mechanisms like co-op education programs, internships, apprenticeships and industry participation in program advisory committees have proven effective in building communication and collaboration and better aligning education and training with industry needs.
- **Action 3: Align post-secondary programs with industry needs.** Improving alignment requires first developing a better understanding of the existing gaps in the labour force. The Skills for Success Action Plan includes an action to promote the delivery of programs that lead to the NWT jobs in-demand, by working in partnership with post-secondary education partners to provide those program offerings. In addition to increasing employer involvement with the education and training sector, gaps will be identified through direct research into the evolving requirements of employers in the NWT, such as the NWT's labour forecast which identifies jobs in demand up to 2040. The information will be used by Career and Education Advisors and Community Development Officers to assist individuals in planning for their future employment goals.
- **Action 4: Support micro-credential programs that provide skills or certifications.** The pace of change, particularly technological change, will continue to accelerate in the future, thereby increasing the importance of on-going learning and highly targeted training. Through the Skills 4 Success Action Plan, the GNWT will identify, prioritize and distribute information on micro-credential certified courses and programs that link to NWT jobs in demand, by working in partnership with industry to provide that information. These will provide applied skills or certifications to help ease worker transition into the knowledge economy, reduce the burden of in-house training on employers, and encourage employers not to look outside of the NWT for their needs.



Flexible training such as micro-credentialing or badging, usually co-developed with industry (to ensure that the credential reflects the needed skills and competencies), demonstrates the student has gained required skills and competencies. Micro-credentials enable program requirements to be broken into smaller components, which can increase the flexibility and relevance of the training for both the employer and student. The credentials may also be able to be stacked with other credentials to meet the requirements for larger qualifications. As Aurora College transforms into a polytechnic university, opportunities to provide more applied and technical training programs (e.g. micro credentials, experiential learning, technical certificates) will be considered by the institution as it works with partners and key stakeholders.

- Action 5: Further incorporate Indigenous, traditional and local knowledge into post-secondary education.** The NWT will build upon one of its unique strengths of the territory's communities, namely traditional knowledge, experience on the land, and artistic abilities, through further integrating those strengths into educational programming. Building upon the research vision developed in the GNWT Knowledge Agenda: Northern Research for Northern Priorities (Knowledge Agenda) and other strategic instruments, the intent is to further include traditional and local knowledge as well as western science and innovation to enhance decision-making and pursue sustainable economic opportunities. As Aurora College transforms to a polytechnic university, a new tricameral model of governance will be implemented. This includes the Board of

Governors of which half must be Indigenous, an Academic Council and an Indigenous Knowledge Holders Council (IKHC). The IKHC will develop, implement and monitor a framework that will ensure Indigenous ways of knowing, being and doing, are considered across all aspects of the institution.

***Goal 2.3: Attract workers by positioning the NWT as a great place to live and work***

Attracting workers from outside of the NWT represents another way to ensure that we are able to access the workers needed to accelerate innovation. The population of the NWT tends to be relatively mobile. Of NWT residents surveyed as part of the 2016 census, 7% moved to their community in the past year (2% moved within the NWT and 5% from other parts of Canada) and 20% moved to the community in the past five years (5% moved from within the NWT, 13% from other parts of Canada, and 2% from outside of Canada).

People most commonly move for employment, with two recent factors playing to the NWT's strengths: (1) technology has greatly increased the ability of people to work from a place of their choice; and (2) the nature of the pandemic has contributed to a desire, amongst some, to use technology to get out of urban areas into smaller communities.

The NWT provides residents with a variety of non-repayable grants as well as forgivable and repayable student loans to assist with the costs of obtaining a post-secondary education, under the Student Financial Assistance program. In addition to providing a suite of benefits, the Student Financial Assistance program also provides loan repayment incentives to encourage residents to return to the territory upon ceasing full-time studies.



**Actions associated with this goal include:**

- **Action 1: Implement attraction programs targeted at skilled workers.** These programs will promote the NWT as a great place to live and work, highlighting the lifestyle, access to nature, culture and community. There will also be opportunities to attract remote workers (in areas with adequate connectivity) and new immigrants to Canada through the Northwest Territories Nominee Program (NTNP). Combined with efforts to retain existing workers and slow the “brain drain”, attracting skilled workers (as well as entrepreneurs) will also help to build the population of the NWT, thereby increasing the size of the local markets for NWT goods and services. For small communities, continue to support the development of Community Labour Market Development Plans, which are community-driven, based on community needs, and are anticipated to lead to more long-term, sustainable employment positions.
- **Action 2: Address factors, particularly housing, that constrain the attraction and retention of skilled knowledge workers.** In many communities, the major constraint is access to housing. Increasing access to affordable housing, particularly smaller rental units for singles and couples, is critical to improving the attractiveness of the NWT to prospective permanent and temporary residents (including remote workers and

digital nomads). Housing NWT will continue to work with Indigenous Governments, NGO's and other housing partners to help facilitate access to available funding sources, such as Canada's National Co-Investment Fund, to construct new market housing units for the territory. Housing NWT is also supporting communities with the development of Community Housing Plans to help identify and inform future housing investments, including market housing.



## Pillar 3: Research, Development and Commercialization

### Context

The Knowledge Agenda maintains the goal of “positioning the Northwest Territories as an active leader, practitioner, partner and promoter of all forms of research.” GNWT departments and agencies are promoting and conducting their research activities based on priorities set in the Knowledge Agenda.

A strategic pillar of the Knowledge Agenda is the development of expertise in the NWT. Progress being made in the NWT includes:

- Indigenous governments, including the Tłı̨chǫ Government and the Inuvialuit Regional Corporation, have established their own research entities within their organizations.
- Independent research organizations, such as the Institute for Circumpolar Health Research, have been established to advance and support research focusing on health and related social determinants.
- Research conducted on the Inuvik-Tuktoyaktuk highway corridor is an example of emerging collaboration.
- There is an emerging innovation cluster in Inuvik, consisting of Aurora College’s Western Arctic Research Centre (WARC), the Inuvik Satellite Station Facility (ISSF), and the INNOVATE Centre for Arts, Crafts & Technology.
- GNWT investments and expertise in world class geospatial information and technology support research, development, and innovation by providing current and authoritative data that is open (available), supporting multiple industries and research sectors. This attracts investments and research in the Northwest Territories.
- The NWT Geological Survey Strategic Plan focuses on a variety of field-based public geoscience studies throughout the NWT, the availability of high-quality geoscience knowledge to promote exploration for and discovery of NWT mineral and energy resources, and defining permafrost conditions that may impact future infrastructure development.
- Southern-based universities such as Wilfrid Laurier, the University of Alberta, and UBC operate research programs in the NWT.
- The transformation of Aurora College into a polytechnic university will create new opportunities for knowledge generation and partnerships.
- The natural resource sector and mine remediation economy, with estimated expenditures of more than \$2 billion over the next 10 to 20 years, will provide significant opportunities for research, technology development and adoption as well as re-purposing of infrastructure for research and tech innovation projects.

Overall, however, the rate of technology development and adoption in the NWT is low relative to other regions in Canada, partly because of the nature of the economy, small population size, limited private sector investment in R&D, and more restricted access to funding to develop, commercialize and adopt new technologies.



## ■ Success Statement, Goals and Actions

The success statement for research, development and commercialization is “The NWT is recognized as a region that values and supports discovering, developing and commercializing knowledge.” As indicated below, these goals focus on attracting research to the NWT, facilitating research activities, and supporting private sector research, development and commercialization.

### *Goal 3.1: Expand research activities in the NWT*

There is an opportunity to promote the NWT’s unique location and cultures as a place to conduct research as well as develop, test and commercialize new technologies. The NWT is well-positioned to attract substantial investment in research on technologies and topics such as climate change, permafrost and cold regions research, cold-weather testing, wildlife research, mining remediation and pipeline construction in sensitive environments.

To expand research activity in the NWT, steps can be taken to promote the territory as a location for research, help to integrate Indigenous, traditional, and local knowledge into research, and expand domestic research capabilities.

### **These actions are further described below:**

- **Action 1: Strengthen and promote the NWT as a location for targeted research.** Increasing the level of research activity has the potential to both increase access to knowledge relevant to the NWT and its communities as well as serve as an important economic driver (as additional projects and funding flows into the NWT). With expanded research capacity, partnerships across sectors and regions can also be developed or developed further, creating further spin-off economic activity and societal benefits. The NWT Research website will be further developed to actively promote research opportunities in the NWT and enable researchers to quickly find the digital

information they need to initiate, plan, and implement their research activities in the NWT. Lastly, the GNWT can expand the access to long term baseline environmental data – this can act as a leveraging point to bring researchers to the NWT. If they can get easy access to GNWT funded baseline climate, and other data, it may attract them to working here, where data is more easily available than in other regions. These services would be complementary to the support provided through Aurora College’s Research Services Division, to help researchers connect, collaborate, and access support services (such as licensing, funding etc.).

- **Action 2: Promote Indigenous, traditional, and local knowledge in research programs.** Indigenous knowledge provides a different worldview. For example, the Tłı̨chǫ Government’s Research and Training Institute, Hotı̨ ts’eeda, has attracted academic partners and research funding for its Ekwo` Nàxoède K’è: Boots on the Ground caribou monitoring program, which is collecting critical information on changes to caribou habitat. The GNWT will include Indigenous governments and organizations for input on strategic direction and priorities for research and innovation.



The GNWT will play an important role in building connections between communities and researchers and supporting the integration of Indigenous, traditional and local knowledge into research programs. These connections will help to ensure that the research undertaken helps to address local issues and priorities. This will be done by recognizing the knowledge systems that exist in Indigenous communities, determining how to accelerate innovation in the context of those systems, and working with Indigenous communities to develop or implement clear pathways for collaboration.

- **Action 3: Support further development of domestic research capabilities.** NWT researchers, businesses and others need increased access to research facilities and resources. By improving access to funding, research expertise, facilities, equipment and other resources, the GNWT will stimulate further investment in R&D in the NWT. There is a need to develop a centre for knowledge and innovation in the NWT to help promote and support research, innovation, and use of traditional Indigenous knowledge, and foster partnerships with the universities, governments, the private sector and other organizations. The GNWT and other organizations do provide pathfinding services linking private, public, academic and non-government organizations to available resources including funding programs.

There is great potential for NWT entities to access increased research support through the federal research granting agencies such as the Social Sciences and Humanities Research Council, the Natural Sciences and Engineering Research Council and the Canadian Institutes of Health Research, as well as the Canada Foundation for Innovation. However, it requires a substantial investment of time, combined with subject matter expertise, to prepare a grant application to these agencies. Furthermore, once funding is received, there are numerous administrative and reporting requirements.





Southern universities manage these pressures through research support functions which have dedicated expertise knowledgeable about research funding programs. These support functions are resourced in part by the Tri-Council Research Support Fund (RSF), which allocates a percentage of each research grant awarded to an institution directly to this central function. As Aurora College transforms into a polytechnic university, it will hopefully expand its role in this area which would be beneficial in building research capacity. GNWT departments, non-government organizations and Indigenous governments have all benefitted from these programs.

### **Goal 3.2: Facilitate research in the NWT**

Research activities in the NWT could benefit from the provision of enhanced pathfinding services for private, public, academic, and non-government organizations, simplifying the research license approval processes and improving data management practices and repositories.

#### **Actions associated with this goal include:**

- **Action 1: Enhance pathfinding services for private, public, academic, and non-government organizations.** Southern researchers and institutions can encounter barriers in pursuing research interests in the NWT. The GNWT will attract increased research investment by developing or encouraging the development of research support services. These services better enable researchers to access the information and resources they need to succeed in the NWT. Research investments in the communities will have stronger outcomes, including increased employment, the development of expertise for NWT residents, and economic gains for the travel and accommodation industries. These services can build on the existing support provided through Aurora College's Research

Services Division, will help researchers connect and collaborate, and access support services (licensing, funding etc.)

- **Action 2: Simplify research license approval processes.** A stumbling block is the process associated with getting approval for research in the NWT. The licensing process can sometimes take months to decide on whether a research project should be approved. Licensing data will improve the reporting of data on the nature and results of research undertaken in the NWT. Indigenous governments will continue to license for their areas and communities.
- **Action 3: Improve data management practices and repositories.** There are opportunities to support improvements in data management practices, data repositories and the development of research related best practices, guidelines, policies, and protocols. This will build on the GNWT's Open Government Policy concerning Open Information and Open Data.<sup>14</sup>



<sup>14</sup> [https://www.eia.gov.nt.ca/sites/eia/files/2018-01-08\\_open\\_government\\_policy\\_-\\_signed.pdf](https://www.eia.gov.nt.ca/sites/eia/files/2018-01-08_open_government_policy_-_signed.pdf)

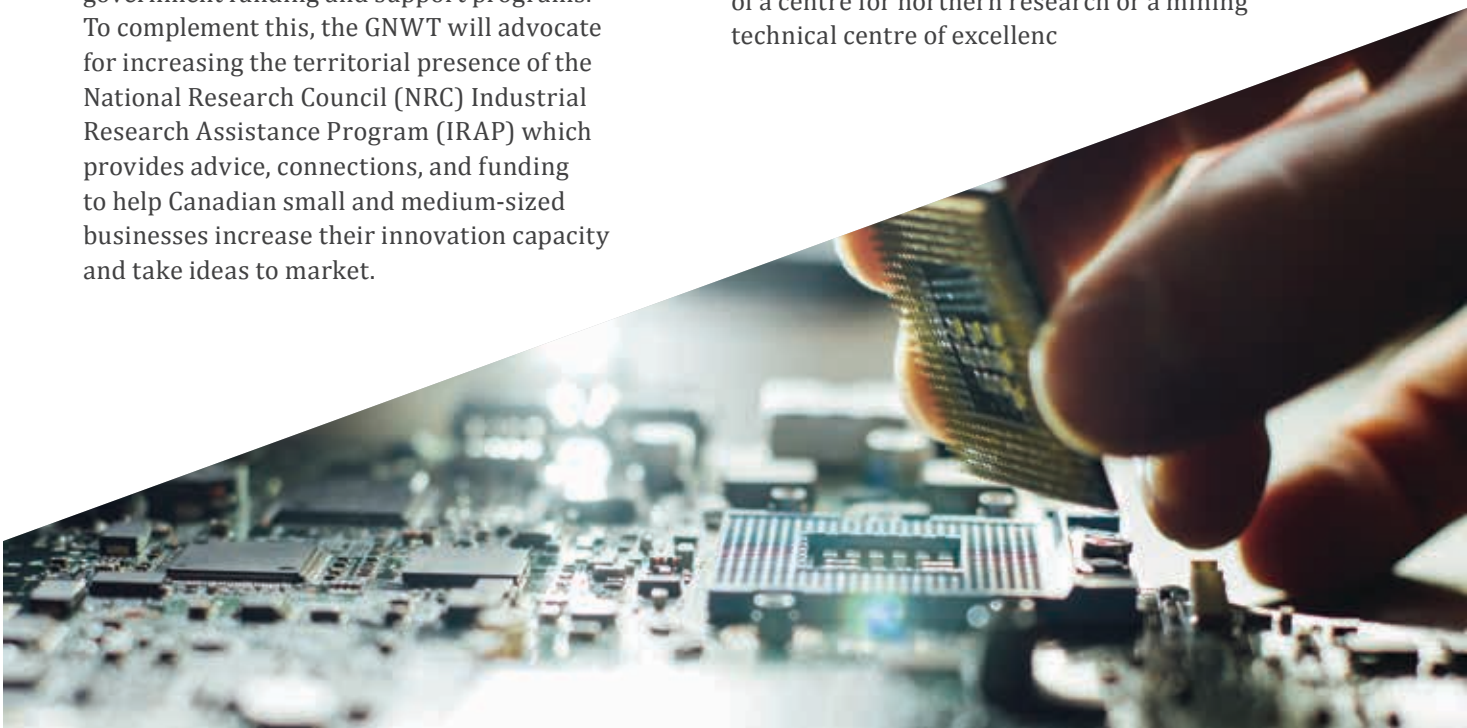
**Goal 3.3: Support private sector research, development and commercialization**

The Knowledge Agenda recognizes the NWT's interest in the commercialization of ideas originating from the North. Development, adaptation and adoption of new technology (e.g., through innovation hubs or technology centres) will improve the competitiveness of NWT businesses, open up new markets, and spur additional investment.

There are opportunities to increase the involvement of the private sector in research, development and commercialization through attracting private sector investment, increasing access to funding and other financial supports, and increasing access to needed facilities and equipment.

**In addition to promoting the NWT as a location for targeted research (which was outlined under Goal 3.1), actions that can be taken to support private sector research, development and commercialization include:**

- Action 1: Increase access to funding and other financial supports for research, development and commercialization.** The GNWT will serve as a pathfinder for private sector organizations, linking their projects and initiatives to available federal and territorial government funding and support programs. To complement this, the GNWT will advocate for increasing the territorial presence of the National Research Council (NRC) Industrial Research Assistance Program (IRAP) which provides advice, connections, and funding to help Canadian small and medium-sized businesses increase their innovation capacity and take ideas to market.
- Action 2: Assess the feasibility of establishing an innovation or technology centre to support business R&D and commercialization activities.** As it transforms into a polytechnic and strengthens its relationships with private employers, there are opportunities for Aurora College to increase its role as a hub for research, development and commercialization.
- Action 3: Facilitate connections between the natural resource sectors and other sectors.** The natural resource sector is the largest non-government sector of the NWT economy. While several existing mines are nearing the end of their productive life, the NWT contains a vast array of mineral deposits and mineral occurrences, and several potential new mines are at various stages of development. The industry also generates significant economic activity related to R&D, exploration, remediation, purchase of products and services, construction, and employee spending. As such, there are significant opportunities for NWT businesses and organizations to partner with the sector in developing the NWT's opportunities in critical mineral mining, as well as new technologies, products and services, research, education and training programs, such as establishment of a centre for northern research or a mining technical centre of excellence



## Pillar 4: Entrepreneur and Business Development

### ■ Context

Across Canada there has been a major increase in the emphasis placed on early-stage companies that have the potential to grow quickly. Innovation, Science and Economic Development Canada (ISED) conducted a review of companies that either had 10 or more employees and grew by more than 20% annually between 2009 and 2012 or had fewer than ten employees in 2009 and grew by eight or more employees by 2012. The analysis found that between 2009 and 2012, high growth firms made up only 1.2% of all Canadian firms but accounted for 63% of the total net job growth.<sup>15</sup>

Some early-stage business development programs and services available to assist early-stage businesses include EntrepreNorth, Futurpreneur, SMRT Women, and Startup Canada. In addition to Community Futures, financing and funding is available from CanNor, BDIC, BDC, MDDF, First Nations Bank of Canada, and the GNWT (e.g., Support for Entrepreneurs and Economic Development). Business programming is provided through Aurora College. The GNWT's Department of Education, Culture and Employment (ECE) offers the Self-Employment Program to train and mentor entrepreneurs.

The NWT tends to be less developed in areas such as business incubation, recognition of the tech sector, and access to early stage risk capital including angel and venture capital. In addition, local businesses have limited access to educated professionals such as accountants, bookkeepers, lawyers, bankers, suppliers, and potential partners. Increasing access to education and training for entrepreneurs, investing in co-working spaces, makerspaces, and incubators, creating youth entrepreneurship programs, and increasing access to early-stage

capital are key actions that would facilitate increased levels of entrepreneurship and business development.

### ■ Success Statement, Goals and Actions

The success statement for entrepreneur and business development is “The NWT’s rate of business establishment and development is accelerating.” As indicated below, these goals focus on expanding the entrepreneurial base in the NWT, strengthening access to the business support needed by entrepreneurs and businesses, and supporting the marketing of goods and services by northern producers.



<sup>15</sup> Innovation, Science and Economic Development Canada, *The Contribution to Canadian Net Employment Change by High-Growth Firms, December 2017*



### **Goal 4.1: Expand the entrepreneurial base in the NWT**

#### **Actions associated with Goal 4.1 include:**

- **Action 1: Support youth entrepreneurship training.** Youth entrepreneurship programs can raise awareness of opportunities related to business development, create role models which can inspire others, and contribute to increases in new business development, growth and income for the community. The GNWT will support existing programs and will examine all current delivery agents, potentially building upon existing programs currently provided or developing new programming for entrepreneurs.
- **Action 2: Increase access to entrepreneur mentorship programs.** Mentorship programs have proved effective in offering guidance and assistance to entrepreneurs and the business establishment and development stages. The GNWT will commit to leveraging existing mentorship programming provided.
- **Action 3: Leverage the NTNP Business Stream program.** Attracting entrepreneurs from outside of Canada is a way to augment the existing base in the NWT. The Business Stream of the NWT Nominee Program targets people who want to start a business in the NWT, purchase an existing business based here, or invest in and operate an existing business based here. This allows NWT businesses the opportunity for improved business practices from talented entrepreneurs and business people, and residents the opportunity to benefit from those enhanced businesses.

### **Goal 4.2: Strengthen access to the business support needed by entrepreneurs and businesses**

#### **Actions associated with this goal include:**

- **Action 1: Improve business development agencies' communication and collaboration.** There are numerous organizations active in the NWT in delivering services to businesses and entrepreneurs in the NWT. Effective communication and collaboration between these agencies are necessary to address gaps and redundancies, and better leverage available resources.
- **Action 2: Provide pathfinding support that helps connect entrepreneurs to available programs, funding and other supports.** Given the range of programming available, the GNWT will work with partners to establish a front door or pathfinding service through which entrepreneurs can be referred to appropriate programming.
- **Action 3: Improve access to business support services.** The GNWT will commit to working with organizations to address gaps in the business support system. There may also be opportunities to connect local businesses with resources in other regions such as the work the NWT Chamber of Commerce is doing with the Trade Accelerator Program.

### **Goal 4.3: Support the marketing of goods and services by northern producers**

Government plays an important role in facilitating market access for its producers. That can involve making strategic use of government procurement or supporting the development of regional brands and platforms.

#### **Actions associated with this goal include:**

- **Action 1: Strategic use of government procurement.** The GNWT spends over \$337 million annually on products and services.

<sup>16</sup> [https://www.iti.gov.nt.ca/sites/iti/files/content/Procurement\\_Review\\_Panel\\_Report\\_Final\\_-\\_2021-06-30\\_v2.pdf](https://www.iti.gov.nt.ca/sites/iti/files/content/Procurement_Review_Panel_Report_Final_-_2021-06-30_v2.pdf)



To promote economic growth and capacity within NWT businesses, it has established the Business Incentive Policy (BIP) which gives preference on government procurement to businesses that are owned and operated within the NWT. The GNWT commits to helping business capitalize on its procurement actions by presenting its planned capital spending for the year ahead via holding an annual GNWT Industry Day. This is an opportunity for contractors and organizations, interested in doing business with the GNWT, to gather information on planned capital projects and expected budgets for projects taking place during the upcoming fiscal year. The GNWT procurement policies and practices were recently independently reviewed, resulting in the Report of the Procurement Review Panel which provided recommendations to GNWT.<sup>16</sup>

- **Action 2: Support development of regional brands, platforms, marketing tools and other supports.** A major impact of the pandemic has been to accelerate the movement

to online sales. Across Canada, retail e-commerce sales increased by 71% in 2020 and 14% in 2021. E-commerce accounted for 6.2% of retail sales in Canada in 2021, up from 5.9% in 2020 and from 3.5% in 2019. This shift to online sales reduces some of the market barriers faced by northern producers but also increases the importance of accelerating the digitization of business operations. The GNWT can play an important role in facilitating digitization, through training and funding, supporting development of a tech sector which can assist in that process, and assisting producers in developing brands, platforms, and marketing materials to promote their products online. This is further discussed in Goal 5.2, below.



## Pillar 5 : Connectivity

### ■ Context

The challenges associated with connectivity are twofold. The first is to ensure that residents have access to fast, reliable, and affordable internet. The second is to ensure that residents have the required knowledge, hardware, and resources in place to effectively access information, learning opportunities and digital services like e-healthcare as well as participate in the digital economy.

With a population of 44,000 residents in 33, often remote communities spread over an area of over one million square kilometres, broadband connectivity is crucial. Insufficient connectivity limits business access to southern markets and poses a substantial risk to partner or client organizations that rely on timely communication or product/service delivery.

### LEO Satellite Service

Northwestel has pledged to close the technology gap and provide all customers in the NWT with access to broadband 50/10 internet speeds. It is working to complete “last mile” upgrades in 26 of the NWT’s 33 communities offering 50/10 USO, by 2023. The next generation of technology, known as low-Earth orbit (LEO) satellites, may be used to serve nine remote communities in the NWT and Yukon which are located far from existing lines. In 2019, Northwestel signed a memorandum of understanding to use Canadian satellite company Telesat’s LEO satellites and, in 2020, the federal government also signed a \$600-million deal for Telesat space. Telesat plans to launch 300 satellites starting in 2023 and begin serving the North by early 2024. Starlink has successfully deployed around 1,800 LEO satellites with plans to launch more.





## ■ Success Statement, Goals and Actions

The success statement for connectivity is “NWT residents are connected with each other and with the wider world.” The GNWT has established two goals and outlined a series of actions under each. These goals focus on improving connectivity, resiliency and affordability as well as supporting businesses and communities in using the new connectivity (education, training, hardware, digital support, etc.).

### *Goal 5.1 Foster improved connectivity, resiliency and affordability of internet services in all NWT communities.*

A fibre line is being constructed between Dawson City, Yukon and Inuvik which will connect Fort McPherson and Tsiigehtchic and provide a redundant link, known as the Canadian Northern Fibre Loop, connecting the Mackenzie Valley Fibre Optic Line, Yukon’s Dempster fibre line, and Northwestel infrastructure. Another important project is a proposed link from Yellowknife to south of Great Slave Lake that would provide a diverse, redundant, ring for Yellowknife and the wider region.

The Canadian Radio-television and Telecommunications Commission (CRTC) universal service objective (USO) for fixed internet access service is that all Canadians have access to at least 50mbps download and 10mbps upload speed. The Broadband Fund supports investment to achieve this minimum level of service (50/10). In August 2020, CRTC announced approval for funding for Northwestel to upgrade connections for 18 NWT terrestrial and eight NWT satellite served communities.

### **Actions associated with this goal include:**

- **Action 1: Support improvements in connectivity.** While much of the responsibility for expanding connectivity lies beyond its direct control, the GNWT plays an important role in guiding and supporting further improvements, and advocating for regional connectivity needs. A key focus is on improving fibre optic and other infrastructure and creating rings that provide redundancies and improve service resiliency.



- **Action 2: Encourage improvements in unlimited data packages and reduction of internet prices.** The GNWT works with the CRTC and industry to help inform decisions that meaningfully address affordability to ensure broadband services are accessible to all. Even as broadband service is extended into communities across the NWT, internet affordability can remain a key barrier to adoption. This is particularly true for satellite served communities, marginalized populations and small businesses. Relative to other regions, NWT faces high costs of internet. Emerging technology and increased competition will play a factor in addressing affordability.

***Goal 5.2: Support business and communities in using the new connectivity.***

As broadband is extended into the communities, support will be needed to ensure that businesses and residents have the knowledge, skills, hardware (e.g., laptops, desktop computers, tablets, etc.), and other resources needed to participate in the digital economy and access information, learning opportunities, e-healthcare and other resources. Programming provides community members with experiential learning opportunities which exposes them to skills and tools used in the digital

economy as well as its career opportunities. Basic technology and internet training can help incentivize participation.

**Actions associated with this goal include:**

- **Action 1: Enhance training for business and residential internet users.** The GNWT will work with Aurora College, the JK-12 system and others to develop in-person (when appropriate) and virtual internet usage and basic technology skills training, particularly in areas that are experiencing newly improved connectivity. The GNWT will also work to provide businesses assistance in digitizing their operations and making use of digital platforms and social media to access new markets.
- **Action 2: Provide support to businesses in the digitization of their operations.** The GNWT will support businesses to take advantage of the Canada Digital Adoption Program. The CDAP will help get NWT business online, give NWT e-commerce presence a boost and help digitalize NWT business's operations. CDAP provides funding and support to businesses, as well as training and work opportunities for young Canadians.





# Distribution of Responsibility for Action Implementation

Below is a summary table of the Pillars, Goals and Actions. While this action plan is being led by the Department of ITI, it is a multi-departmental initiative that will require action by many GNWT departments. The table below outlines the lead department for each action.

Strategic Pillar	Goals	Actions	Lead Department
<b>Pillar 1 – Collaboration:</b> A culture of innovation is fostered through increasing collaboration in the Knowledge Economy	<b>Goal 1.1:</b> Work with NWT residents, businesses, governments and organizations in developing the Knowledge Economy	<b>Action 1:</b> Support development of a strong industry association	ITI
		<b>Action 2:</b> Support development of physical spaces and experiential learning centres	ITI
		<b>Action 3:</b> Integrate innovation as an important component of Regional Economic Development Plans (REDP)	ITI
		<b>Action 4:</b> Foster communication and collaboration between innovation ecosystem participants through collaborations, events and other mechanisms	ITI
	<b>Goal 1.2:</b> Raise the profile and importance of innovation in the economy	<b>Action 1:</b> Promote innovation and the dissemination and adoption of new knowledge and technology through improved communications	ITI
		<b>Action 2:</b> Establish an Innovation Prize for the NWT	ITI

Strategic Pillar	Goals	Actions	Lead Department
<p><b>Pillar 2 – Skilled Worker Development and Attraction:</b> The NWT’s communities, industries and institutions have access to the NWT-based skilled labour they need</p>	<p><b>Goal 2.1:</b> Further incorporate STEM skills through the JK-12 system</p>	<p><b>Action 1:</b> Promote Science, Technology, Engineering, and Math (STEM) curriculum throughout Junior Kindergarten to grade twelve (JK-12) to increase the number of students pursuing advanced STEM-related courses at the high school level, in preparation for opportunities in the workforce</p>	ECE
		<p><b>Action 2:</b> Provide training that supports the use of new technologies</p>	ECE
	<p><b>Goal 2.2:</b> Align post-secondary education system with innovation needs of the economy</p>	<p><b>Action 1:</b> Transform Aurora College into a polytechnic university</p>	ECE
		<p><b>Action 2:</b> Partner with employers to involve them with education and training</p>	ECE
		<p><b>Action 3:</b> Align post-secondary programs with industry needs</p>	ECE
		<p><b>Action 4:</b> Support micro-credential programs that provide skills or certifications</p>	ECE
		<p><b>Action 5:</b> Further incorporate Indigenous, traditional and local knowledge into post-secondary education</p>	ECE
	<p><b>Goal 2.3:</b> Attract workers by positioning the NWT as a great place to live and work</p>	<p><b>Action 1:</b> Implement attraction programs targeted at skilled workers</p>	ECE
		<p><b>Action 2:</b> Address factors, particularly housing, that constrain the attraction and retention of skilled knowledge workers</p>	ECE

Strategic Pillar	Goals	Actions	Lead Department
<p><b>Pillar 3 – Research, Development and Commercialization:</b> The NWT is recognized as a region that values and supports discovering, developing and commercializing knowledge</p>	<p><b>Goal 3.1:</b> Expand research activities in the NWT</p>	<p><b>Action 1:</b> Strengthen and promote the NWT as a location for targeted research</p>	<p>ENR</p>
		<p><b>Action 2:</b> Promote Indigenous, traditional, and local knowledge in research programs</p>	<p>ENR</p>
		<p><b>Action 3:</b> Support further development of domestic research capabilities</p>	<p>ENR</p>
	<p><b>Goal 3.2:</b> Facilitate research in the NWT</p>	<p><b>Action 1:</b> Enhance pathfinding services for private, public, academic, and non-government organizations</p>	<p>ENR</p>
		<p><b>Action 2:</b> Simplify research license approval processes</p>	<p>ECE</p>
		<p><b>Action 3:</b> Improve data management practices and repositories</p>	<p>ENR</p>
	<p><b>Goal 3.3:</b> Support private sector research, development and commercialization</p>	<p><b>Action 1:</b> Increase access to funding and other financial supports for research, development and commercialization</p>	<p>FIN/ENR</p>
		<p><b>Action 2:</b> Assess the feasibility of establishing an innovation or technology centre to support business R&amp;D and commercialization activities</p>	<p>ITI</p>
		<p><b>Action 3:</b> Facilitate connections between the natural resource sectors and other sectors</p>	<p>ENR with support from ECE</p>



Strategic Pillar	Goals	Actions	Lead Department
<b>Pillar 4 – Entrepreneur and Business Development:</b> The NWT’s rate of business establishment and development is accelerating	<b>Goal 4.1:</b> Expand the entrepreneurial base in the NWT	<b>Action 1:</b> Support youth entrepreneurship training	ITI
		<b>Action 2:</b> Increase access to entrepreneur mentorship programs	ITI
		<b>Action 3:</b> Leverage the NTNP Business Stream program	ITI
	<b>Goal 4.2:</b> Strengthen access to the business supports needed by entrepreneurs and businesses	<b>Action 1:</b> Improve business development agencies’ communication and collaboration	ITI
		<b>Action 2:</b> Provide pathfinding support that helps connect entrepreneurs to available programs, funding and other supports	ITI
		<b>Action 3:</b> Fill gaps in available business support services	ITI
	<b>Goal 4.3:</b> Support the marketing of goods and services by northern producers	<b>Action 1:</b> Strategic use of government procurement	ITI
		<b>Action 2:</b> Support development of regional brands, platforms, marketing tools and other supports	ITI
	<b>Pillar 5 – Connectivity:</b> Residents of the NWT are connected, with each other and with the wider world	<b>Goal 5.1:</b> Foster improved connectivity, resiliency and affordability of internet services in all NWT communities	<b>Action 1:</b> Support improvements in connectivity
<b>Action 2:</b> Encourage improvements in broadband data packages and reduction of internet prices			FIN
<b>Goal 5.2:</b> Support business and communities in using the new connectivity		<b>Action 1:</b> Enhance training for business and residential internet users	Multi-departmental
		<b>Action 2:</b> Provide support to businesses in the digitization of their operations	Multi-departmental



# Performance Measurement

## Logic Model

The table on the following pages presents the strategy underlying the Innovation Action Plan in the form of a logic model. The logic model outlines the actions associated with each goal and then presents the intended outcomes in the short-term (which align with the pillars), the medium-term (which align with the success statements), the longer-term, and the ultimate outcome (which aligns with the vision).

**For example, under the research, development and commercialization pillar, actions will be taken to:**

- Promote research in the NWT;
- Further incorporate Indigenous & local knowledge;
- Expand domestic research capabilities;
- Provide pathfinding services for research;
- Streamline the research licensing process;
- Improve data management practices and repositories;
- Increase private sector research funding and other financial supports;
- Assess the feasibility of an innovation or tech centre; and
- Connect the natural resource sector with other NWT sectors on issues related to innovation.

In turn, these actions will contribute to increased research activity in the NWT, increased involvement of the private sector in R&D and commercialization, and increasing recognition of the NWT as a great place to discover, develop, share and commercialize knowledge and technology.

**Over the long-term, the combined progress made under each pillar will contribute to:**

- Improved access to information and data to support evidence-based decision-making;
- Increased rate of technology development, commercialization and adoption across all sectors in the NWT;
- Growth of tech sector and the innovation-related businesses in the NWT; and
- Increased use of technology by businesses and residents to overcome geographic and other barriers.

Those longer-term impacts will help achieve the vision for the action plan, namely

**An economy that is prosperous, diversified, advanced, and connected but still rooted in the NWT's unique history, culture and environment.**

Logic Model for the In

<b>Pillar</b>	<b>Collaboration</b> ↓		<b>Skilled Worker Development &amp; Attraction</b> ↓		<b>Rese</b>
<b>Actions</b>	Innovation promotion NWT Innovation Prize Industry Association Makerspaces REDPs Communication & Collaboration		STEM skills in JK-12 curriculum Extra-curricular STEM programs Transform Aurora College Involve employers in education and training Align programs with industry needs Create micro-credential programs Indigenous & local knowledge Address housing		Prom Indige Dome Pathfir Res Resea Innova Connect natu
	↓		↓		
<b>Short-term Outcomes</b>	A culture of innovation is fostered through increasing collaboration in the knowledge economy	Increased collaboration and communication	Graduates are better prepared for the new economy	Attracting skilled workers to the NWT	Increased l research a
	↓		↓		
<b>Medium-term Outcomes</b>	A culture of innovation is fostered through increasing collaboration in the knowledge economy		The NWT's communities, industries and institutions have access to the NWT-based skilled labour they need		The NWT is re and suppor com
	↓		↓		
<b>Long-term Outcomes</b>	Improved access to information and data to support evidence-based decision making		Increased rate of technology development, commercialization and adoption across all sectors		Growth o innovation-
	↓		↓		
<b>Ultimate Outcomes</b>	An economy that is prosperous, diversified, advanced, conn				

**Innovation Action Plan**

Research, Development and Commercialization		Entrepreneur and Business Development		Connectivity	
<p>↑</p> <p>Support research in the NWT Promote indigenous and local knowledge Leverage domestic research capabilities Improve funding services for research Streamline research licensing process Increase research funding and supports Establish innovation or technology centre Share resources with other sectors</p>		<p>↑</p> <p>Youth entrepreneurship training Entrepreneur mentorship programs Immigrant investor program Collaboration between agencies Pathfinding for entrepreneurs Access to risk capital Government procurement Brand, platforms &amp; marketing support</p>		<p>↑</p> <p>Connectivity improvements Data packages &amp; pricing Training for businesses &amp; residential users Support business digitization</p>	
<p>↓</p>		<p>↓</p>		<p>↓</p>	
<p>Level of activity</p>	<p>Increase in involvement of private sector in R&amp;D commercialization</p>	<p>Increase in business establishment and growth</p>	<p>Enhance marketing of goods &amp; services by northern producers</p>	<p>Improvements in internet access, reliability and costs</p>	<p>Increase in participation in the digital economy</p>
<p>↓</p>		<p>↓</p>		<p>↓</p>	
<p>Recognized as a region that values discovering, developing and commercializing knowledge</p>		<p>The NWT's rate of business establishment and development is accelerating</p>		<p>NWT residents are connected with each other and with the wider world</p>	
<p>↓</p>		<p>↓</p>		<p>↓</p>	
<p>Support of the technology sector and related businesses in the NWT</p>		<p>Increase in rate of new innovative businesses in the NWT</p>		<p>Increase in use of technology by businesses and residents to overcome geographic barriers</p>	
<p>↓</p>		<p>↓</p>		<p>↓</p>	

**Connected and still rooted in the NWT's unique history, culture and environment**



## Performance Measurement Plan

**The performance measurement plan for the Innovation Action Plan focuses on a small number of key indicators and relies on three core sources of information:**

- **Secondary data, drawn primarily from NWT Bureau of Statistics and Statistics Canada.** Examples including the NWT Community Survey (e.g., home internet use), Statistics Canada data (e.g., Labour Force Survey, Business Counts, Capital Expenditures, Weekly Earnings, and GDP by Sector) and Census data. Data will also be reviewed, as available, regarding internet access, plans and pricing as well as research licensing in the NWT.
- **A high-level review of progress made in implementing actions related to the action plan.**
- **A formal evaluation of the plan in about five years.** This will review the progress made in implementing actions, the resulting outcomes, impacts and effects, any challenges associated with implementation, factors continuing to slow the progress made in accelerating the rate of innovation in the NWT, existing priorities, and opportunities for improvement

The results will then feed into the design of an action plan covering the following five years.

The evaluation would include a:

- o Detailed review of progress made in implementing actions based on review of documentation and interviews with GNWT representatives and others;
- o Review of secondary data;
- o Interviews with key informants including community representatives; and
- o Update of the Innovation Index.

The formal evaluation would be the most important tool for measuring the progress. The following table summarizes a series of key outcomes, indicators and measures that can be used to report on the progress. In selecting the indicators, we focused primarily on those that are measurable through first-grade data. Further, the Innovation Index will be an important tool for measuring the long term success of this plan. The Innovation Index measures education rates, business climate and connectivity rates. Under a successful implementation of the Innovation Action Plan, the longer-term impact of the pillars, goals and actions would cause positive change in these three inputs and cause an increase in the index.



Expected Outcome	Focus	Performance Measure	Frequency	Data Source	Department Responsible for Performance Tracking
<b>Collaboration – A culture of innovation is fostered through increasing collaboration in the knowledge economy</b>					
Increased collaboration and coordination between ecosystem members	Development of a strong industry association	Funding received, number of members and activities	Mid-point and Evaluation	Secondary data	ITI
Increased recognition of importance of innovation	Promotional activity	Numbers of campaigns and events staged and prizes awarded	Evaluation	Documents	ITI
<b>Skilled Worker Development and Attraction – The NWT’s communities, industry and institutions have access to the skilled labour they need</b>					
Graduates are better prepared for the new economy	Education Attainment	Increased educational attainment (Highest Level of Schooling)	Periodic	NWT Stats	ECE
Attracting skilled workers to the NWT	Labour Force Activity	Increase in the Labour Force and Employment Rate	Periodic	NWT Stats	ECE
	Education levels	Educational profile of NWT residents	Periodic	Census Data	ECE
<b>Research Development and Commercialization – The GNWT is recognized as a great place to discover, develop, share and commercialize</b>					
Increased level of research activity	Research Activity	Level of research activities in the NWT	Annual	License Data	ECE
Increased involvement of private sector in R&D and commercialization	R&D and commercialization	Survey of businesses involvement and level of investment in R&D and commercialization/use of other financial supports	Evaluation	Survey	ITI

<b>Entrepreneur and Business Development – The NWT’s rate of business establishment and development is accelerating</b>					
Increase in business establishment and growth	Business start-ups	Number of new businesses registered	Annual	Business registrations	ITI
	NTNP Business Stream	Number and value of NTNP Business Stream investments made	Periodic	Secondary data commercialization	ITI
	Small and Medium Enterprise (SME) growth	Comparison of the rate of SME establishment, revenue and employment growth in the NWT to other regions	Periodic	Statistics Canada	ITI
<b>Connectivity – Residents of the NWT are connected, with each other and with the wider world</b>					
Improvements in internet access, reliability and costs	Coverage	% of population with 50/10 access	Periodic	Secondary data	FIN
	Internet access	% Home internet access	Periodic	CRTC Data	FIN
Increased participation in the digital economy	Business digitization	% of businesses participating in e-commerce (CDAP)	Periodic	Secondary data	ITI





## Innovation Index

In order to maintain a NWT-wide benchmark to measure innovation in the NWT economy, the Department of Industry, Tourism and Investment has created an Innovation Index. This index is designed to measure the real-world effect of the Innovation Action Plan, while the Performance Measurement Plan detailed is designed to measure the efficiency of the implementation of the Innovation Action Plan.

For the Innovation Index, innovation, as defined by the World Bank and the OCED, consists of three critical inputs: 1) an educated population; 2) information infrastructure; and 3) a business environment conducive to innovation. As such, these inputs are necessary for innovation to occur within an economy: the larger the inputs, the greater the innovation output. An input model was chosen because the Innovation Action Plan is largely based around these inputs. Innovation output will be measured separately.

**The Innovation Index uses NWT, Statistics Canada, CRTC and other data to compile basic metrics on these goals of innovation, including:**

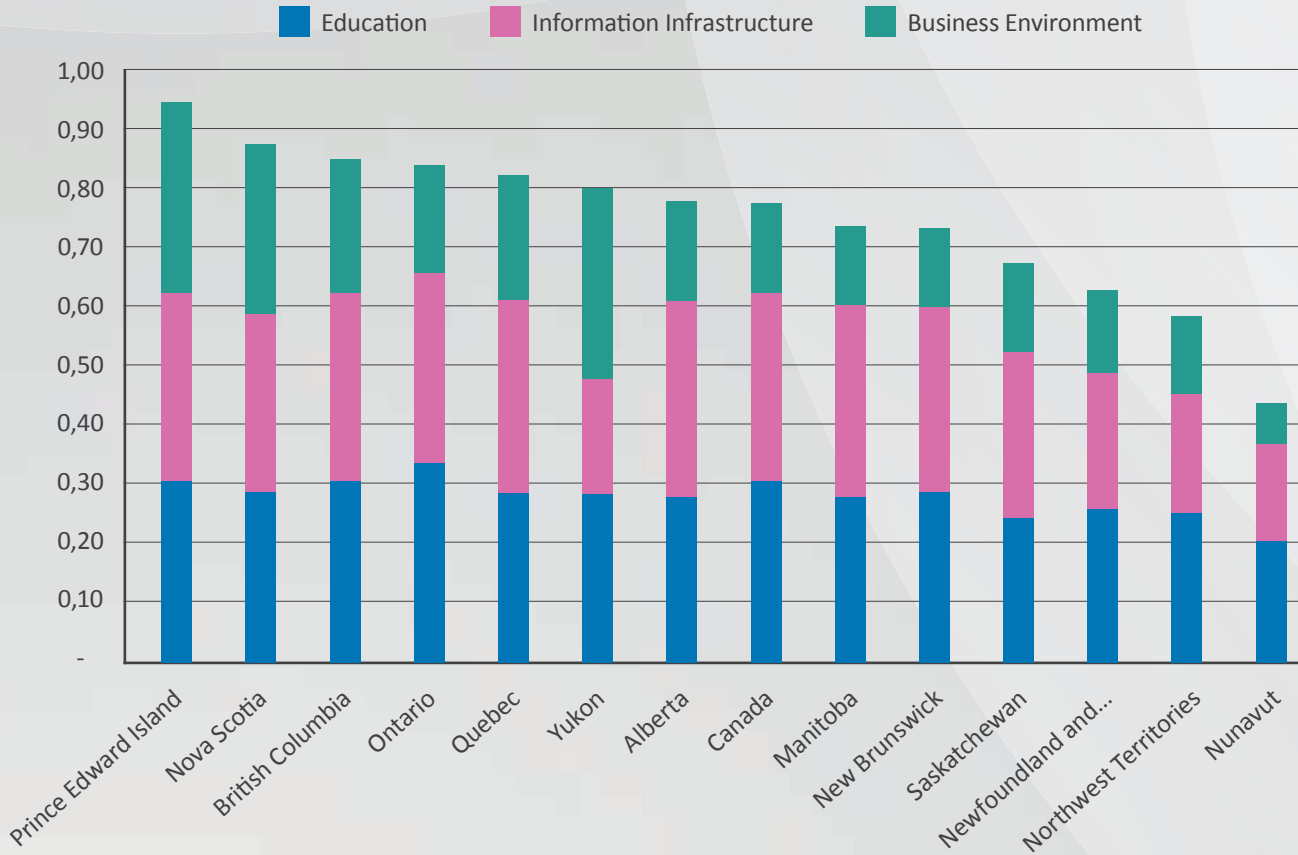
- 1) The tertiary education rate in the NWT;
- 2) The availability of widespread internet and data connectivity in the NWT; and
- 3) Business environment growth.

**These metrics were normalized to the following specifications:**

- 1) Tertiary education rate (unchanged);
- 2) The average of internet accessibility and cellphone data connectivity, as a percentage of population for which they are available;
- 3) The average growth of new businesses compared to active businesses, which was then averaged with the five-year growth in the ICT sector; and
- 4) Measured against the provinces and territories of Canada, where each metric for each region was set relative to the best-performing region under each input.

## Current Results

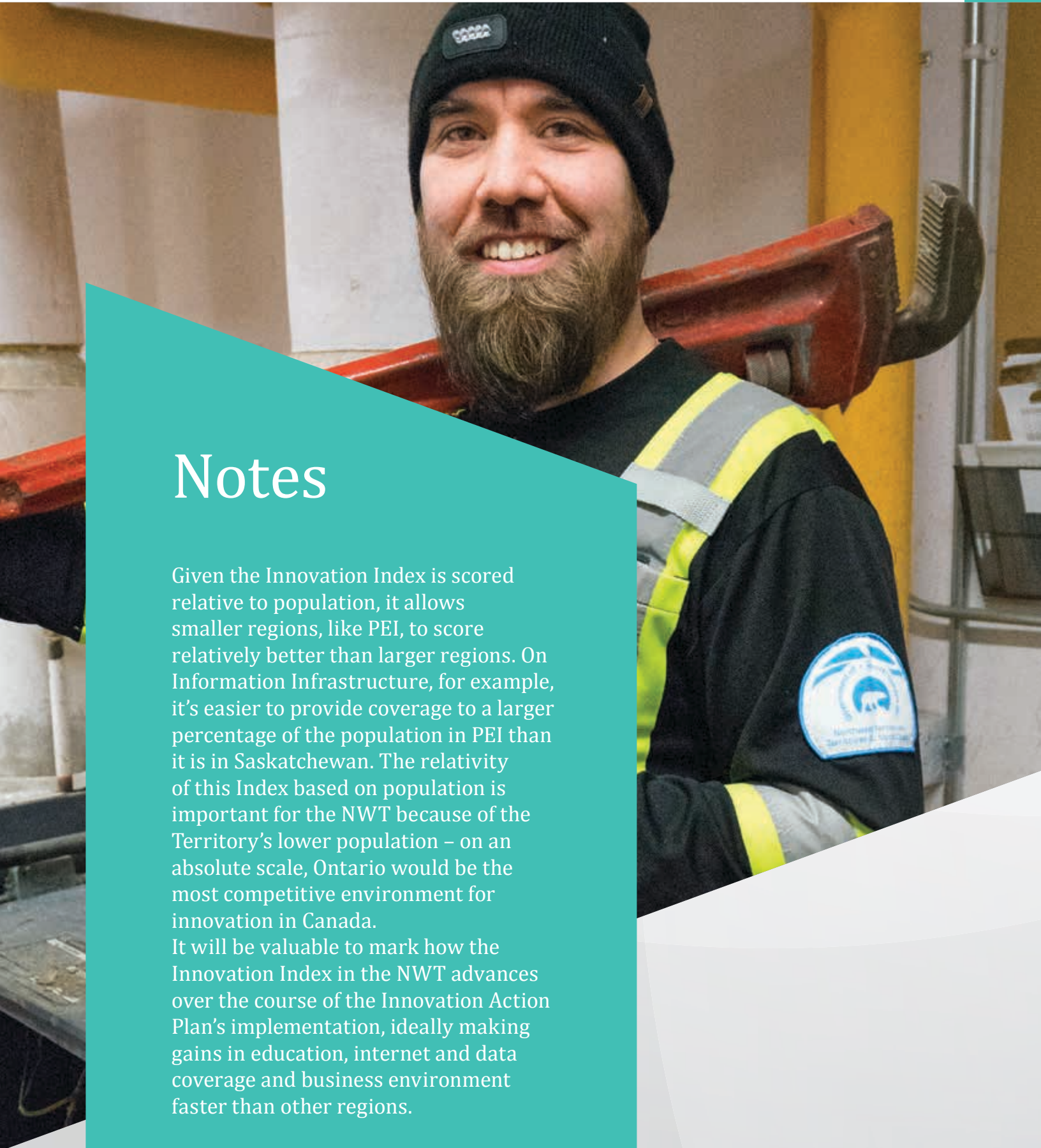
Department of Industry, Tourism and Investment's Index



# Notes

Given the Innovation Index is scored relative to population, it allows smaller regions, like PEI, to score relatively better than larger regions. On Information Infrastructure, for example, it's easier to provide coverage to a larger percentage of the population in PEI than it is in Saskatchewan. The relativity of this Index based on population is important for the NWT because of the Territory's lower population – on an absolute scale, Ontario would be the most competitive environment for innovation in Canada.

It will be valuable to mark how the Innovation Index in the NWT advances over the course of the Innovation Action Plan's implementation, ideally making gains in education, internet and data coverage and business environment faster than other regions.









Government of Northwest Territories  
Gouvernement des Territoires du Nord-Ouest

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