



N.W.T. Labour Market Information Resource Module 5

The Territorial Forecasting Model

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Key Findings

- The Conference Board of Canada's Territorial Forecasting Model (TFM) was used to produce three sets of economic forecasts for the Northwest Territories up to the year 2040.
- Population growth in the territory will be weak over the forecast period.
- On average, mining and oil and gas extraction will account for a quarter of the N.W.T.'s annual GDP up to 2040.
- Construction is expected to grow by 6.4 percent in 2022. Beyond that, the industry outlook is less positive.
- Services such as travel and accommodation will not likely return to pre-pandemic output levels until well into 2022.



This forecast is an update to The Conference Board of Canada's previous forecast scenarios published in the *2016 Labour Market Information Resource*. It represents five new years of data and more up-to-date assumptions about the future of the economy.

Overall, the forecast provides a similar outlook to the previous 2016 results,¹ but with a slightly more negative emphasis. In addition to the COVID-19 pandemic, the past few years have been marred by delays to major projects that were expected to have been completed earlier (like the Jay kimberlite pipe).

In this module, we discuss the economic forecasting model used to construct the occupational demand scenarios. This model produces forecasts for real GDP by industry, as well as employment by industry. The module also discusses the results for GDP and employment growth, while Module 6 discusses the corresponding occupational demand scenarios. The basic assumptions of the territorial forecasting model are detailed, as are the different sets of assumptions used to produce our base case and alternative low and high forecasts.



The Economic Forecasts

The following section provides an analysis of the base case forecast, the low forecast, and the high forecast, including the key assumptions that have been included in each. Assumptions include information surrounding the exploration and mining of minerals and the oil and gas sectors, the government sector, and the tourism sector over the short, medium, and long term. The resulting economic outlook and impacts on employment growth are reported.

Demographic Trends

Population growth in the Northwest Territories will be weak over the forecast period, as net emigration from the territory will outpace net immigration. Specifically, between 2025 and 2040, we forecast that approximately 500 people will leave the Northwest Territories, with only 140 coming the other way. These migratory dynamics will dampen growth of the labour force, employment, and, by extension, the economy. In fact, from 2029 onward, we forecast a labour force of decreasing size.

¹ Conference Board of Canada, *The, Labour Market Information Resource*.

A positive aspect of the territory's demographics is that the fertility rate is sufficiently high to maintain the natural rate of increase of the population (the number of births minus the number of deaths). This remains positive over the whole forecast period.

As in much of the rest of Canada, the population of the Northwest Territories is aging. This will create a higher demand for health care services and, given the shrinking labour force, will put pressure on government finances.

For the high scenario, we expect the increased job opportunities to lead to increased population growth and labour force growth. Conversely, we expect that the low scenario's relatively weaker employment opportunities to lead to more people exiting the Northwest Territories for opportunities elsewhere.



The Base Case Economic Forecast

The base case economic forecast is our forecast for the N.W.T.'s economy using the set of assumptions that we believe are most likely to occur. Over the next few sections, we describe our most important assumptions. We outline our outlook for key industry sectors and the impact on employment.

Mining

Non-metallic mining in the N.W.T. will account for roughly a quarter of overall output in 2021, highlighting the integral role of this industry to the overall economy. Three mines—Gahcho Kué, Diavik, and Ekati—are currently operating in the territory. Of these, the Diavik mine is set to cease operations in 2025, while operations at Gahcho Kué will end in 2030. At the Ekati mine, the development of an additional kimberlite pipe (the Jay pipe) has allowed an extension of the mine's life and a sustained level of production through the decade. This will provide welcome support to the economy and allow the mine to remain operational until 2035.

While there are currently no metal mines operating in the territory, three prospective mines are expected to begin production by 2025. These will partially offset the diminishing production in the non-metallic mining industry, providing a degree of insulation from larger GDP losses.

Diamond Mining

In 2020, the Gahcho Kué mine produced approximately 6.5 million carats of diamonds. The first quarter of 2021 was difficult as far as production is concerned. This was due to bad weather and an outbreak of COVID-19, which forced a three-week shutdown in February. According to mine owners, this led to a 40 per cent decrease in production compared with the same quarter last year. Despite this setback, annual production is forecast to hover around 6.4 million carats in 2021 and 2022, after which production will begin to fall incrementally over the next eight years. That said, the mine is still expected to produce just over 30 million carats between 2023 and 2030.

In 2020, diamond production at the Diavik mine reached 6.2 million carats. In 2018, a fourth kimberlite pipe, A21, was opened, which has helped to sustain production levels at the mine. The mine had been the subject of a legal dispute between the owners. Dominion Diamond Mines sued DDMI, a subsidiary of Rio Tinto, in June 2020 over alleged breaches of contract and fiduciary responsibilities. But in November 2021, Rio Tinto completed a transaction with Dominion Diamond Mines to become the mine's sole owner.² The mine is expected to produce around 18 million carats between 2021 and 2025. Production will cease at the Diavik Mine in 2025, dealing a blow to the wider economy of the Northwest Territories.



In March 2020, Ekati, the oldest diamond mine in Canada, was closed as a precautionary response to the COVID-19 pandemic due to the high frequency of air travel required for employees and because of the mine's remote location. This negatively affected production levels in 2020. Nevertheless, the mine, owned by Arctic Canadian Diamond Company, is estimated to have produced nearly 1 million carats of diamonds in 2020. The company said it planned to raise production to 4 million carats in 2021.

Despite several delays, development of the Jay kimberlite pipe is expected in the coming years, which will extend the life of the Ekati mine by up to 11 years. The Jay pipe offers the potential to mine approximately 80 million carats. We forecast that the development of this additional kimberlite will bolster production at the mine starting in 2025. This will allow annual average production to reach 7 million carats between 2025 and 2030.

The diamond industry was dealt a severe blow by the pandemic, as lockdowns and border closures brought the global diamond supply chain to a standstill. In India, where many of the world's diamonds are cut and polished, business temporarily stopped in 2020. This lowered the demand for the rough diamonds produced by the mines of the Northwest Territories. Among consumers, the pandemic has also severely hurt demand for luxury goods, including diamonds. Trade does appear to be recovering but is likely to remain weakened by the ongoing effects of the pandemic, at least in the short term.

² Van Dusen, "Rio Tinto Becomes Sole Owner of Diavik Diamond Mine."

The Tł'chǫ Highway, which connects Whatì to Highway 3, is a crucial piece of infrastructure for the NICO project, providing the means for the transportation of its products to market.



Photo credit: Kiewet



Metal Mining

Metal mining has been absent in the Northwest Territories since 2015. However, after a long hiatus, a total of three prospective mines are expected to begin production in 2026. These mines will produce a variety of metals, partially offsetting the impacts of declining diamond production.

The Prairie Creek mine, operated by NorZinc, was given the go-ahead following a feasibility study in 2017. The mine is set to begin producing zinc, lead, and silver in 2026. Currently, the life of the mine is projected at 15 years. However, beyond the 8 million tonnes of reserves, an additional 7 million tonnes of inferred reserves have been detected. This has the potential to extend the life of the mine beyond 15 years. The possibility of extension confers a degree of upside risk to the forecast.

The NICO deposit was first discovered in 1996 and is a combination of open pit and underground mines. Mineral reserves are estimated at 33 million metric tonnes. The development of the mine received a huge boost with the completion of the Tłı̨chǫ Highway in 2021 and is set to begin producing gold, cobalt, bismuth, and copper in 2025. Two of the mine's products—cobalt and bismuth—have been identified by the U.S. and EU as critical minerals that are essential to industry and not easily substituted. Given that the automotive industry is starting to transition from internal combustion engines to electric drive trains, the demand for cobalt, which features heavily in car batteries, is likely to increase.



The Pine Point project, owned by Osisko Metals, is set to come online in 2026, adding a second zinc-producing operation to the metal mining industry of the Northwest Territories. The prospects for the mine received a boost following a recent report estimating that mineral resources included 5.3 billion pounds of zinc and 2.1 billion pounds of lead. This represents a 36 per cent increase on estimates from a previous report conducted in 2018. Once operational, the mine is expected to remain productive for 10 years.

Currently, there are no operational gold mines in the Northwest Territories. This is set to change with the start of the NICO project in 2025. Despite the lack of operational metal mines, there are several companies conducting exploration in the territory. This includes Gold Terra Resource, which, in 2019, released mineral resource estimates totalling 735,000 ounces of gold. Additional drilling programs were announced by the company in November 2020. Elsewhere in the territory, Nighthawk Gold recently announced the start of the 2021 exploration program at its Indin Lake gold property. This initial phase will see over 40,000 metres of drilling.

With three productive mines expected to come online by 2026, the Northwest Territories is set to start producing several metals. Besides gold, these include silver, cobalt, zinc, lead, copper, and bismuth. In addition, Vital Metals has announced the commencement of its Nechalacho rare earths project. This project will be the first producer of rare earth metals in Canada. Rare earth elements have become increasingly important owing to their various uses in a variety of modern electronic technologies. Since the beginning of the pandemic, prices for many metals have risen sharply. This bodes well for the prospective mining operations and raises the attractiveness of additional mineral exploration operations.

Oil

In October 2018, Imperial Oil restarted production at its Norman Wells operation in the Northwest Territories after almost two years of closure. This allowed a bounce-back in production in 2019. However, there has been a lack of exploratory drilling recently and production at the Norman Wells facility is declining. Our outlook for the territory's oil sector over the forecast period is one of decreasing oil production. In the medium term, there is likely to be a degree of support for production. In addition, demand for oil is likely to rise as the global economy emerges from the turmoil inflicted by the pandemic.

Remediation

There is also significant economic activity in the remediation sector. Over the past few decades, many sizable mine sites in the Northwest Territories have been abandoned, which means cleanups are needed. These include the Giant Mine Remediation Project, which addresses the long-term containment and management of arsenic trioxide waste, the demolition and removal of all buildings on the surface, and the remediation of surface areas, including tailings ponds, at the former Giant Mine site in Yellowknife. It also includes work at the Cantung Mine, which closed for good in 2015, and the Great Bear Lake Remediation Project, which comprises work at smaller-scale sites located close to one another, including Silver Bear Mine and Port Radium Mine. In the medium term, Diavik will also wind down and cease production in 2025. The mine's operator is currently undertaking detailed closure planning studies that cover not only site reclamation, but also employees, communities, and business transition planning.

Exploration

Despite the promise of future projects, the mining sector's potential upside is limited by weak exploratory expenditures. Expenditures on exploration and deposit appraisals fell dramatically in 2020 to \$35.4 million, (from \$79.8 million in 2019 and \$112 million in 2018).³ Spending intentions collected by Statistics Canada estimate that exploration and deposit appraisal expenditures grew to \$47.7 million in 2021, but that is still 60 per cent below expenditures in 2019. This slowdown in exploration spending came at a point in which Northern mineral exploration was already struggling. The weakness of exploratory expenditures has prompted discussions between the N.W.T. and Nunavut Chamber of Mines and the government on developing a strategy to help support the industry going forward.



³ Natural Resources Canada, "Table 02 - Exploration Plus Development."

Construction

The outlook for the construction industry over the medium term is positive, partly owing to the three new mines expected to come online within the next five years. Work is largely complete on the Tł'chǫ Highway, which opened near the end of 2021. The all-season gravel highway was constructed along an existing route and now connects the community of Whati to Highway 3. Despite a short halt to activities when the pandemic first hit, work resumed in May 2020. The road is a crucial piece of infrastructure for the NICO project, providing the means for the transportation of its products to market.

In addition, there are several upcoming infrastructure projects that will help support the territory's economy. These projects include the Prohibition Creek access road. This 13-kilometre, two-lane gravel road will connect Canyon Creek and Prohibition Creek and is an important component of the Mackenzie Valley Highway. Construction is expected to commence in 2022 and will be funded by federal and territorial governments. A second notable project is the construction of the Great Bear River Bridge. This bridge will be constructed 800 metres from the confluence of the Mackenzie and Great Bear rivers. Construction is expected to begin in the winter of 2023 and continue until 2026. A third notable project is the \$50-million investment in the replacement of the Frank Channel Bridge, which is scheduled to start construction in 2022 and continue until 2024.

There are also significant investments in housing construction.

The Government of the Northwest Territories has partnered with the Government of Canada to provide about \$140 million over the next 10 years for housing through the National Housing Strategy. In addition, there are another \$150 million in federal housing investments through the Social Housing Agreement. These investments will support the housing sector for years to come.

We estimate that the N.W.T. construction industry decreased by 3.1 per cent in 2020 but then bounced back in 2021 with growth of 8.9 per cent. For 2022, we expect growth of 6.4 per cent. Beyond that, the outlook for the industry is less positive. A drop-off in mining-related construction in the second half of the decade will result in falling output and employment in the sector from 2027 onward.

Base Case Outlook

Our economic outlook is summarized and divided into three periods. The first period begins in 2021 and ends in 2025. The second spans the years 2026 through 2030, while the third covers 2031 to 2040.

The base case economic outlook for the Northwest Territories is one of muted growth. The region suffered an economic contraction in 2019 and then another in 2020 when the COVID-19 pandemic struck. While we expect 14.2 per cent growth in 2021, fuelled by increased diamond production at the Ekati mine, real GDP will not recover to 2018 levels until 2026.

The pandemic has been particularly damaging to the tourism industry in the Northwest Territories. Travel restrictions came into effect in 2020 and dealt a devastating blow to the many businesses that rely on visitors from outside the territory. As a result, output in the accommodation and food services industry, which thrives on tourists, fell sharply in 2020. While the numbers are expected to show a partial recovery in 2021, the continuation of restrictions means pre-pandemic output levels will not return until at least well into 2022.

As such, we expect annual growth to average 3.3 per cent a year from 2021 to 2025.

With production in two of the three diamond mines set to decrease over the medium term, the contribution of this crucial element of the economy will decline in the coming years. Yet beyond the medium term, there are some positives on the horizon. Three additional mines are scheduled to begin production around the mid-point of the current decade. Furthermore, the life of the Ekati diamond mine is set to be extended as attention turns to developing a new kimberlite pipe deposit. With these new mines injecting more life into the economy, we expect it to grow, on average, 4.2 per cent a year from 2026 to 2030. The economy will then slow as mines wind down production, with GDP shrinking at an average annual rate of 0.8 per cent from 2031 to 2040.

Employment by Industry

2020 was tough on the labour market of the Northwest Territories. We estimate that employment growth was flat or negative in nearly all sectors. This left 800 fewer people employed than in 2019.

Underpinning these disappointing figures was the global pandemic. The pandemic led to closures and capacity restrictions, which resulted in declines in the commercial services sector. This drove the unemployment rate up to 8.4 per cent in 2020. But 2021 saw a modest bounce-back, with employment growing by an estimated 2.5 per cent, the equivalent of about 520 jobs. The commencement of several infrastructure projects implies solid employment growth in the construction industry, and we estimate about 340 additional jobs were added in that sector in 2021. Elevated levels of employment will be sustained over the next few years, supported by the arrival of new mining projects.

Over the next decade, the gradual ramping-down of the Gahcho Kué and Mountain Province diamond mines will likely see fewer employees required to sustain these operations. However, the losses are expected to be partially offset by growing demand for labour from the three additional mines that are set to open. Beyond 2030, with two of the three diamond mines no longer in operation, further employment declines are expected.



The Low Case Economic Forecast

The low case differs from the base case in a few important ways. First, we assume that the infrastructure spending outlined in the base case will be delayed. For example, construction of the Great Bear River Bridge will be delayed due to the inability to conduct community consultations during the pandemic. In addition, infrastructure spending support from the federal government will be delayed due to the increased debt loads caused by the pandemic.

Second, we assume world commodity prices will be lower than expected. This weighs on mining investment, causing output to be lowered. Due to weakness in commodity prices, mines produce less than they would in our baseline scenario. The delayed infrastructure spending also leads to continued high costs of operating within the Northwest Territories, which further stymies mining investment.

The COVID-19 pandemic also has bigger impacts on both housing and tourism under the low case scenario. Due to the increased debt, there will be lower housing investment support from the federal government, which lasts for five years. In addition, the COVID-19 pandemic weighs on consumer confidence for years to come and consumers continue to be hesitant to travel. As a result, tourism-related industries, such as accommodation and food services, take longer to recover than under the baseline scenario.

Low Case Outlook

The less optimistic outlook results in much slower growth for the economy. Annual growth in real GDP is now at 3.3 per cent annually in the first period (2021 to 2025), one percentage point lower than in the base case. This is driven primarily by the decrease in tourism-related industries and the weaker commodity prices leading to decreased mining output.

In the second period, GDP grows at an average annual rate of 3.8 per cent. Here, tourism recovers, but weaker commodity prices (compared with our other scenarios) hurt mining output.

In the final period, we see GDP decrease at a slower rate, compared with the base case scenario. This is because, in this scenario, mining has already waned at this point and construction that would have started under the base case never starts. Although the growth rate is higher in this period compared to our base case scenario, real GDP is \$286 million lower by the end of the forecast.

As with real GDP, employment is weaker under the low case scenario. In the low case assumptions, employment falls from 22,200 in 2021 to 21,500 in 2025 – compared with the base case forecast of 23,300 for 2025. Employment then further declines in 2030, settling at 21,600 by 2040, due largely to the end of several major construction projects in the territory and to mining activities winding down.

The High Case Economic Forecast

The high case forecast is more optimistic than the base case scenario. First, we assume that additional infrastructure investments, like the Slave Geological Province Corridor Project, receive approval. This is based on a stronger-than-anticipated recovery from the pandemic.

Our second major assumption change is that commodity prices are higher than in the other scenarios. This increases mining investment and output. In addition, this trend is further supported by lower operating costs, thanks to the infrastructure investments mentioned above.

As a result of a strong recovery from the pandemic and increased household savings, people spend more on travel, leading to a stronger performance for the tourism sector. In addition, the increased infrastructure further encourages people to travel as access to more remote tourism destinations becomes easier. The improved infrastructure and the stronger performance by the tourism industry result in increased housing demand and residential investment, as well.

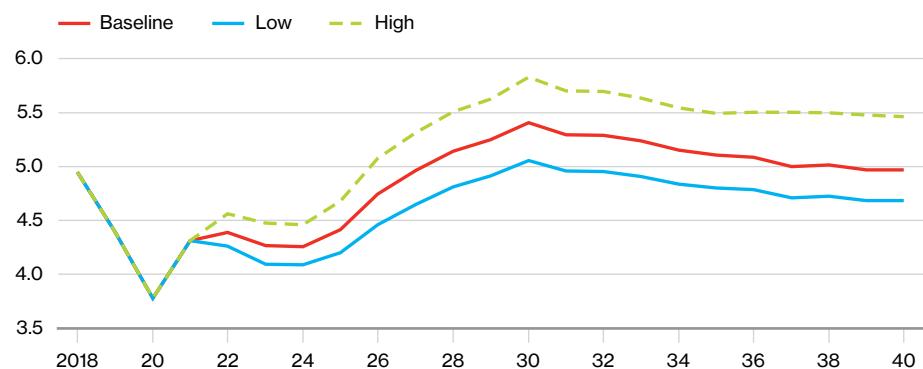


High Case Outlook

The most optimistic of our three cases improves the Northwest Territories' outlook. In the high case, annual growth in real GDP is projected to be 4.5 per cent in the first period (2021–2025), 1.2 percentage points higher than in the base case. The difference is largely driven by increased commodity prices and a boom in tourism due to increased household savings.

The second period continues the growth trend at an annual average of 4.5 per cent from 2026 to 2030. This is slightly stronger than under the base case and is thanks primarily to the higher mining output. In the third period, the decline in GDP is further slowed to 0.6 per cent. This is due primarily to the construction of the Slave Geological Province Corridor, which starts in 2030. Chart 1 compares the GDP forecasts from our base case, low, and high scenarios. (See also Chart 1(5) in the data download.)

Chart 1
GDP Scenarios
(GDP, 2012 \$ billions)

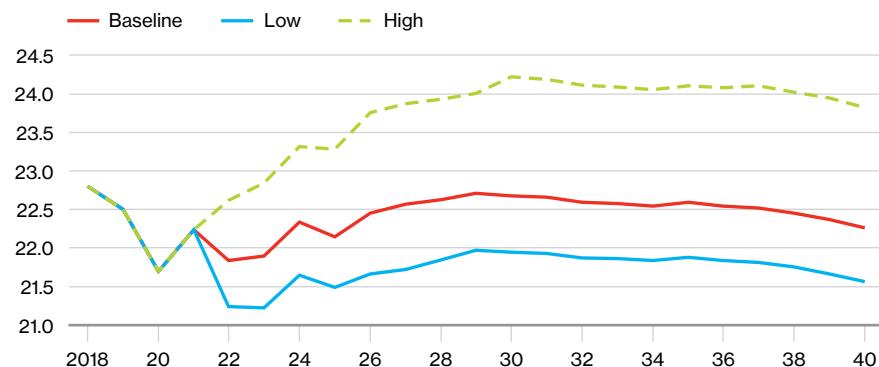


Sources: The Conference Board of Canada; Statistics Canada.

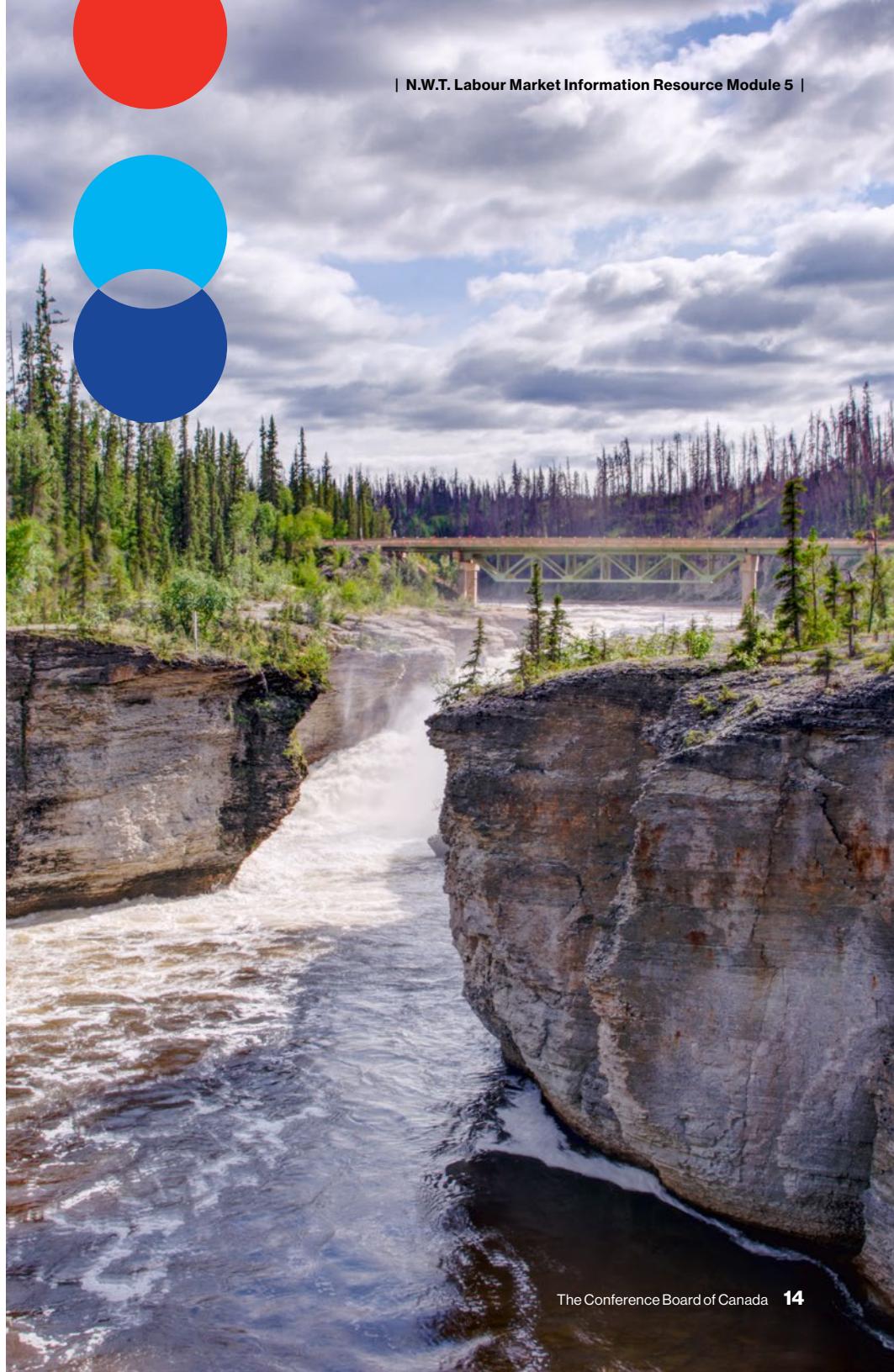
The employment forecast is also improved. Under the high case outlook, employment increases from 22,200 in 2021 to 22,500 in 2025 (compared with the base case forecast of 22,300). Employment continues to rise, peaking at 24,200 in 2030. It then starts to decline in 2031, falling to 23,800 by 2040. That is 1,600 more jobs than in the base case, thanks primarily to the Slave Geological Province Corridor construction project and increased mining output. Chart 2 compares the employment forecasts from our base case, low, and high scenarios. (See also Chart 2(5) in the data download.)

Chart 2 Employment Scenarios

(employment, 000s)



Sources: The Conference Board of Canada; Statistics Canada.



Appendix A

Methodology

This research project applied a mixed-methods approach that includes qualitative analysis, cross-sectional data analysis, historical time series, and forecasting.

Our analysis of factors shaping the contemporary Northwest Territories labour market combined quantitative and qualitative research activities. These activities included a collaboration with the Northwest Territories Bureau of Statistics and engagement with Education, Culture, and Employment and other Government of the Northwest Territories (GNWT) stakeholders to access relevant internal reports and administrative data. Specific research activities included:

- A review of academic and grey literature (public policy, industry, etc.) on key labour market issues in the territory and Northern economies. The review included over 400 documents from academic, public (federal, territorial, and Indigenous governments), and private sector sources.
- A review of data sources, including databases maintained by Statistics Canada and relevant federal and territorial government departments.
 - An exploratory analysis of data sets from Statistics Canada, including custom data from the National Household Survey, Census, Aboriginal Peoples Survey, Labour Force Survey, and Canadian Business Patterns.
 - An exploratory analysis of custom data sets from the Northwest Territories Bureau of Statistics (linked to the N.W.T. Community Survey), as well as program data from ECE.

The Conference Board of Canada's Territorial Forecasting Model (TFM) was used to produce three sets of economic forecasts up to the year 2040. The model relies on a core set of consistent assumptions formed from our global, Canadian, and provincial forecasts, in addition to ongoing monitoring of international, national, and territorial events. Specific territorial forecasting assumptions were then developed through engagement with the GNWT, industry experts, and through research of publicly available information on the status of project plans and capital investments in the territory. The forecasts were completed on June 15, 2021.



Definitions

National Occupational Classification System (NOCs) 2016 Version 1.0 Classification System

NOCs Skill Level Criteria

Each skill level represents the type and/or amount of education or training required to enter into and work in an occupation.

Skill level	Education/training required
Skill level A:	
Management occupations	These occupations can be classified as either “management occupations” or “professional occupations.”
Professional occupations	These occupations are characterized by a high level of responsibility, accountability, and subject matter expertise. Expertise can be acquired either through formal education or extensive subject matter expertise.
Skill level B: College/apprenticeship training	These occupations usually require college education or apprenticeship training.
Skill level C: Occupational training	These occupations usually require secondary school and/or occupation-specific training (up to two years).
Skill level D: On-the-job training	These occupations usually revolve around on-the-job training.

NOCs Skill Type

Each skill type refers to the type of work performed in an occupation or the field of study needed to enter into an occupation.

Skill type	Description
Management occupations	These occupations are considered to be at the top of the organizational hierarchy of workplaces or businesses. Decision-making that affects the organization as a whole, or departments within organizations, is undertaken by management.
Business, finance, and administration occupations	This category contains occupations that are concerned with providing financial and business services, administrative, and regulatory services and clerical supervision and support services.
Natural and applied sciences and related occupations	This category contains professional and technical occupations in the sciences, including physical and life sciences, engineering, architecture, and information technology.
Health occupations	This category includes occupations concerned with providing health care services directly to patients and occupations that provide support to professional and technical staff.
Occupations in education, law, and social, community, and government services	This skill-type category includes a range of occupations that are concerned with law, teaching, counselling, conducting social science research, developing government policy, and administering government and other programs.
Occupations in art, culture, recreation, and sport	This skill-type category includes professional and technical occupations related to art and culture, including the performing arts, film and video, broadcasting, journalism, writing, creative design, libraries, and museums. It also includes occupations in recreation and sport.

(continued...)

NOCs Skill Type

Skill type	Description
Sales and service occupations	This skill-type category contains sales occupations, personal and protective service occupations, and occupations related to the hospitality and tourism industries.
Trades, transport and equipment operators, and related occupations	This skill-type category includes construction and mechanical trades, trades supervisors and contractors, and operators of transportation and heavy equipment. These occupations are found in a wide range of industrial sectors, with many occurring in the construction and transportation industries.
Natural resources, agriculture, and related production occupations	This category contains supervisory and equipment operation occupations in the natural resource-based sectors of mining, oil and gas production, forestry and logging, agriculture, horticulture, and fishing. Most occupations in this category are industry specific and do not occur outside of the primary industries.
Occupations in manufacturing and utilities	This category contains supervisory and production occupations in manufacturing, processing and utilities.

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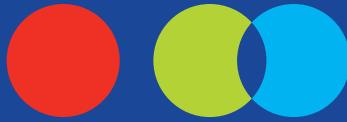
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