Appendix 60

Labour Market analysis

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

CONSEIL DES RESSOURCES HUMAINES
DE L'INDUSTRIE MINIÈRE

Kivalliq Labour Market Analysis (KLMA)

Final Report

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Submitted to:
Employment and Culture Committee (ECC)
Agnico Eagle Mines Limited (AEM)
Kivalliq Inuit Association (KIA)

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1. Introduction

This report presents the results of the Kivalliq Labour Market Analysis (KLMA), a study conducted by the Mining Industry Human Resources (MiHR) Council on behalf of Agnico Eagle Mines Limited (AEM) and its community partners**,** the Kivalliq Inuit Association (KIA) and the Employment and Culture Committee (ECC).

The Mining Industry Human Resources Council (MiHR): conducts research into Canada's mining labour market with the goal of discovering important human resources trends that are relevant to Canada's mining industry. As the primary resource for labour market information for mining industry stakeholders, MiHR provides a centralized, trusted and responsive knowledge center for mining labour market trends, intelligence and research. A deep understanding of current labour market trends, valid projections of future needs, and a clear picture of the potential sources of labour to meet these needs, all provide a necessary foundation for proactive, coordinated and cooperative human resources strategies.

Agnico Eagle Mines Limited (AEM): is a well-established Canadian gold mining company that has produced precious metals since 1957. AEM has identified three properties in the Kivalliq region of Nunavut, Canada, with development potential:

- **Meadowbank**: is an operating open-pit gold mine with three pits: Portage, Goose and Vault. An expansion to the Vault, Phaser and Portage pits will extend the mine life into 2019.
- **WhaleTail:** is an active exploration project that employed more than 100 workers, including contractors, in 2017. Currently in the permitting process, AEM anticipates that open pit mining operations will begin in the third quarter of 2019.
- **Meliadine**: is an advanced development project currently in construction; the proposed underground operation (years 1 through 9) and open pit mine (years 4 through 7) will begin by 2019 and is expected to employ 500 to 600 workers, mostly in front-line production and trades occupations.

The Kivalliq Inuit Association (KIA): represents the interests of all Inuit living in the Kivalliq Region. Their mission is to guide and encourage the development, protection, administration and advancement of the rights and benefits of Inuit; as well as to preserve and promote the Inuit culture, arctic wildlife and the environment, and the economic well-being for successive generations.

The Employment and Culture Committee (ECC): is comprised of representatives from AEM and KIA as part of the Inuit Impact and Benefit Agreement (IIBA). The objective of the committee is to provide a vehicle to discuss issues and opportunities related to training, employment, social wellness and cultural wellness.

KLMA Objectives

The purpose of the KLMA is to provide an objective and independent analysis of the availability of Inuit labour for the three AEM projects in the region and to identify the labour market challenges and opportunities that may affect that availability.

At its core, the KLMA aims to understand and inform expectations of labour supply in the Kivalliq region, such that project partners can develop strategies to maximize the potential of their community members. As well, the KLMA covers labour demand factors that may tighten the labour market for different occupations and categories of skill level.

This report provides an analytical framework that is simple to understand and reproduce, and can lead to informed decisions about AEM's annual Inuit Employment Goals (IEGs) and targets as set out in the Inuit Impact Benefit Agreement.

2. Scope of Research

Labour supply is a complex subject — there is no single, concise way of measuring the labour supply that is applicable across all sectors, regions and spheres of interest. The challenges become acute when considering a small, northern community where formal and informal economies co-exist. This study therefore offers a framework for de-constructing the complexity of labour supply in Kivalliq, and weaves together the methodology and analysis through successive levels of inquiry. The framework offered here is simple, but powerful, designed to elicit insights into the market behaviours and outcomes of specific segments of the population, both observable (statistically reported) and "hidden."

Main Data Sources

The KLMA relies on a number of data sources that provide key information on variables of interest, such as demographic characteristics (e.g. age, gender) and economic and behavioural factors (e.g. unemployment, turnover). Data obtained from a variety of public and private sources are used to analyze the Kivalliq labour market. Data sources that are central to this analysis include the following:

Census Data (Statistics Canada):[1] Produced every five years**,** the census provides a wide variety of data, including labour market data on Canada's population. The most recent census was produced in 2016. MiHR requested a customized data set from Statistics Canada (for 2006, 2011 and 2016) in order to deliver analyses focused on the Kivalliq region.

Nunavut Bureau of Statistics (NBS): This is the government of Nunavut's central statistical agency. The NBS collects, records, analyzes and distributes statistical data on population, economics, labour force and employment, social, and housing for Nunavut and its regions and communities.

[1] The 2016 census marked the reinstatement of the mandatory long-form census, which had been temporarily dropped in favour of the voluntary National Household Survey for the 2011 census.

AEM Data: AEM provided data and information that covers the timeline of operations and human resources of each mining project. Data sources include AEM's socio-economic reports and employee records, the latter of which include information on employment status, termination/turnover and hours of work, among other factors. Data in this report are presented in aggregate to protect the confidentiality of individuals.

The Labour Pool List[2]: The labour pool list contains data on the performance of persons who entered the Labour Pool Program, a recruitment process to pre-qualify potential candidates. Research findings from this data source are presented here in aggregate to protect the confidentiality of individual information in the database.

Other Data: Considered in this report are data from Statistics Canada's Job Vacancy and Wage Survey (JVWS), the Canadian Disability Survey (2012) and (enrolment data) from Arctic College's 2006 and 2015-2016 annual reports.

Geography

The focus of the KLMA is on the Kivalliq region in Nunavut, which is comprised of the following seven communities:

- Rankin Inlet
- Arviat
- Baker Lake
- Chesterfield Inlet
- Coral Harbor
- Repulse Bay
- Whale Cove

Key Occupations

The KLMA analyzes occupations that are relevant to the mining sector and AEM's operations. In collaboration with AEM, MiHR has identified a list of critical occupations to establish a focus for the occupational analysis in this report. These occupations range from production and operations (e.g. heavy equipment operators) to professional and physical sciences (e.g. geologists), among others, and are aligned with the *National Occupational Classification (NOC)* system used by Statistics Canada. (Please refer to Appendix A for the complete list.)

The NOC system is a standardized framework for organizing labour market data into a manageable and intelligible system — it groups together occupations according to the kind of work performed and the output produced. Occupations are assigned a NOC code number consisting of 1 to 4 digits. Each 4-digit NOC code denotes four levels of disaggregation: broad, major, minor and unit occupational groups.

[2] The Labour Pool List is a product of the Inuit Impact and Benefit Agreements with the KIA, to offer pre-employment opportunities to Inuit from all Kivalliq communities.

Time Frame of Analysis

Many of the key findings in this report focus on the inter-census periods (primarily 2006, 2011 and 2016) largely because much of the analysis is based on census data from Statistics Canada. Presented throughout this report is a projected scenario for 2021, the next scheduled census year. This forward-looking scenario is based on specified assumptions and forecasting, such as population projections obtained from the Nunavut Bureau of Statistics.

Limitations and Challenges

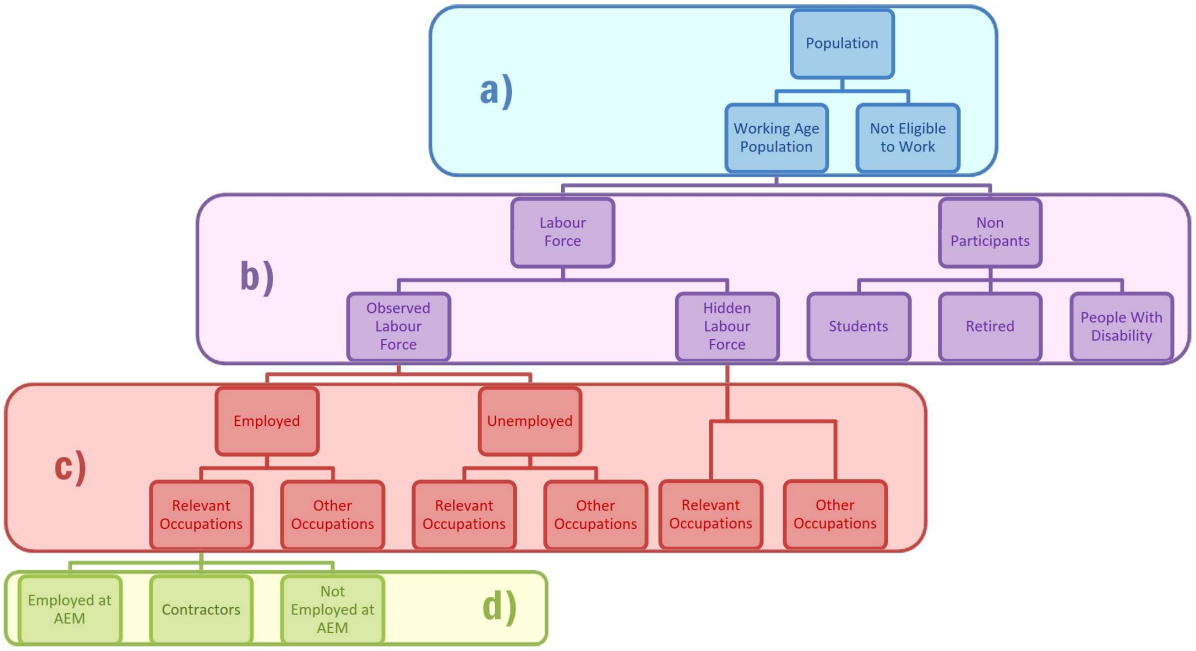
MiHR acknowledges certain research challenges and limitations in the KLMA study. Firstly, external (or secondary) data sources do not always align with the realities of people living in the North. Conventional measures of educational attainment, for example, may not be relevant to Northern concepts of educational attainment.

Secondly, as the regional focus becomes smaller, and as more variables are included in the analysis, access to dependable and consistent data becomes more challenging. Additionally, depending on the variable(s) considered, information for a smaller region is often suppressed or unavailable, to ensure data integrity and protect individual privacy as required under the *Statistics Act*.

MiHR has mitigated some of these challenges in the KLMA. For instance, this report introduces the concept of the "hidden labour force" as a way to address the difficulties arising from the use of conventional labour statistics in a Northern context. In order to address concerns over data integrity, any information that was thought to suffer from suppression/small data issues was avoided in favour of less granular information. For instance, in certain cases, it was problematic to break occupational data down by age, gender, education, etc.

3. KMLA Research Framework

Figure 1: Kivalliq Labour Supply Visualized



Source: Mining Industry Human Resources Council (MiHR); 2018

To understand and describe the availability of labour in Kivalliq, MiHR created a visual framework (Figure 1) that depicts the complexity of labour supply. As the analysis drills down layer by layer, a more complex and nuanced picture of Inuit labour supply emerges. The layers of the KLMA framework are grouped into four main topics that form the structure of the analysis presented in this report.

a) Working Age Population: the analysis begins at the broadest possible level, the overall population of Kivalliq, which is systematically disaggregated into segments of increasing labour supply relevance. Hence, the overall population (shown at the top of Figure 1) is sub-divided into Inuit of working age and those ineligible to work (under-age).

b) Labour Force Participation: the Inuit working age population is further divided into labour force participants and non-participants. The category "labour force" describes those who are potentially available for employment; in this analysis, the labour force is adjusted to consist of both the observed labour force (statistically reported) and the hidden labour force (unreported, unknown).

c) Employment and Unemployment: the Inuit labour force is then separated into those who are (1) employed, (2) unemployed (i.e. actively looking for work) and (3) among the (aforementioned) hidden labour force. The analysis focuses on Inuit labour supply in relevant occupations.

d) Employment at AEM: the final layer of the framework (Figure 1) contrasts the findings on Kivalliq region's Inuit labour supply with AEM employment (i.e. labour demand). This comparison is used to inform Inuit employment expectations (IEEs) for AEM employment in the region and to identify potential occupational and skill level gaps. As well, this analysis projects the capacity of the region's Inuit labour supply to meet the Inuit employment goals (IEGs) set out in the IIBA.

This report follows the research framework depicted in Figure 1, stating key assumptions and methodological steps taken as well as significant observations and findings. Appendix B provides further details on specific assumptions, observations and estimates found in this report. The report concludes with a section on strategic options for updating the KLMA on a regular basis.

4. KLMA Analysis and Findings

The analysis and findings are organized to reflect the structure of the KLMA framework (depicted in Figure 1), and include a summation of Kivalliq's overall labour picture and an analysis of AEM's Labour Pool Program (LPP) list. This section of the report is organized as follows:

a) Working Age Population
b) Labour Force Participation
c) Employment and Unemployment
d) Employment at AEM
e) Overall Labour Picture
f) Labour Pool List

a) Working Age Population

Section Overview

The first step in the analysis was to disaggregate the overall population into two groups: those of working age and those who are ineligible to work. The minimum allowable age to work in Canada is 15 years old. The term "working age population" refers to those in the population who are 15 years of age and older, regardless of their employment status, and includes people who are of retirement age.

The share of the working age population is calculated by deducting the share of the population that is ineligible to work from the overall population.

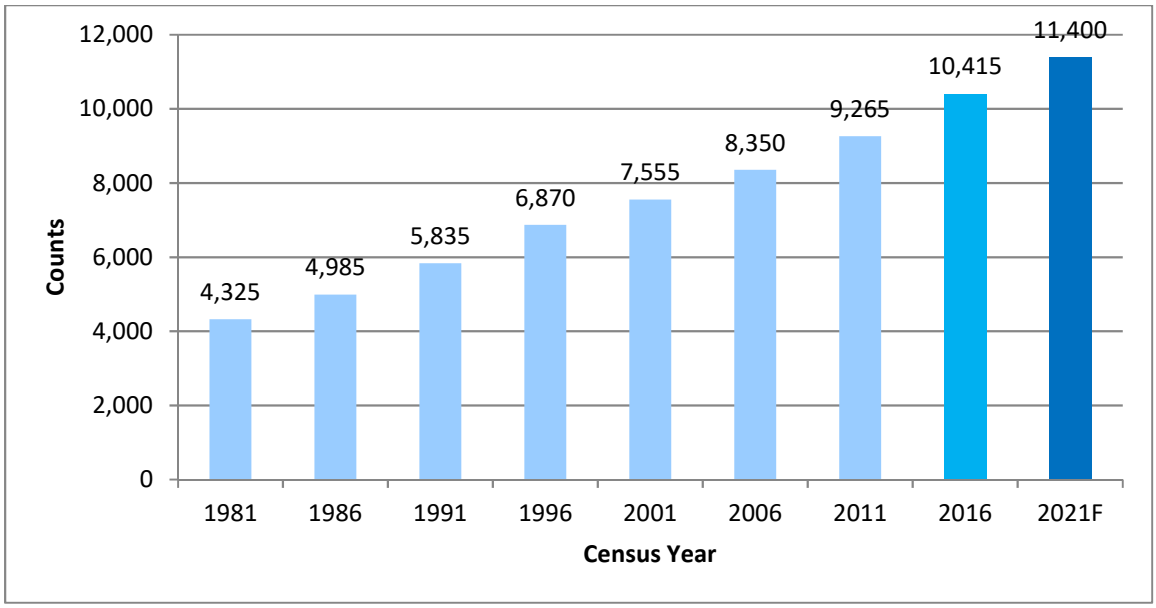
Working Age Population = Overall Population — Population Under 15 Years Old

The IIBA is centered on Inuit outcomes and goals, and thus the second step of the analysis was to identify the share of the working age population that is Inuit, setting the stage for rest of the analysis in this report. This section presents relevant facts and figures related to the overall population, the segment that is eligible to work and the share that is Inuit, defining the scope for the next section (b) on labour participation.

Overall Population is Growing Steadily

Data from the most recent census (2016) show that the overall population of Kivalliq is 10,415. The region's population is growing at a steady rate, forecasted to reach 11,400 by 2021 (Figure 2). A forecast for 2021, derived from population projections from the Nunavut Bureau of Statistics, estimates the population will grow by roughly 9% from 2016 to 2021.

Figure 2: Overall Population in Kivalliq (1981 to 2021F)

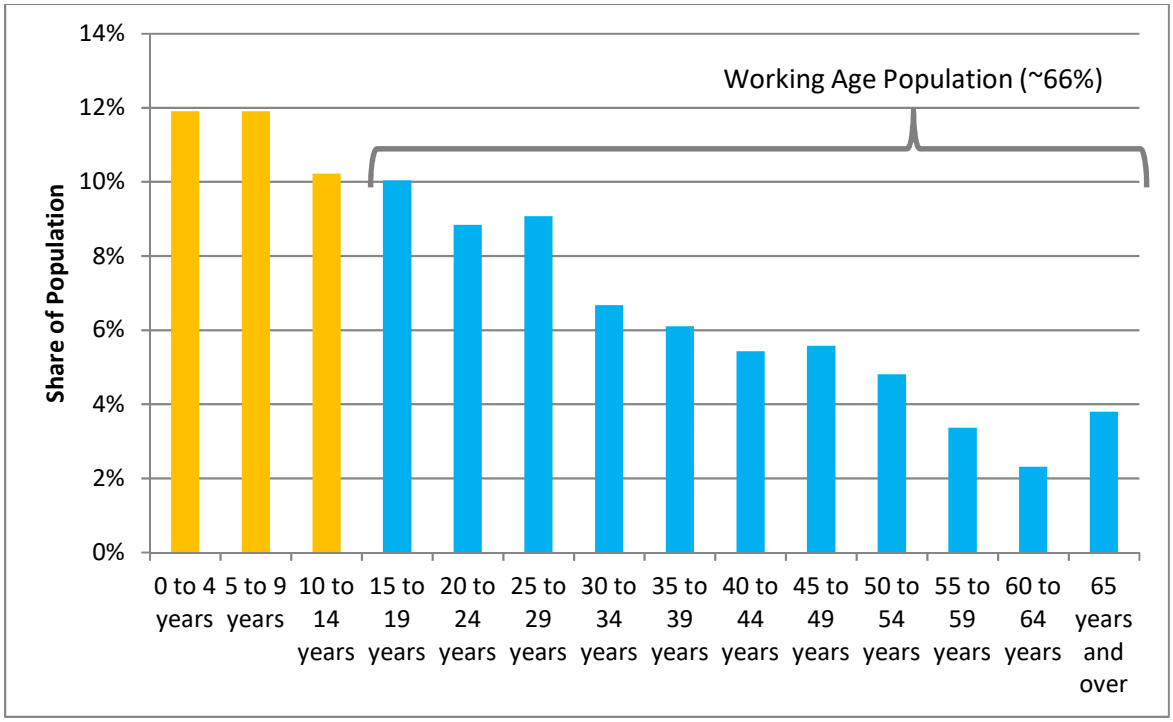


Source: Statistics Canada, Census (1981; 1986; 1991; 1996; 2001; 2006; 2011; 2016). A forecast for 2021 was derived from Nunavut Bureau of Statistics (Population Projections); 2018

Many are Too Young to Work

Of the overall population in 2016, about two-thirds (66%) was of working age, and one-third was under 15 years of age and thus too young to work (Figure 3). As a result, a significant portion of the Kivalliq region's overall population is immediately separated from those who are allowed to work.

Figure 3: Overall Population of Kivalliq by Age (2016)



Source: Statistics Canada, 2016 Census; 2018

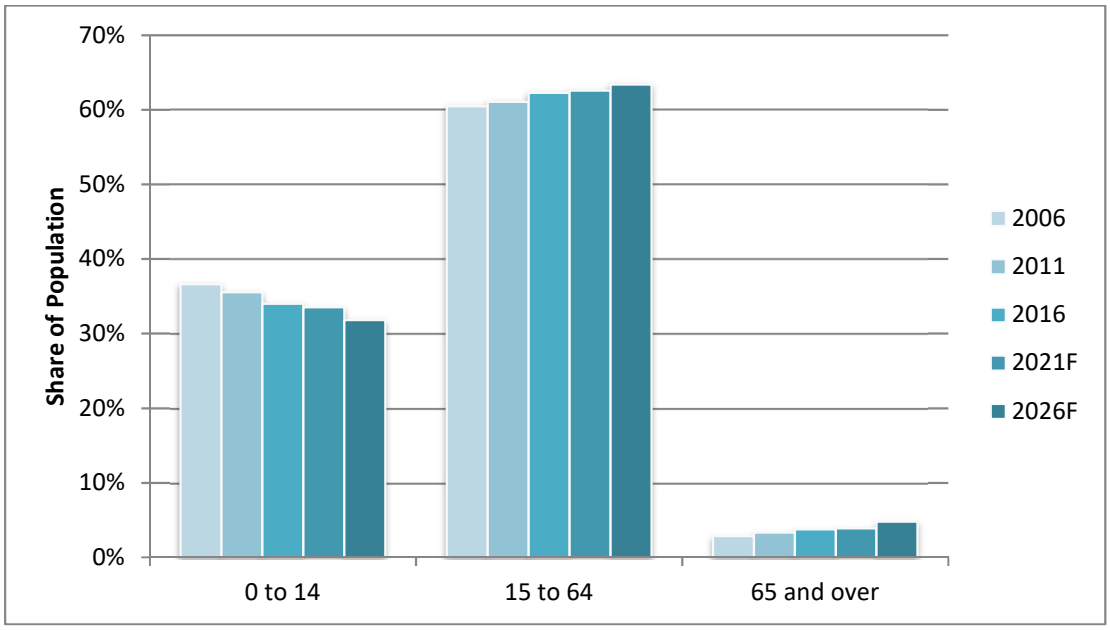
Modest Growth Expected for Ages 15 to 64

The study analyzed the potential size and composition of the working age population (Inuit and non-Inuit) over the past three census periods, with a focus on three age categories of interest: non-working age (0 to 14 years old), primary working age (15 to 64 years of age), and retirement age (ages 65 and older).

The results (Figure 4) show a subtle downward trend in the number of young people (non-working age) approaching their productive years: Census data for 2006 show that 37% of Kivalliq's population was too young to work. That share fell to 34% in 2016, and is projected at 34% and 32% for 2021 and 2026 respectively (derived from Nunavut Bureau of Statistics' population projections). This trend suggests that a significant influx of young people into the labour market is unlikely in the coming years, even as this age group enters working age.

The primary working age group (15 to 64) has been growing modestly, a trend that will likely continue into 2021 and 2026.

Figure 4: Overall Population of Kivalliq by Age Category (2006 to 2026)

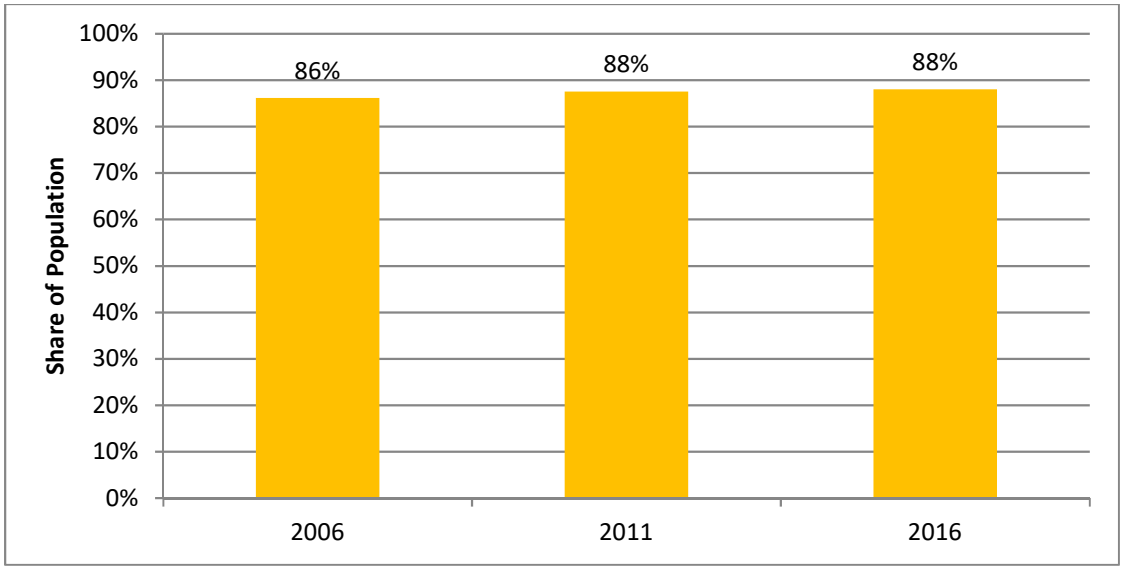


Source: Statistics Canada, Census (2006; 2011; 2016) obtained though the Nunavut Bureau of Statistics. A forecast for 2021 was derived from Nunavut Bureau of Statistics (Population Projections by Age); 2018

Majority of the Population are Inuit

Inuit represent the majority of the working age population in the Kivalliq region, at roughly 86% to 88% from 2006 to 2016 (Figure 5). This study considers the Inuit working age population as the initial focus for a labour market analysis, and the broadest layer for understanding the region's overall labour supply. The estimated size of this layer within the overall population is summarized in Table 1.

Figure 5: Share of Inuit among the Working Age Population in Kivalliq (2006 to 2016)



Source: Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Estimate: Inuit Working Age Population

This section highlights the disaggregation of the Kivalliq population: from the overall population to the Inuit working age population (Table 1). The analysis covers the past three census periods and provides a scenario for 2021 (derived from Nunavut Bureau of Statistics' population projections).

In 2016, the Inuit working age population accounted for roughly 57% of the overall population.[3] This reduction is further illustrated in Figure 6, which compares the size of the overall population to the Inuit working age population, with the latter underlining the principal labour supply segment of relevance to the KLMA.

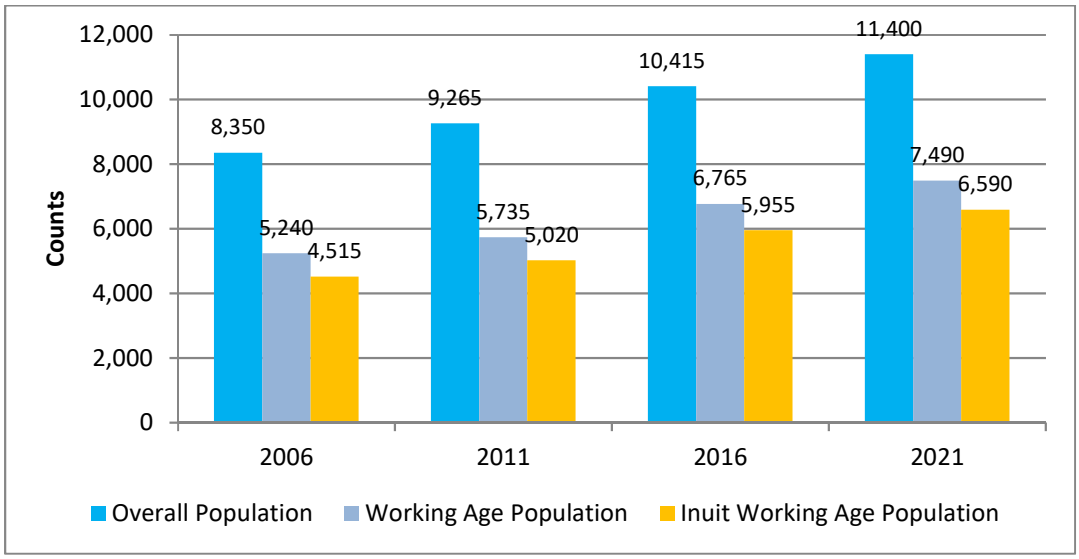
The Inuit working age population is shown to be roughly 5,955 in 2016 and projected to be roughly 6,590 in 2021 (Table 1).

Table 1: Inuit Working Age Population of Kivalliq (2006 to 2021)

	2006	2011	2016	2021
a) The Working Age Population				
What is the overall population?	8,350	9,265	10,415	11,400
What share is eligible?	63%	62%	65%	66%
Working age population	5,240	5,735	6,765	7,490
What share is Inuit?	86%	88%	88%	88%
Inuit working age population	**4,515**	**5,020**	**5,955**	**6,590**

Source: Statistics Canada, Census (2006; 2011; 2016), publically available and custom request. A forecast for 2021 was derived from Nunavut Bureau of Statistics (Population Projections); 2018

Figure 6: Overall Population versus Inuit Working Age Population (2016 to 2021)



[3] Calculated as the overall population (100%) x the share that is working age (65%) x share that is Inuit (88%).

Source: Statistics Canada, Census (2006; 2011; 2016), publically available and custom request. A forecast for 2021 was derived from Nunavut Bureau of Statistics (Population Projections); 2018

Summary of Key Findings

- The overall population of Kivalliq is growing at a steady rate;
- A relatively younger population (many are under 15);
- About one-third of the population was too young to work in 2016;
- The share of working age people is growing modestly;
- Young people will not likely create a significant influx of new labour when they reach working age;
- The vast majority of the working age population are Inuit.

b) Labour Force Participation

Section Overview

This section continues to investigate the potential labour supply in the Kivalliq region by focusing on who are in the labour force. Statistics Canada conventionally defines "the labour force" as individuals of working age who are observed to be employed or unemployed (i.e., actively seeking work in the past four weeks). Non-participants, on the other hand, are those who have not signaled that they are looking for work.

However, this classical approach for determining who is among the active labour market participants does not necessarily apply to the northern context. This analysis has therefore adapted the definition of the labour force to account for people who are potentially overlooked as labour market participants.

In its basic form, the labour force can be characterized as:

Labour Force = Working Age Population x Labour Force Participation Rate

Thus, one of two factors can categorically increase the size of the labour force: the first is an increase in the size of the working age population, covered in the previous section (a); the second is an increase in the rate at which people provide labour (participation rate). This section (b) investigates the latter variable as it relates to the size of the Inuit labour force in Kivalliq. Also examined are characteristics such as age and education that can affect the likelihood of labour participation.

The Observed Labour Force

The observed labour force represents the conventional statistic for measuring the labour force (i.e., the sum of employed and unemployed). In 2016, the size of the observed labour force in Kivalliq was 3,860, whereas 2,095 were non-labour force participants (Table 2).

Table 2: Observed Labour Force Participants in Kivalliq (2006 to 2021)

	2006	2011	2016	2021
b) Labour Force Participation				
Observed Inuit labour force	2,590	2,950	3,860	4,230
Observed Inuit non-labour force participants	**1,925**	**2,070**	**2,095**	**2,360**

Source: Statistics Canada, Census (2006; 2011; 2016), custom data request. A forecast for 2021 is derived from the 2021 working age population projection from Section (a) of this report and assumes 2016 labour force participation rates; 2018

While this approach to measuring the size of the labour force (Table 2) is useful when gauging labour activity in market-based economies, its application does not reflect the realities of northern communities with informal, non-wage economies. As Delic (2013) states:

> *The two key criteria used to classify respondents as "active labour market participants" and "inactive out of the labour force" are the individuals' self-reported survey responses about their job search activity and their availability to accept a job. The rule stipulates that, if an individual reports being available to take a job but fails to report any job search activity, that individual is automatically classified as being out of the labour force. Lack of evidence about job search activity is deemed as evidence of weak attachment to the labour market and the rule is applied uniformly across all regions of the country.*[4]

In short, conventional measurement tools cannot provide a comprehensive measure of labour force participation in small Northern communities because of the scarcity of formal wage employment opportunities.[5]

Capturing the Hidden Labour Force

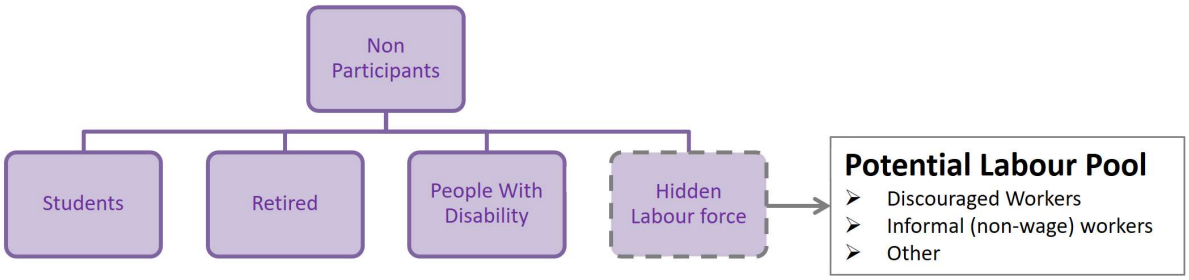
The KLMA framework (Figure 1) embraces the concept that not all labour market participants are transparent under conventional measurement by Statistics Canada. The analysis therefore uses a different approach (depicted in Figure 7) to estimate the "hidden labour force," capturing potential participants who did not report they were looking for work (Table 3 & Figure 8):

1. Start with the total number of observed non-labour force participants reported by Statistics Canada (2,095 in 2016);
2. Identify the population segments that are likely non-labour force participants. This report considers three separate categories — students, retired and people with disability. While not comprehensive, these groups represent the most obvious categories (and a foundation) of non-labour force participants;
3. Estimate the size of each identified group (students, retired, people with disability) using a variety of data sources, and combine for the total number of non-participants (1,065 in 2016);
4. Remove the estimated non-participant group (1,065) from the total number of observed non-participants (2,095) reported by Statistics Canada. The remaining number represents the potential hidden labour force (1,030 in 2016).

[4] S. Delic. Measurement of labour market attachment in the northern Canadian context: Conceptual and methodological issues, *Revue Interventions économiques* (2013) 7: 1 & 2.

[5] Statistics Canada reported about 300 job vacancies across all of Nunavut in 2016. (CANSIM Table 285-0002, JVWS)

Figure 7: Capturing the Hidden Labour Force



Source: Mining Industry Human Resources Council, 2018

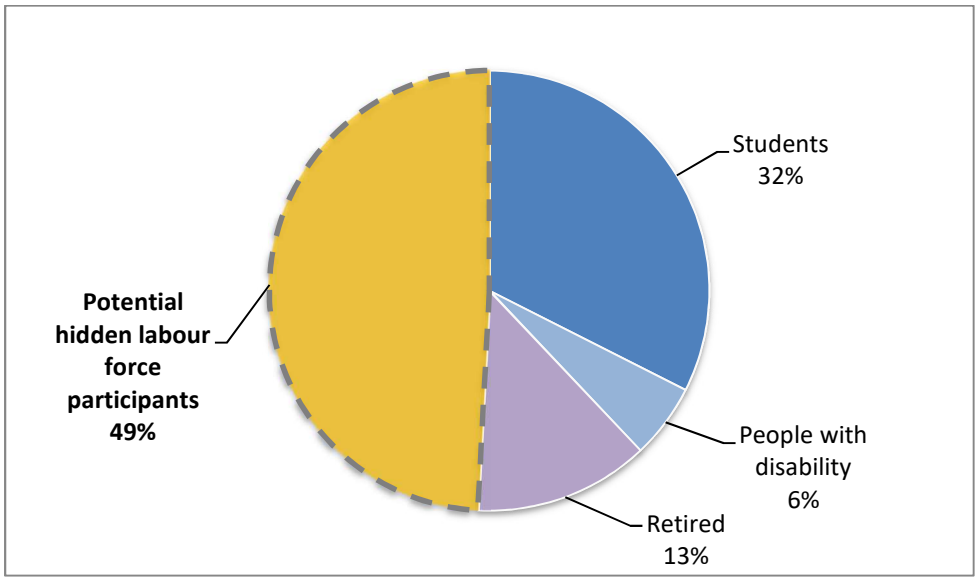
Table 3: The Potential Hidden Labour Force (2006 to 2021)

	2006	2011	2016	2021*
Size of the observed non-labour force participants	1,925	2,070	2,095	2,360
Categories of Non-Participation				
Students: estimated non-labour force participants	535	690	680	685
People with disability: estimated non-labour force participants	85	95	115	130
Retired: estimated non-labour force participants	200	215	270	320
Total not in the labour force	**820**	**1,000**	**1,065**	**1,135**
Possible hidden labour force participants	**1,105**	**1,070**	**1,030**	**1,225**

Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; Nunavut Bureau of Statistics and Arctic College, Annual Report (2006; 2015-2016); Canadian Disability Survey (2012); 2018

**__Observed non-labour force participants:__ Statistics Canada, Census (2006; 2011; 2016), custom data request. A forecast for 2021 is derived from the 2021 working age population projection from Section a) and assumes 2016 labour force participation rates; __Students:__ Nunavut Bureau of Statistics and Arctic College,* Annual Report *(2006; 2015-2016). A forecast for 2021 assumes that the share of students in the population (ages 15 to 34) will remain the same as 2016; __People with disability:__ Statistics Canada, Canadian Disability Survey (2012). A forecast for 2021 assumes the share of disabled people (not in the labour force) in the population will remain the same as the data from 2012; __Retired:__ Statistics Canada, Census (2006; 2011; 2016), custom data request. A forecast for retirement considers the non-labour force participation among those who are 55 years and older. A forecast for 2021 assumes the same participation rates as 2016.*

Figure 8: The Hidden Labour Force and Categories of Non-Participants (2016)



Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; Nunavut Bureau of Statistics and Arctic College, Annual Report (2006; 2015-2016); Canadian Disability Survey (2012); 2018

The estimated hidden labour force is admittedly optimistic, at the high end of possibility and raises questions about who may fall within this category (there is limited available data). However, it seems reasonable to assume that the following categories are a source of hidden labour:

- Informal market workers engaged in non-wage, tradition-based activities such as hunting and making clothing;
- Discouraged potential workers, i.e., the unemployed who are able and wanting work but have not actively sought work in the past 4 weeks because no suitable work was available;
- Others unidentified.

Estimate: The Adjusted Participation Rate

Following the KLMA framework (Figure 1), the previous section estimated the size of the hidden labour force. When the hidden and observed labour forces are combined, the result is a more comprehensive definition of the labour force: the "adjusted labour force."

Adjusted Labour Force = Observed Labour Force + Hidden Labour Force.

This adjustment has an interesting effect on the labour force participation rate — measured as the share of the working age population that is in the labour force. When the observed and hidden labour force participants are combined, the result is an adjusted participation rate considerably higher than the conventional rate. In 2016, the observation participation rate was 65%. When adjusted, the rate soars to 82% (Table 4 & Figure 9).

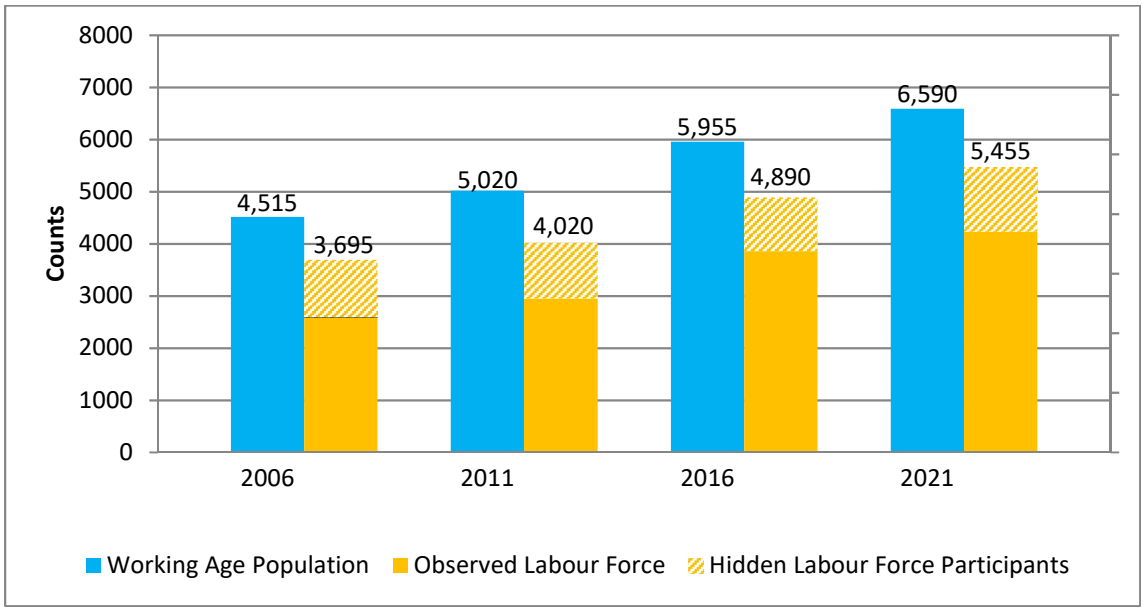
As previously stated, the upward adjustment offers a very optimistic scenario of potential labour supply in the region. Simply put, the adjusted participation rate (82% in 2016) represents the share of the population that this study has failed to discount from the labour force. There are, in reality, people among the adjusted labour force who are not likely to work for reasons external to the methodology scoped above. Yet, the adjusted labour force lays the groundwork for a better understanding of the region's labour supply.

Table 4: The Adjusted Labour Force (2006 to 2021)

	2006	2011	2016	2021
b) Labour Force Participation				
Working age population	4,515	5,020	5,955	6,590
Observed labour force	2,590	2,950	3,860	4,230
Labour force participation rate (observed through Stats Canada)	57%	59%	65%	64%
Hidden labour force participants	1,105	1,070	1,030	1,225
Adjusted labour force (observed + hidden)	**3,695**	**4,020**	**4,890**	**5,455**
Adjusted participation rate (observed + hidden)	**82%**	**80%**	**82%**	**83%**

Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Figure 9: Working Age Population versus the Adjusted Labour Force (2016 to 2021)

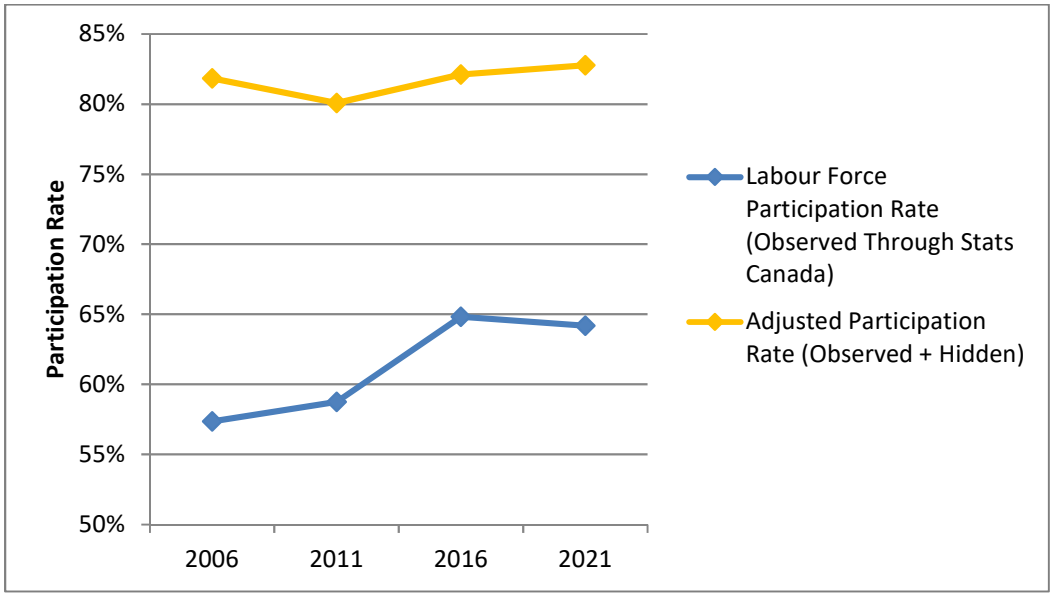


Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Many are Stepping into the Labour Force

Overall increases in participation rates reveal that more people are entering the labour force than in previous years. The participation rate for the observed labour force spiked to 65% in 2016, up from 57% in 2006, and is projected to remain stable at 64% in 2021 (Figure 10). The adjusted participation rate (observed + hidden) shows a much higher and steadier rate of participation (80% to 83%) over the past decade and into 2021.

Figure 10: Observed and Adjusted Labour Force Participation Rate (2006 to 2021)



Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Participation Spike for Younger (and Older) People

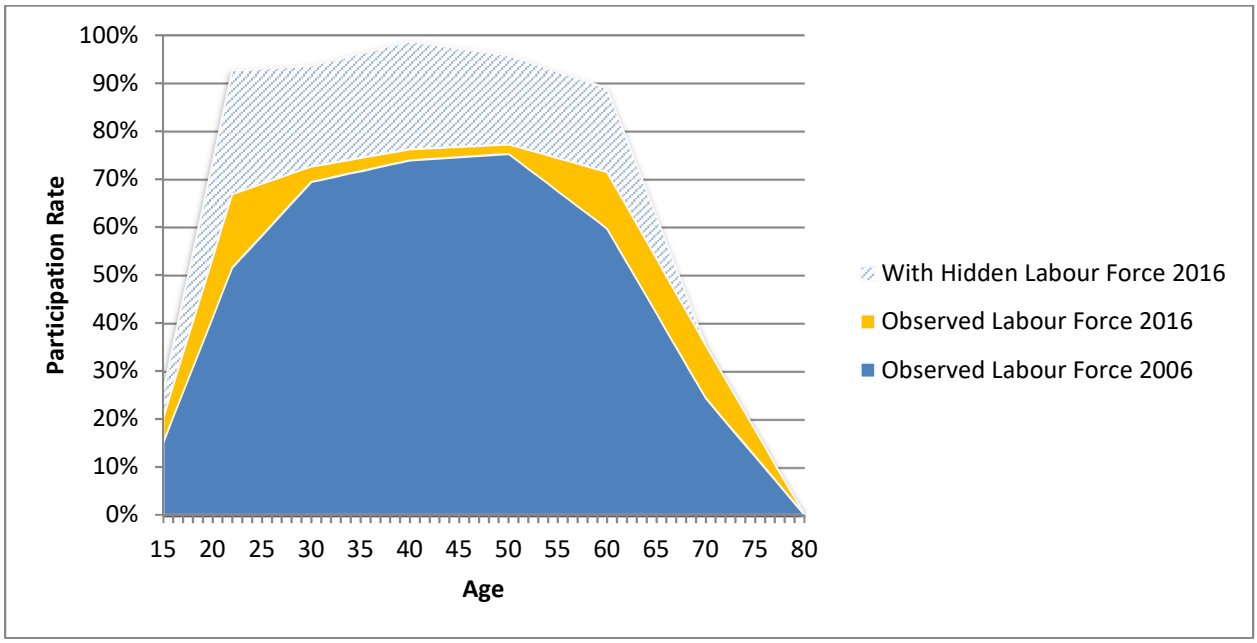
An individual's participation in the labour force can depend on several factors such as their age or educational level.

This analysis finds that from 2006 to 2016, the spike in the observed participation rate (Figure 10) was relatively stronger among those under 30 years of age and over 50 (Figure 11).[6] This observation suggests that, more than ever, younger people in the Kivalliq region are showing a stronger attachment to the labour force. The increase over this period translates to roughly 375 additional labour force participants, mostly in the younger (under 30) age category.

The presence of the hidden labour force is also evident (Figure 11), outlining the adjusted labour force participation rate by age. Notably, most of the hidden labour force is in the prime working years (about 20 to 60 years old).

[6] Note that the age cohorts were extrapolated (Figure 11) from five and ten year intervals to yearly estimates.

Figure 11: Labour Force Participation Rate by Age (2006 versus 2016)



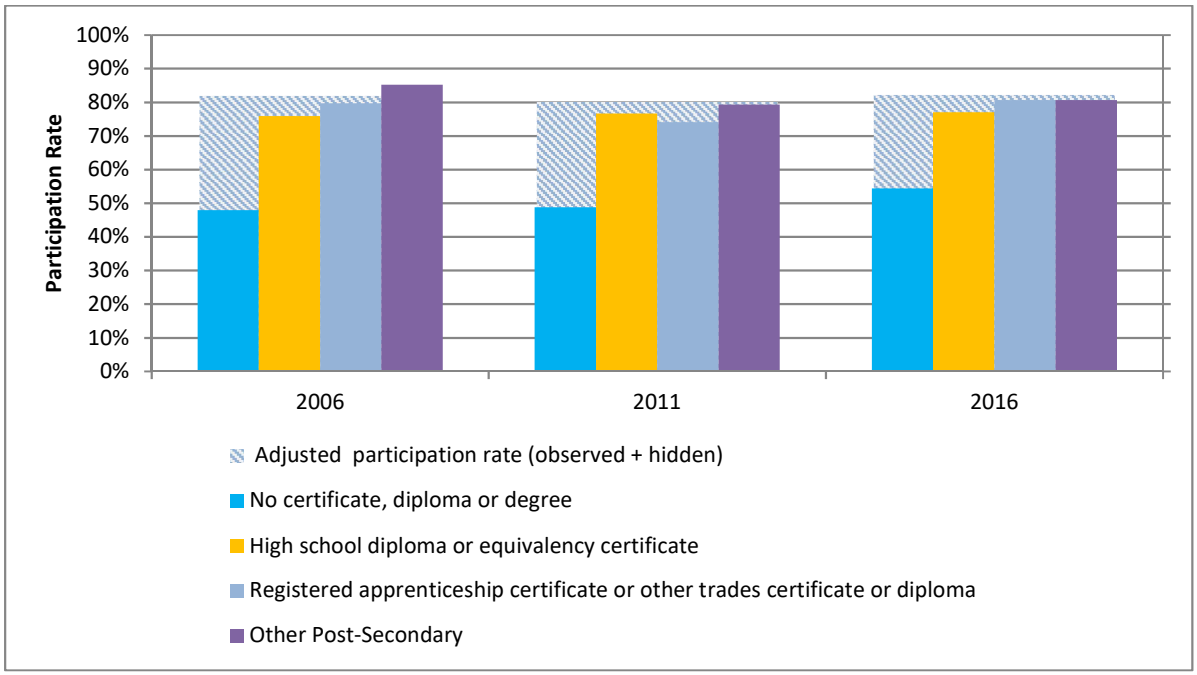
Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Participation Dramatically Increases with Education

Educational attainment has a profound effect on labour force participation, and the Kivalliq region is no exception. Over the past decade, the likelihood of observed participation (Figure 12) increased significantly for those with a formal certificate (i.e., postsecondary education, a registered apprenticeship certificate or other trades certificate, or a diploma). Those with less than a high school diploma or equivalent certificate had the lowest rates of participation (at 54% in 2016 compared with 75% for those with a high school diploma).

Even though the educational profile of the hidden labour force is limited because of lack of data, this group is more likely to have persons with no certificate, diploma or degree, given that those with a certificate are likely already in the labour force.

Figure 12: Adjusted Labour Force Participation Rate, by Education (2006 to 2016)



Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Summary of Key Findings

- The hidden labour force represents a potential labour pool that, when combined with the observed labour force, significantly increases the potential participation rate; the conventional rate of participation in 2016 was 65%, whereas the adjusted participation rate for that year is 82%. However, this adjusted rate assumes a very optimistic scenario;
- Labour market participation is on the rise. The participation rate of the observed labour force spiked in 2016, but the adjusted rate shows that the participation of labour was steady over the past decade and at a significantly higher rate than the conventional participation rate;
- Rates of participation have increased for younger people (under 30 years old) and for older people (50 years and older). There is a potential hidden labour pool in primary working age (20 to 60 years old);
- Education level has a significant effect on participation rates. In 2016, the rate of participation for those with no high school diploma or equivalent certificate was about 50% compared with 75% for those with a high school diploma;
- People in the hidden labour market are most likely to have no high school diploma or equivalent certificate.

c) Employment and Unemployment

Section Overview

In this section, the labour force is divided into three main segments (as per Figure 1): those who are (1) employed, (2) unemployed and (3) the previously derived hidden labour force. The analysis presented here narrows down each segment into occupations that are relevant to AEM, thus providing the range for the potential labour force that is available to AEM in the Kivalliq region.

The analysis then turns to the skills profiles and capacities of the labour force, including a look at how people are distributed by skill level and occupational category. Understanding the skill profile of the labour force can help identify where particular skill gaps in the region may exist.

This section also examines the hours worked among Inuit employees at AEM and the average hours Inuit supply in the region overall. The analysis further explores absenteeism (hours missed) and its potential impact on the region's labour supply.

Lastly, prevailing wage rates at AEM and in the Kivalliq region are observed. This section compares the competitiveness of AEM's wages with those of other industries in the region, the differences in earnings between skill levels at AEM, and the costs associated with absenteeism.

NOC Codes Explained

Occupational analysis in this report follows the National Occupation Classification (NOC) code system to report on labour market activity. The NOC is a standardized framework for categorizing occupations. Each occupational category is assigned a code consisting of 1 to 4 digits, and a corresponding occupational title. Each digit in a NOC code conveys specific information, categorized as follows: [7]

- The first digit denotes a broad level of occupational skill type; however, in this report, MiHR has developed its own broad classification to better reflect the mining industry (detailed below);
- The second digit indicates a category of skill (detailed below);
- Further digits (third and fourth) designate a more specific occupation within the NOC hierarchy.

Broad Occupational Category

- Trades Occupations
- Production Occupations
- Supervisors, Coordinators and Foreman
- Support Workers
- Professional, Physical Science and Technical Occupations
- Human Resources, Administrative, Supply Chain Logistics and Financial Occupations
- Community Support Workers

Skill Level Category

- Skill level A (Management): Occupations usually require university education
- Skill level A (Professionals): Occupations usually require university education
- Skill level B: Occupations usually require college education or apprenticeship training
- Skill level C: Occupations usually require secondary school and/or occupation-specific training

[7] For more information on NOC codes, see the Government of Canada website: (http://noc.esdc.gc.ca/English/NOC/Matrix2016.aspx?ver=16)

- Skill level D: On-the-job training is usually provided for occupations

For example, *NOC 75 – Transport and heavy equipment operation and related maintenance occupations* is classified under *Trades Occupations* and *Skill Level C* (i.e., occupations usually requiring secondary school and/or occupation-specific training). Within the hierarchy of NOC 75 is *NOC 7521 – Heavy equipment operators*, which provides a more specific occupational classification.

MiHR (in collaboration with AEM) ordered data from Statistics Canada for NOC codes related to jobs at the AEM operations: 36 codes were at the 4-digit level and 25 codes were at the 2-digit level.[8,9] For the the occupational analysis in this study, MiHR established two main scenarios: the "baseline" scenario uses 4-digit NOC codes, whereas the more inclusive "expanded" scenario is aligned with 2-digit NOC codes and represent broader categories of occupational type and skill level (and likely less specific to direct employment interests at AEM operations).

A more detailed list of NOC codes – including corresponding title, occupational category and skill level – is found in Appendix A of this report.

Estimate: the Potential Labour Supply Range

The share of the labour force in relevant occupational categories is estimated (Table 5 and illustrated in Figure 13) for each principal labour supply group (employed, unemployed and hidden), and for each scenario (baseline and expanded). Accordingly, the estimated percentage of the total labour force in relevant occupations ranged between 25% and 53% in 2016 (Table 5).

The baseline and expanded estimates are further summarized as a potential labour force range (Figure 14), offering parameters to AEM's labour supply in the Kivalliq region. For 2021, the labour force size will range from 1,300 (baseline) to 2,900 (expanded) out of the entire labour force of 5,705 people. Note that the expanded scenario is rather optimistic, perhaps at the cost of occupational relevancy. In other words, as the size of the relevant labour pool increases, the degree of occupational relevancy lessens.

[8] Note, that this list of NOC codes represents roughly 90% of the workforce at AEM operations in 2016.
[9] In a few instances, 3-digit codes were ordered in place of 2-digit codes.

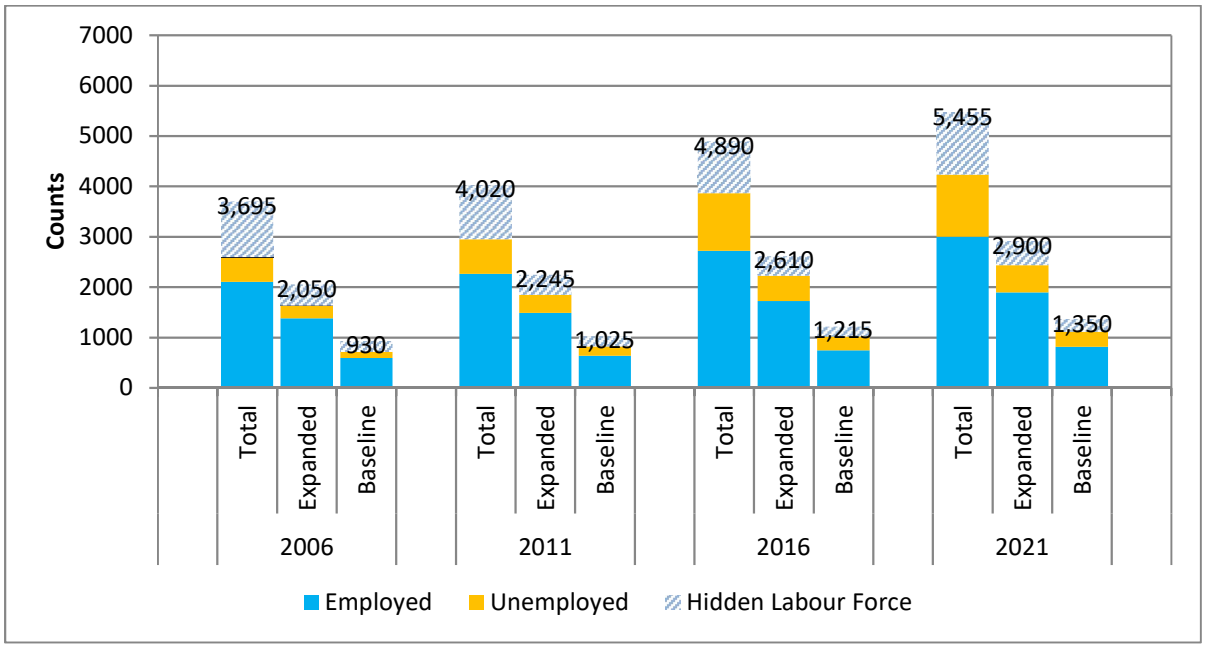
Table 5: Occupational Ranges by Labour Force Group (2006 to 2021)

	2006	2011	2016	2021[10]
C) Employment and Unemployment				
Employed	2,105	2,260	2,720	2,995
Relevant occupations (expanded)	1,380	1,485	1,720	1,895
Relevant occupations (baseline)	590	635	740	815
Percentage range	28% - 66%	28% - 66%	27% - 63%	27% - 63%
Unemployed	485	690	1,140	1,235
Relevant occupations (expanded)	250	355	500	540
Relevant occupations (baseline)	130	185	275	295
Percentage Range	27% - 52%	27% - 51%	24% - 44%	24% - 44%
Hidden Labour Force	1,105	1,070	1,030	1,225
Relevant occupations (expanded)	420	405	390	465
Relevant occupations (baseline)	210	205	200	240
Percentage range	19% - 38%	19% - 38%	19% - 38%	20% - 38%
Total Labour Force	3,695	4,020	4,890	5,455
Relevant occupations (expanded)	2,050	2,245	2,610	2,900
Relevant occupations (baseline)	930	1,025	1,215	1,350
Percentage range	25% - 55%	25% - 56%	25% - 53%	25% - 53%

Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

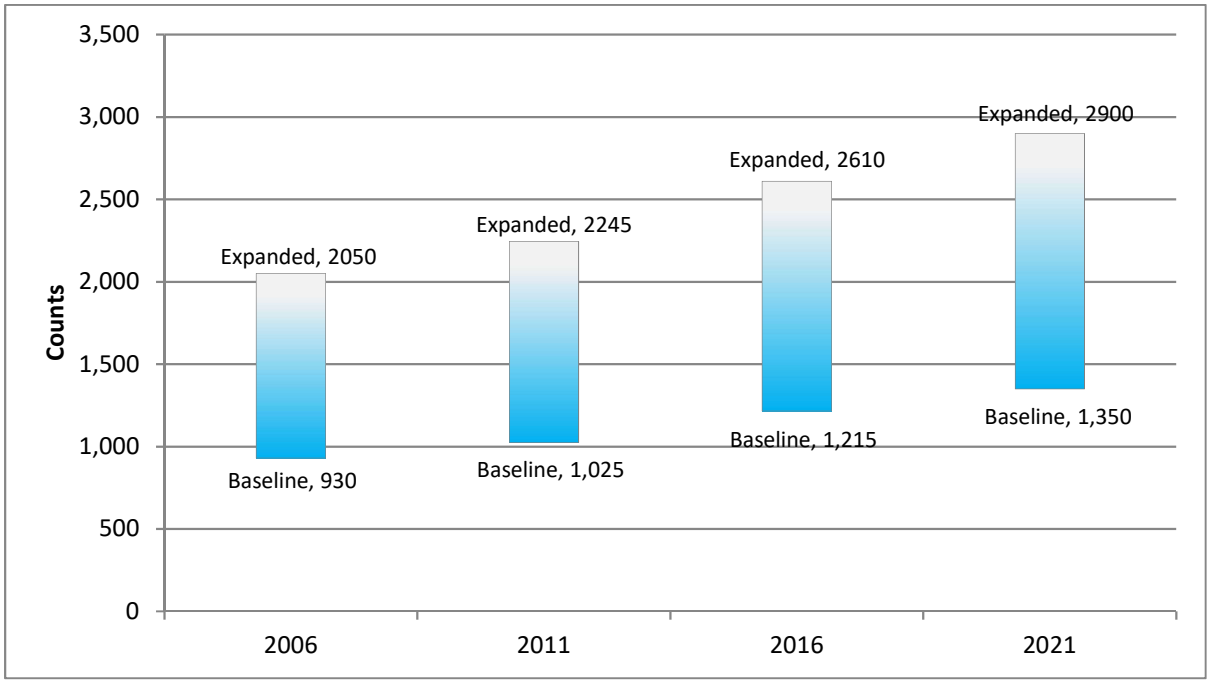
[10] Employed: A forecast for 2021 assumes a consistent employment rate (i.e. employment / working age population) as 2016. Unemployed: A forecast for 2021 is derived from the difference of forecasts for labour force and employment. Hidden Labour Force: A forecast for 2021 is derived in Section b. NOC Ranges: For Employed, Unemployed and Hidden Labour Force, a forecast for 2021 assumes the same occupational shares as 2016. In addition, due to discrepancies in the occupational data, the 2006 estimate assumes the same occupational shares as 2011.

Figure 13: Occupational Ranges by Labour Force Group (2006 to 2021)



Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Figure 14: Potential Labour Force Range (2006 to 2016)



Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

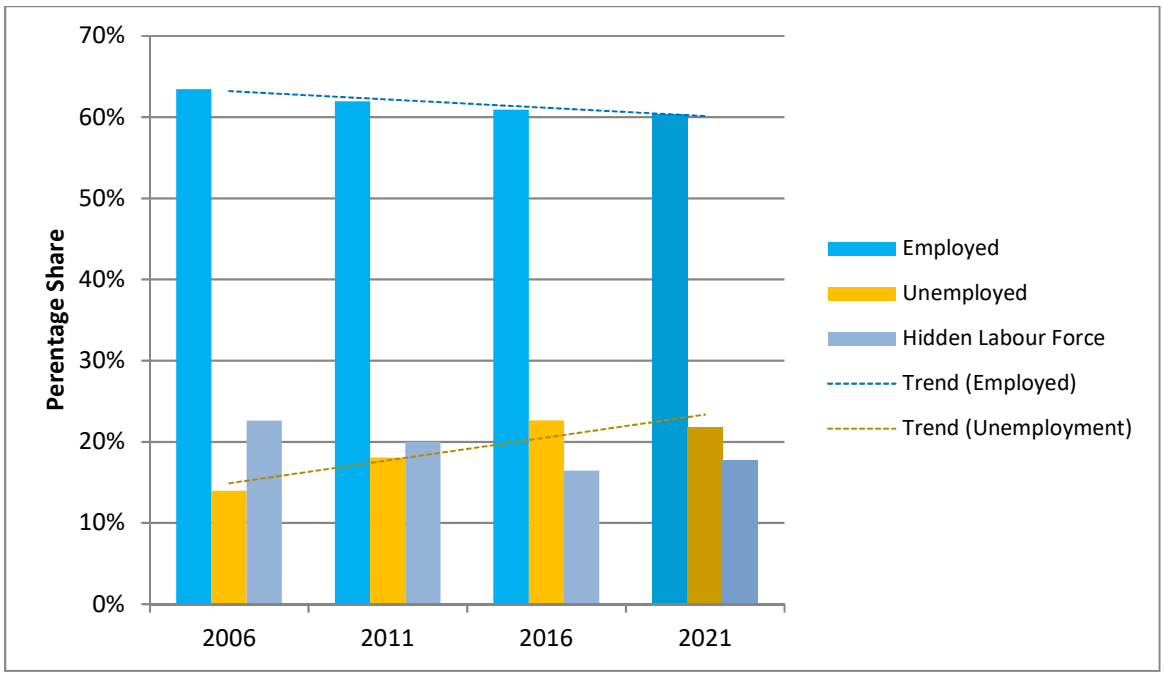
The Shift from the Hidden Labour Force to Unemployed

The study revealed an interesting trend among the labour force categories (employed, unemployed and hidden). From 2006 to 2016, the share of unemployed increased (14% to 23%), mirroring a similar decrease (23% to 16%) in the share of hidden labour force (Figure 15; baseline scenario). Yet, throughout this same period, the share of employed remained relatively constant, at about 61%.

Therefore, the 2016 spike in the rate of labour force participation (as observed in Figure 10 above) is likely the result of the hidden labour force moving into (observed) unemployment, as opposed to employment.

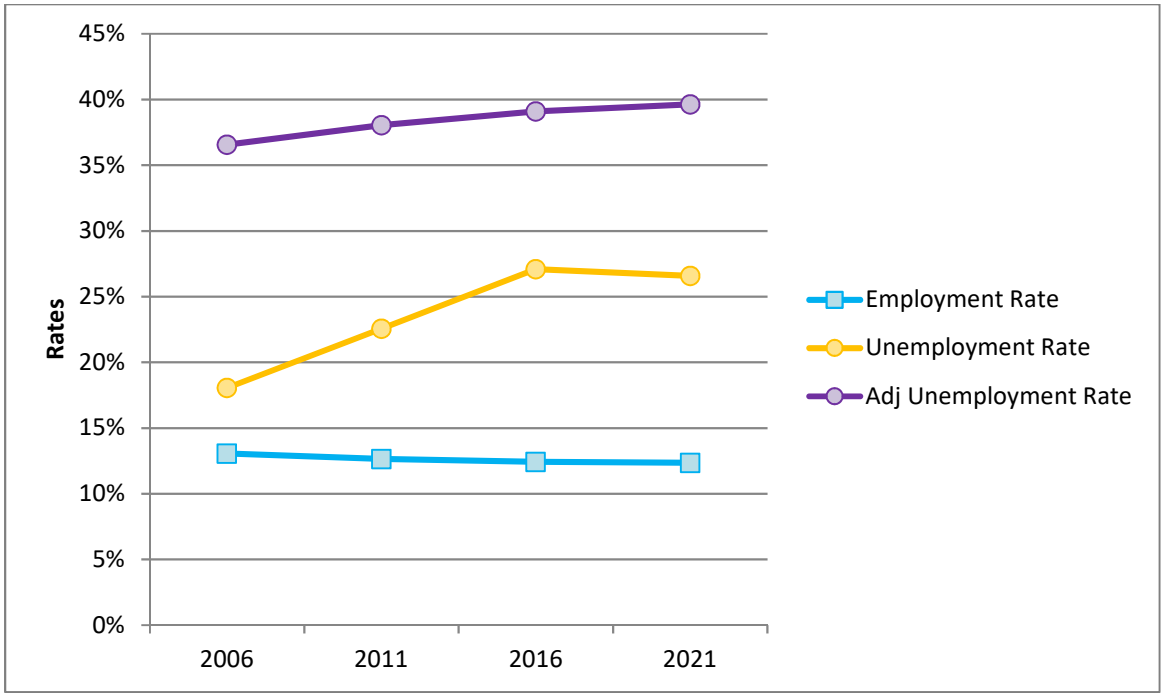
This pattern is further supported when the (observed) unemployment rate, i.e., the share of the observed labour force that is unemployed, is adjusted to include the hidden labour force (Figure 16; baseline scenario). Specifically, the rising unemployment rate (18% to 27% from 2006 to 2016) becomes relatively constant after the adjustment (37% to 40% from 2006 to 2016), suggesting the hidden labour force features potential workers who were not visible under the conventional unemployment measurement. The employment rate (the share of the population employed in relevant occupations) remained static at about 12% to 13% over the same period (Figure 16; baseline scenario).

Figure 15: Share of Potential Labour Force Groups, Baseline (2006 to 2021)



Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Figure 16: Employment Rate and Unemployment Rate (Observed and Adjusted), Baseline (2016 to 2021)



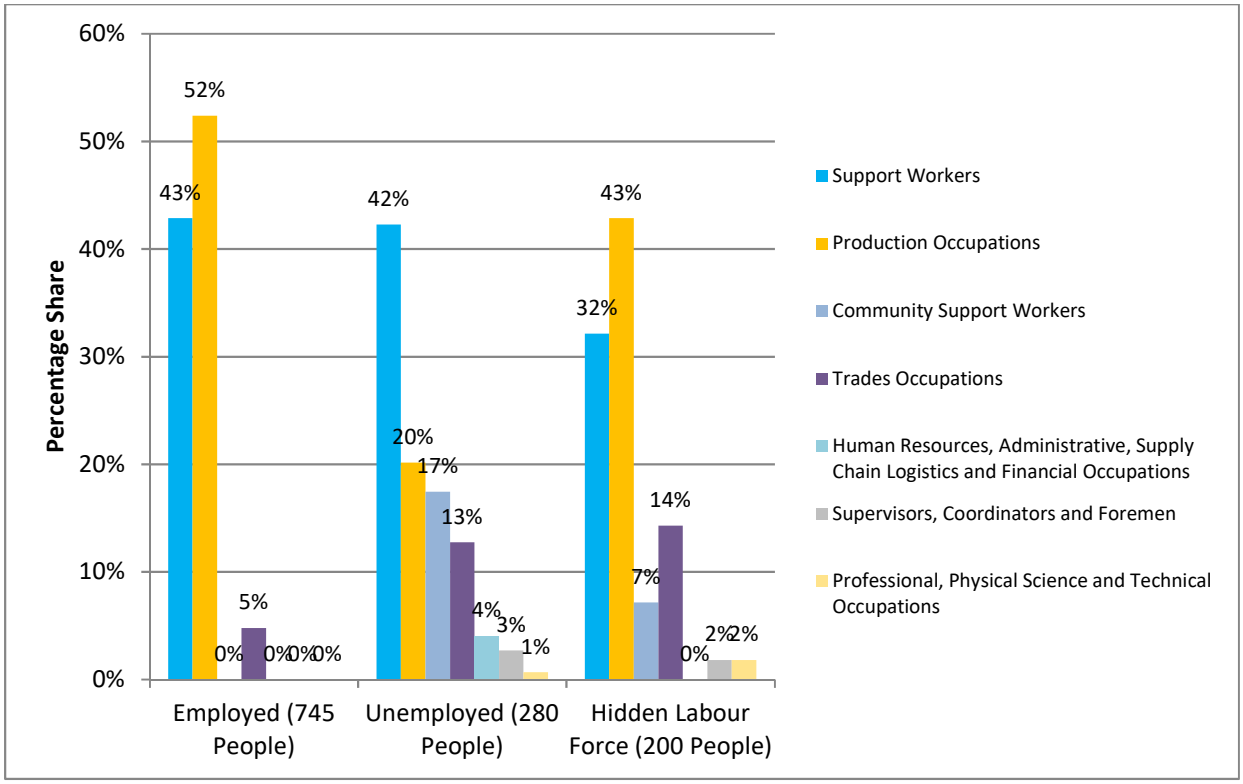
Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Profile of Broad Occupational Categories

As noted previously, MIHR has developed seven broad occupational categories, onto which it maps the 61 NOC codes analyzed in this report (Appendix A). The study looked at the distribution of these categories across the three labour supply groups of interest (employed, unemployed and hidden labour force), an approach which serves to profile the relevant labour force by its occupational tendencies.

The differences in the composition of occupations is highlighted (Figure 17) for the three labour force groups in 2016. *Support Workers* (between 32% and 43%) and *Production Occupations* (between 20% and 52%) account for the two largest shares in each labour force group, while *Professional, Physical Sciences and Technical Occupations* (as high as 2%) and *Supervisors, Coordinators and Foremen* (as high as 2%) are among the lowest shares.

Figure 17: Comparison of Broad Occupational Categories by Labour Force Group, Baseline (2016)



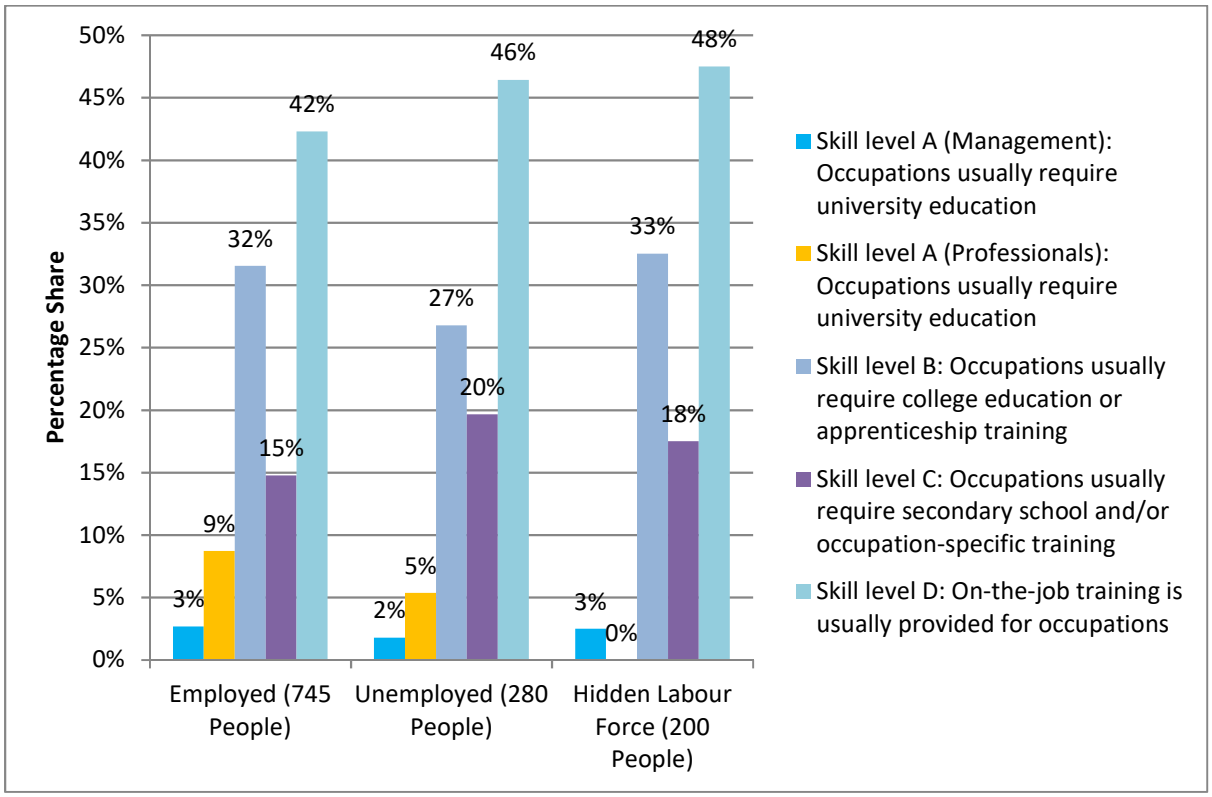
Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Profile of Skill Levels

MiHR profiled each of the three labour force groups by skill level as defined by Statistics Canada ("A" to "D" as listed above). *Skill Level A* (management /professional occupations usually requiring university) is typically associated with the highest skill level — requiring several years of specialized training — whereas *Skill level D* (on-the-job training) is the lowest skill level on the spectrum.

In 2016, *Skill Level D* accounted for the largest share across all three labour force groups: 42% of employed, 46% of unemployed and 48% of the hidden labour force (Figure 18). On the other hand, the share in *Skill Level A* is relatively low for all three groups: 12% of employed, 7% of unemployed and 3% of the hidden labour force. Curiously, the share in *Skill Level C* (occupational-specific training) dropped relative to *Skill Level B* (college or apprenticeship training), even though this category represents a step between *Skill Level D* and *Skill Level B*.

Figure 18: Comparison of Skill Level by Labour Force Group, Baseline (2016)



Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Absenteeism Presents a Challenge

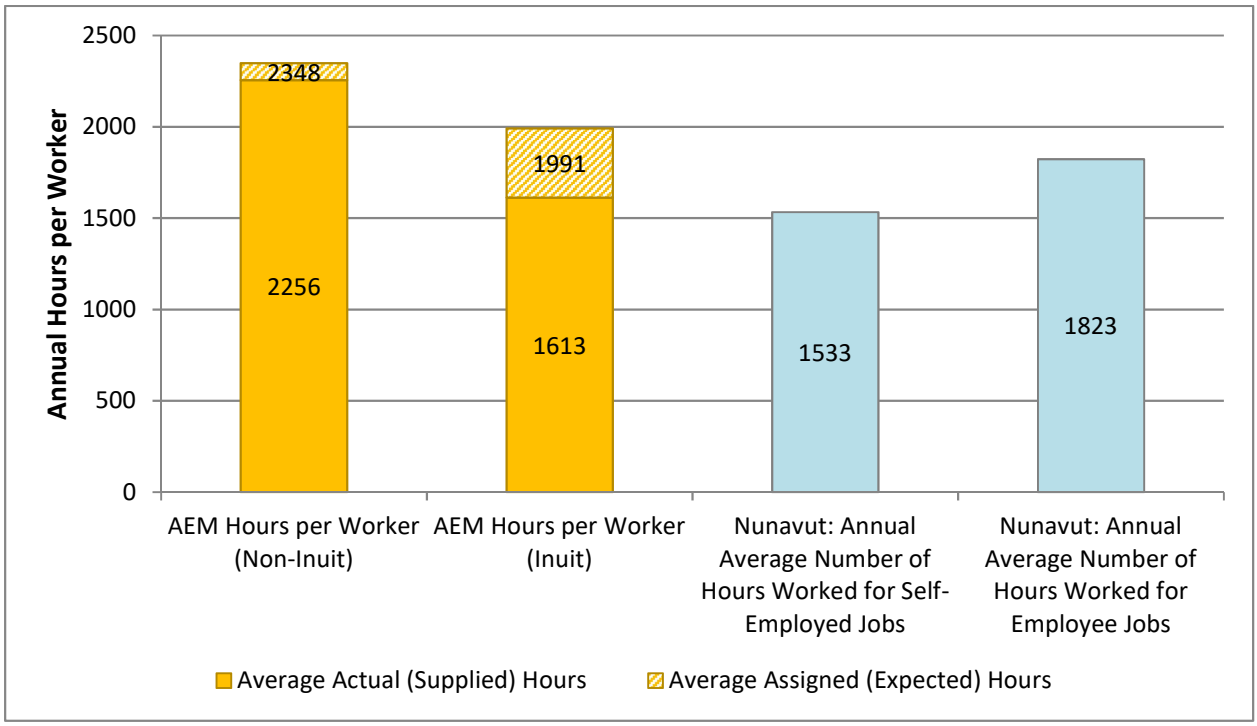
Thus far, the analysis presented in this report focuses on the individuals (or headcount) that represent the potential labour supply in the region. However, insight into the labour force's likely hours of work expands the intelligence regarding the region's labour supply.

MiHR analyzed the average annual hours worked in 2016,[11] including the average assigned (expected) hours and the average actual (supplied) hours (Figure 19). The results show a high rate of absenteeism (19%) for Inuit workers compared with non-Inuit workers (4%). Over the course of 2016, Inuit workers were assigned 1,991 hours on average, but supplied only 1,613 (Figure 19), resulting in an average of 378 hours of absenteeism per person; this quantity is equivalent to about a month of work annually, assuming 12-hour shifts. The observation of 1,613 hours per person on average is comparable to the average hours supplied by all self-employed persons (1,533 hours) and employees (1,823 hours) in all of Nunavut (Statistics Canada's Labour Productivity Measures).

[11] See AEM's 2016 Development Partnership Agreement Report.

Further, when the headcount labour force (baseline) is adjusted to reflect full-time equivalents (1 FTE = 2,184 hours per year),[12] a significant gap emerges between the headcount and the number of FTEs: In 2016, the baseline number was 1,215, whereas the number of FTEs was calculated at 890 (Table 6).

Figure 19: Average Annual Hours per Worker, AEM and Nunavut (2016)



Source: AEM, 2016 Development Partnership Agreement Report; Nunavut Bureau of Statistics (Statistics Canada's Labour Productivity Measures (2017)), 2018

Table 6: Converting the Labour Force: Headcounts to Full-Time Equivalents, Baseline (2006 to 2021)

	2006	2011	2016	2021
Full Time Hour Equivalents (based on 1613 Hours per Worker; 1 FTE = 2184 hours per year)				
Labour Force Headcount (baseline)	930	1,025	1,215	1,350
Full Time Hour Equivalents	685	755	900	995

Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; AEM, 2016 Development Partnership Agreement Report, 2018

[12] Calculated as (Headcount x Average Hours worked per person) ÷ 1 FTE in Hours (Based on 1613 Average Hours per Worker; 1 FTE = 2184 Hours per Year).

Summary of Key Findings

- The labour force consists of three main groups: employed, unemployed and hidden labour;
- This report uses 61 NOC codes (36 at the 4-digit level and 25 at the 2-digit level) that directly relate to jobs at AEM. The 4-digit NOC (baseline scenario) provides a higher degree of occupational relevancy; the 2-digit NOC (expanded scenario) indicates a more general occupational category, including functions with lesser relevance to AEM operations;
- For 2021, the estimated potential size range of the labour force will be 1,300 (baseline) to 2,900 (expanded);
- Labour force participation in the region is on the rise, resulting from the movement of hidden labour into (observed) unemployment. Yet, the share of employed (and the employment rate) has not increased;
- The largest share of the labour force (employed, unemployed and hidden) are in *Skill level D* (i.e. requiring on-the-job training);
- The largest share of the labour force (employed, unemployed and hidden) are in *Support Worker* occupations;
- Absenteeism among Inuit workers is high, about 378 hours per year (equivalent to about a month of work annually, assuming 12-hour shifts).

d) Employment at AEM

Section Overview

This final layer in the KLMA framework (Figure 1) introduces AEM employment into the analysis. Data on AEM employment provide insight into labour demand and allow for a comparison with the (previously derived) labour supply.

AEM and the KIA established *Inuit Employment Goals (IEGs)* as a part of the Inuit Impact and Benefit Agreement (IIBA), which sets targets for Inuit employment at AEM operations in the Kivalliq region. In this analysis, MiHR introduces *Inuit Employment Expectations (IEEs)*: they are based on AEM's likely capacity to recruit from the derived labour supply in the region. Thus, IEEs are not benchmarked against AEM's changing labour demand, but are based on Kivalliq's labour supply.

Inuit Employment Goals (IEGs) = Inuit Employment at AEM ÷ Total Employment at AEM

Inuit Employment Expectations (IEEs) = Inuit Employment at AEM ÷ Kivalliq Labour Force

IEEs identify potential labour market challenges by pointing to deviations from IEGs, which are an indication that greater effort (recruiting and training; competition with other employers) may be required to meet the IIBA. Conversely, the prospect of reaching IEGs becomes more likely when they approximate IEEs.

This section examines whether Kivalliq's labour force is able to respond to fluctuations in AEM labour demand in the coming years. The results illustrate the challenges of reaching IEGs (currently and in 2021); a comparison of occupational categories and skill levels indicates an apparent skills mismatch between AEM's labour demand and Kivalliq's labour supply. Finally, this section investigates turnover within AEM operations as it relates to AEM's continuing capacity to employ Inuit workers in the region.

Estimate: Inuit Employment Expectations (IEEs)

IEE projections (Table 7) are based on AEM employment data and the relevant labour force, as derived previously in this report (under the baseline scenario). A standard estimate for IEEs assumes that AEM will be able to capture the same share of the labour force (26%) as was realized in 2016; this assumption translates to roughly 345 Inuit employees for AEM in 2021 (or 26% x 1,350, or the projected size of the labour force in 2021). Expressed as a share of AEM employment, 345 employees represent a modest 16% of projected AEM employment in 2021, considerably lower than the 35% observed in 2016 and 39% in 2011. This result is mainly due to a rapid expansion planned for 2021 (expected to grow AEM's workforce from 875 in 2016 to 2,100 in 2021).

The IEGs in this analysis use a benchmark of 50% Inuit employment (Table 7). Note that this assumption follows a "target" of 50% Inuit employment across AEM's Nunavut Operations. However, there are a number of issues to consider. IEGs are set annually by the ECC; they are broken down by job category and established by considering relevant data on supply and demand. To the extent that IEGs may differ from 50% (e.g. for specific job categories), the ECC is open to considering alternate targets in the analysis (Table 7).

A parallel (but abbreviated) analysis is also shown (Table 8) for AEM contractor employment. Note that contractor data are rather limited. Thus, contractor employees were estimated (by headcount) using data sources provided by AEM. A scenario for 2021 assumes the ratio of contractor employees to AEM employees will be consistent with that at Meadowbank (average from 2010 to 2016).

Table 7: Employment at AEM and Estimating IEEs, Baseline (2011 to 2021)

	2011	2016	2021
d) Employment at AEM			
Overall Employment			
Meadowbank mine (including Whale Tail)	695	825	1,305
Meliadine mine	-	50	795
Total AEM employment	695	875	2,100
Inuit Employment			
Meadowbank mine (including Whale Tail)	270	295	-
Meliadine mine	-	15	-
Total Inuit AEM employment; Inuit employment expectations (IEEs) in 2021	270	310	**345**
AEM's Share of the Inuit Labour Force			
Labour force in relevant occupations (baseline)	1,025	1,215	1,350
AEM's share of the labour force (%)	26%	26%	26%
Inuit Employment Goals and Outcomes			
Inuit employment goals (IEG) (%)	50%	50%	50%
Inuit employment outcomes (%); 2021 based on Inuit employment expectations (IEEs)	39%	35%	**16%**

Source: Mining Industry Human Resources Council; AEM, Socio Economic Nunavut Reports for Meadowbank (2011; 2016; 2017) and Meliadine (2011; 2016; 2017); AEM Manpower Projections for 2018-2021 (2017); Statistics Canada, Census (2011; 2016), custom data request; 2018

Table 8: Employment at AEM Contractors and Estimated IEEs, Baseline (2011 to 2021)

	2011	2016	2021
AEM Contractors			
Total contractor employment	405	925	1,050
Inuit AEM contractor employment; Inuit employment expectations (IEEs) in 2021	60	145	160
Contractor share of the labour force (baseline) (%)	6%	12%	12%
Inuit employment outcomes (%); 2021 based on Inuit employment expectations (IEEs)	15%	16%	15%

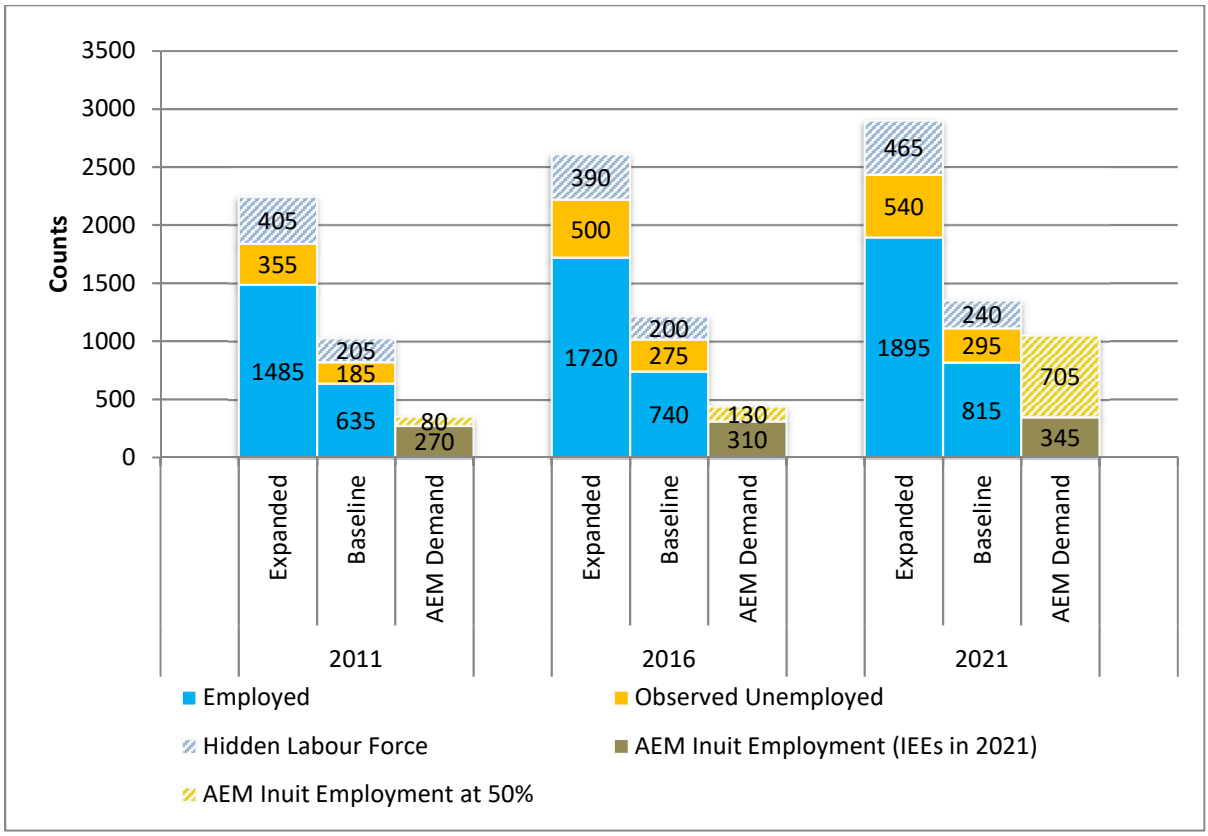
Source: Mining Industry Human Resources Council; AEM, contractor employment data (2018); AEM Manpower Projections for 2018-2021 (2017); Statistics Canada, Census (2011; 2016), custom data request; 2018

Comparison of AEM Labour Demand with Kivalliq Labour Supply

At this stage of the report, it is possible to compare AEM labour demand and the Kivalliq labour supply (Figure 20). Demand is shown in the form of AEM's Inuit employment outcomes and IEEs in 2021, whereas supply is shown in the form of the labour force (baseline and expanded scenarios).

The evaluation (Figure 20) reveals that AEM needed to recruit an additional 80 Inuit to meet 50% Inuit employment in 2011, equivalent to about 43% of unemployment (baseline). In 2016, AEM needed to recruit an additional 130 Inuit to reach 50% Inuit employment, equivalent to about 47% of unemployment (baseline). Given these trends and status quo assumptions about AEM's share of the labour force, AEM will need to recruit an additional 705 Inuit in 2021 to meet 50% Inuit employment, exceeding the combined pool of unemployed and hidden labour force (baseline).

Figure 20: AEM (Inuit) Employment Set Against the Labour Force, Baseline and Expanded (2011 to 2021)



Source: Mining Industry Human Resources Council; AEM, Socio Economic Nunavut Reports for Meadowbank (2011; 2016; 2017) and Meliadine (2011; 2016; 2017); AEM Manpower Projections for 2018-2021 (2017); Statistics Canada, Census (2011; 2016), custom data request; 2018

The Challenge of Meeting IEGs and AEM Demand

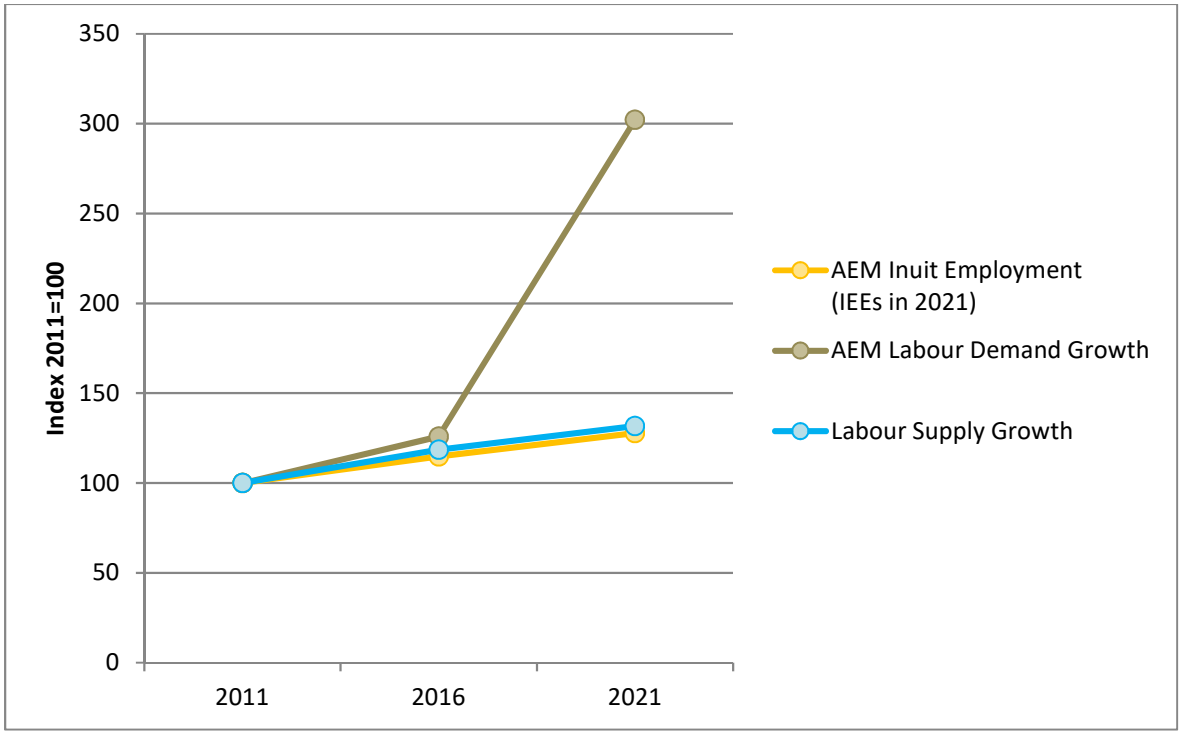
IEGs are expected to need adjustment in view of expanding AEM demand. As shown for 2021 (Figure 21), an emerging gap between AEM's labour demand and Kivalliq's labour supply points to potential labour pressures, especially as IEGs are weighed against the surge in labour demand. This pressure will likely intensify because labour supply growth is projected to be lower than growth in labour demand.

In order to meet the IEG target, AEM will require a greater share of the labour force, beyond the status quo scenario depicted in this report (Table 7). The analysis presented here (Figure 22 and corresponding Table 9) provides various markers of Inuit employment at AEM, and the share of the labour force needed to attain them.

The results signal a shift from 2016 to 2021: In 2016, Inuit employment share at AEM was 35%, corresponding to about 26% of the labour force (baseline). In 2021, the same share of the labour force would result in only 16% Inuit employment share at AEM (as found in Table 7). Furthermore, in 2021, AEM will need to capture about 78% of the labour force in order to meet the 50% Inuit employment share at AEM.

In summary, AEM will need to increase its share of the labour force from 26% to 78% in order to reach the target of 50% Inuit employment share at AEM by 2021.

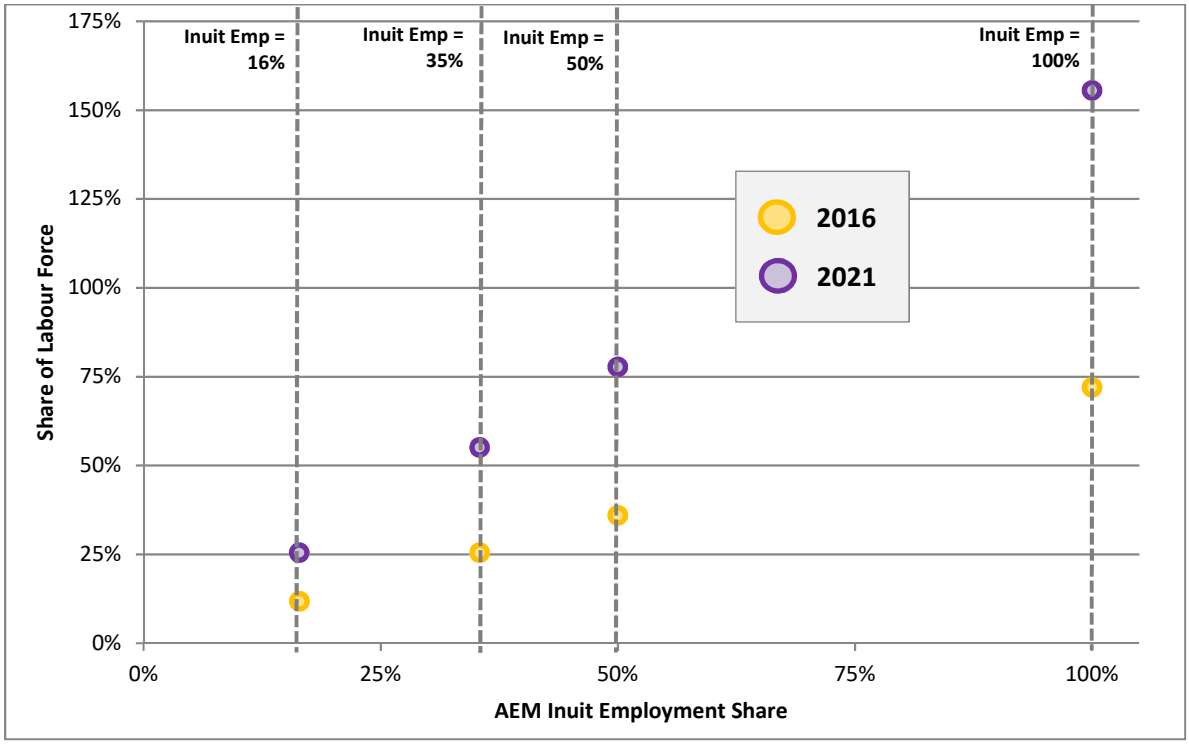
Figure 21: AEM Labour Demand Growth versus Labour Supply Growth (2011 to 2021)



Source: Mining Industry Human Resources Council; AEM, Socio Economic Nunavut Reports for Meadowbank (2011; 2016; 2017) and Meliadine (2011; 2016; 2017); AEM Manpower Projections for 2018-2021 (2017); Statistics Canada, Census (2011; 2016), custom data request; 2018

** Labour supply represented as the labour force (baseline); Labour demand represented as overall AEM employment.*

Figure 22: AEM Share of Baseline Labour Force versus Inuit Employment Share at AEM (2016 and 2021)



Source: Mining Industry Human Resources Council; AEM, Socio Economic Nunavut Reports for Meadowbank (2011; 2016; 2017) and Meliadine (2011; 2016; 2017); AEM Manpower Projections for 2018-2021 (2017); Statistics Canada, Census (2011; 2016), custom data request; 2018

Table 9: AEM Share of Baseline Labour Force versus Inuit Employment Share at AEM (2016 and 2021)

	Inuit Employment Share	Share of Labour Force Needed in 2016	Share of Labour Force Needed in 2021
Expected Inuit Employment Share in 2021	16%	12%	26%
Inuit Employment Share in 2016	35%	26%	55%
Inuit Employment Share at 50%	50%	36%	78%
Inuit Employment Share at 100%	100%	72%	156%

Source: Mining Industry Human Resources Council; AEM, Socio Economic Nunavut Reports for Meadowbank (2011; 2016; 2017) and Meliadine (2011; 2016; 2017); AEM Manpower Projections for 2018-2021 (2017); Statistics Canada, Census (2011; 2016), custom data request; 2018

Signs of Occupational Mismatch

The previous section (c) of this report defined the seven broad occupational categories used to describe the 61 relevant NOC codes covered in this analysis. This section of the report compares AEM's labour demand and Kivalliq's labour supply across differing occupational categories (Table 10).

For particular occupational groups, this comparison (Table 10) reveals a relatively tighter labour market[13] for *Supervisors, Coordinators and Foremen* and *Professional, Physical Science and Technical Occupations*, but a surplus of *Support Workers.*

AEM's prospective labour force (baseline), excluding those already employed at AEM, is further explored for each occupational category (Figure 23). *Production Occupations*, in particular, are more likely to feature unemployed and hidden labour force participants.

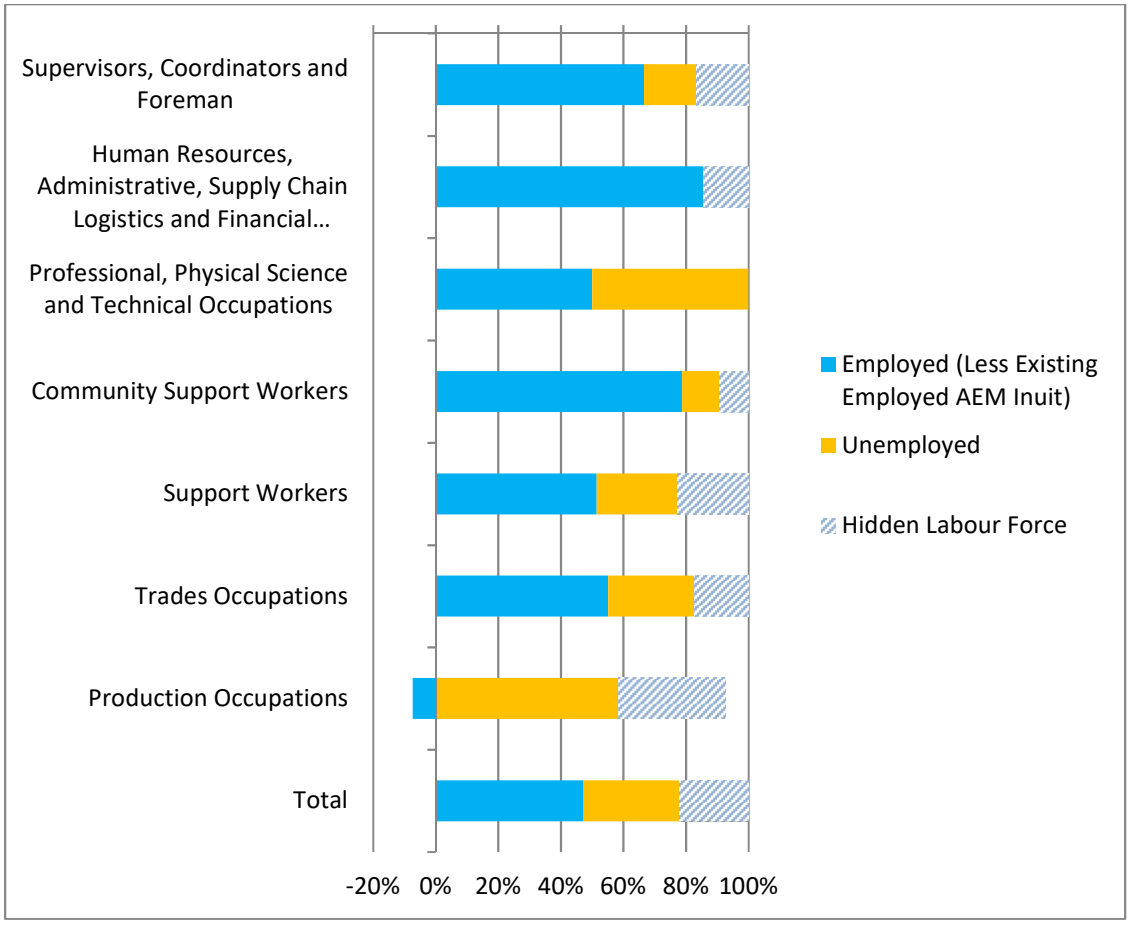
Table 10: Comparison of Labour Supply and Labour Demand by Broad Occupational Category, Baseline (2016)

Skill Level	Labour Supply (Total Labour Force)	Labour Demand (AEM Employment)	Supply less Demand
Supervisors, Coordinators and Foremen	30	130	-100
Human Resources, Administrative, Supply Chain Logistics and Financial Occupations	35	35	0
Professional, Physical Science and Technical Occupations	10	85	-75
Community Support Workers	165	15	150
Support Workers	485	165	320
Trades Occupations	160	105	55
Production Occupations	340	325	15
Total	**1225**	**860**	**365**

Source: Mining Industry Human Resources Council; AEM, Socio Economic Nunavut Reports for Meliadine (2016); AEM, GNDPA Employment Data for Meadowbank (2016); Statistics Canada, Census (2016), custom data request; 2018

[13] A "tight" labour market describes a situation in which the number of available jobs is high, relative to the number of people available to fill them. Such tightness can result from a shortfall of available workers or from a robust demand for workers (or a combination of both factors). In either case, employers' demand for workers has outpaced supply.

Figure 23: Potential Labour Force Groups (Less Existing AEM Inuit Employment) by Broad Occupational Category, Baseline (2016)



Source: Mining Industry Human Resources Council; AEM, Socio Economic Nunavut Reports for Meliadine (2016); AEM, GNDPA Employment Data for Meadowbank (2016); Statistics Canada, Census (2016), custom data request; 2018
**Note: negative share of employed for Production Occupations is due to differing data sources (AEM and Statistics Canada). However the negative difference is somewhat insignificant (-15) and is approximate to 0%.*

Signs of Skills Mismatch

AEM's labour demand and Kivalliq's labour supply are compared across skill levels (A, B, C and D) as defined in the previous section (c).

Data for 2016 (Table 11) reveal fairly tight labour markets for *Skill Levels A, B* and *C* and a significant surplus for *Skill Level D* (on-the-job training). Projections for 2021 (Table 12) show a progressively tighter labour market, with significant shortages for most skill levels, especially *Skill Level C*. This shift is largely due to increases in AEM employment (at all skill levels), which are expected to more than double by 2021 (from 865 in 2016 to 2,080), with 40% of demand for *Skill Level C* and 28% for *Skill Level B*.

Yet, in spite of these pressures, *Skill Level D* is projected to remain at a surplus, a telling sign of skills mismatch that may lead to structural unemployment in the region.[14]

AEM's prospective labour force (baseline), excluding those already employed at AEM in 2016, is shown by skill level (Figure 24). Interestingly, *Skill Level C* is most likely to feature unemployed and hidden labour force participants. This result is further indication of a skills mismatch, especially given that *Skill Level C* is among the highest in demand. Yet, the remaining labour pool appears unable to break through into employment in this skill category. Overall, these findings may also point to potential opportunities to better align the skills of the labour force with those in demand.

Table 11: Comparison of Labour Supply and Labour Demand by Skill Level, Baseline (2016)

Skill Level	Labour Supply (Total Labour Force)	Labour Demand (AEM Employment)	Supply less Demand
Skill level A (Management): Occupations usually require university education	30	10	20
Skill level A (Professionals): Occupations usually require university education	80	75	5
Skill level B: Occupations usually require college education or apprenticeship training	375	360	15
Skill level C: Occupations usually require secondary school and/or occupation-specific training	200	230	-30
Skill level D: On-the-job training is usually provided for occupations	540	190	350
Total	**1225**	**865**	**360**

Source: Mining Industry Human Resources Council; AEM, Socio Economic Nunavut Reports for Meliadine (2016); AEM, GNDPA Employment Data for Meadowbank (2016); Statistics Canada, Census (2016), custom data request; 2018

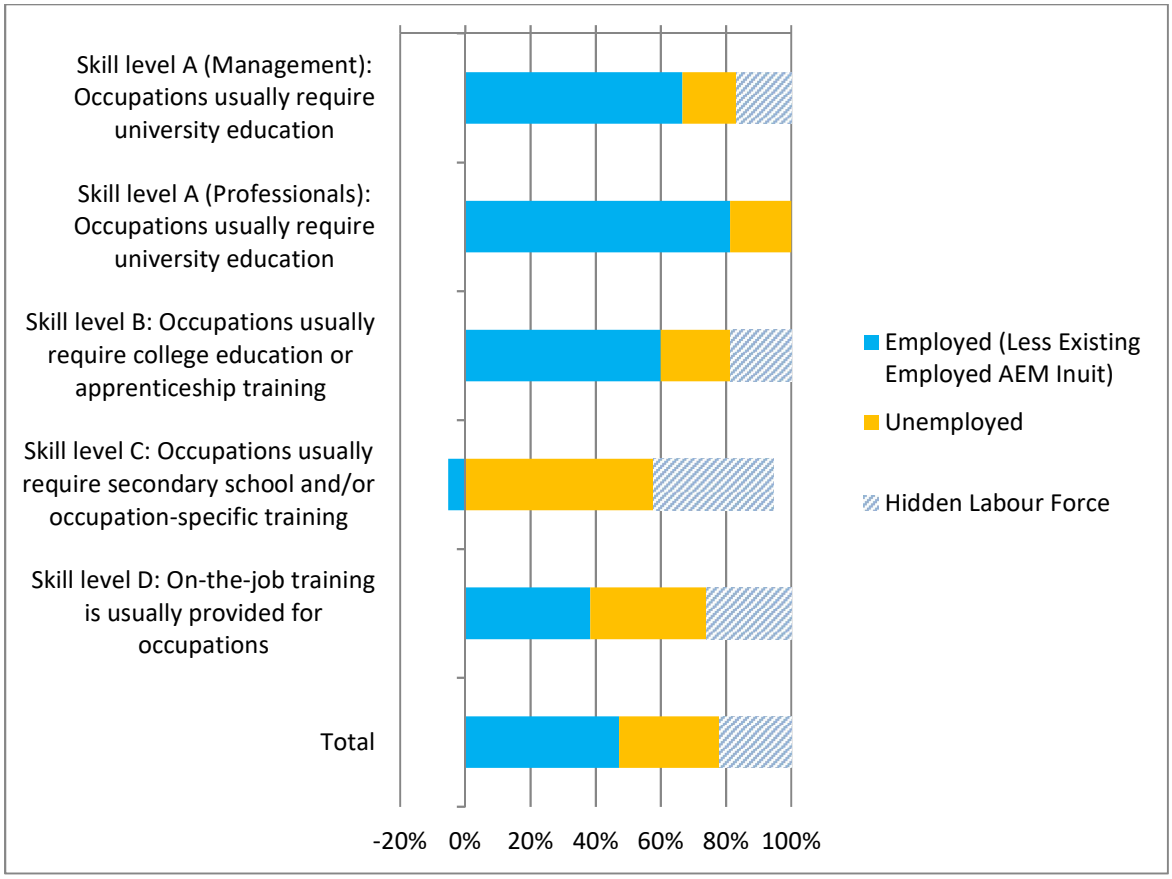
[14] Structural unemployment describes unemployment (typically longer lasting) stemming from a fundamental mismatch between the occupational skills offered by potential workers and the specific needs of employers.

Table 12: Comparison of Labour Supply and Labour Demand by Skill Level, Baseline (2021)

Skill Level	Labour Supply (Total Labour Force)	Labour Demand (AEM Employment)	Supply less Demand
Skill level A (Management): Occupations usually require university education	30	95	-65
Skill level A (Professionals): Occupations usually require university education	85	260	-175
Skill level B: Occupations usually require college education or apprenticeship training	415	585	-170
Skill level C: Occupations usually require secondary school and/or occupation-specific training	220	835	-615
Skill level D: On-the-job training is usually provided for occupations	595	305	290
Total	**1345**	**2080**	**-735**

Source: Mining Industry Human Resources Council; AEM, Socio Economic Nunavut Reports for Meadowbank (2017) and Meliadine (2016; 2017); AEM, GNDPA Employment Data for Meadowbank (2016); AEM Manpower Projections for 2018-2021 (2017); Statistics Canada, Census (2016), custom data request; 2018

Figure 24: Potential Labour Force Groups (Less Existing AEM Inuit Employment) by Skill Level, Baseline (2016)

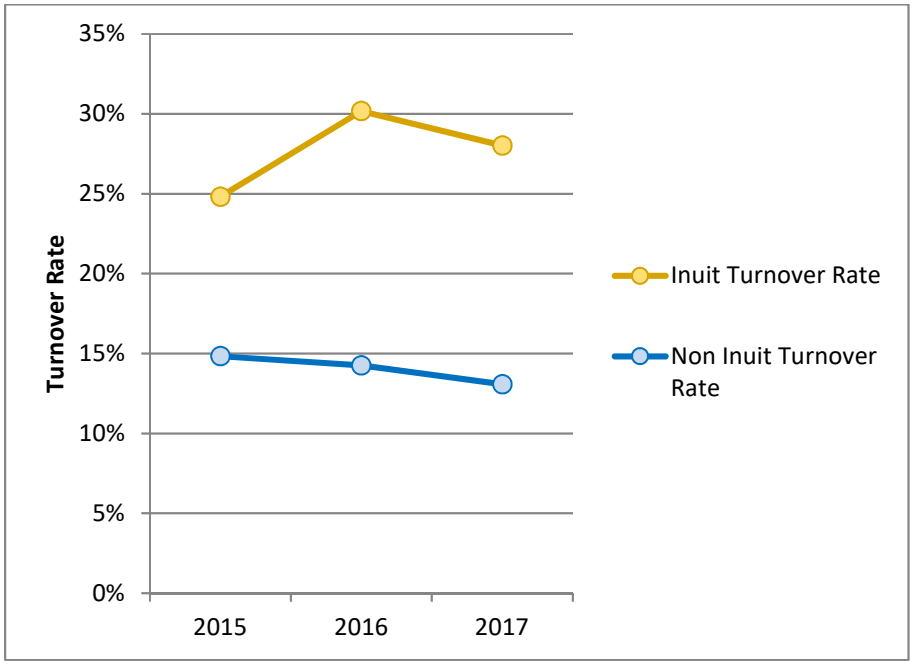


Source: Mining Industry Human Resources Council; AEM, Socio Economic Nunavut Reports for Meliadine (2016); AEM, GNDPA Employment Data for Meadowbank (2016); Statistics Canada, Census (2016), custom data request; 2018
**Note: the negative share of employed for Skill Level C is due to differing data sources (AEM and Statistics Canada). However the negative difference is somewhat insignificant (-5) and is approximate to 0%.*

High Turnover among Inuit Workforce

Employee turnover[15] can potentially undermine efforts to capture more of the labour force. AEM employee termination data for 2015 to 2017 show an average turnover rate (Inuit and non-Inuit) of 19% (Figure 25 & Table 13). The Inuit rate was twice that of non-Inuit (28% versus 14%). Inuit women had somewhat higher rates than men (31% versus 26%). Inuit designated as "unskilled" were twice as likely as "semi-skilled" to leave their job (34% versus 17%).

Figure 25: Turnover Rates at AEM, Inuit and Non-Inuit (2015 to 2017)



Source: AEM data on employment terminations (2015; 2016; 2017;) AEM, Socio Economic Nunavut Reports for Meadowbank (2015-2017) and Meliadine (2015- 2017); 2018

Table 13: Turnover rates at AEM by Various Attributes (Average of 2015 to 2017)

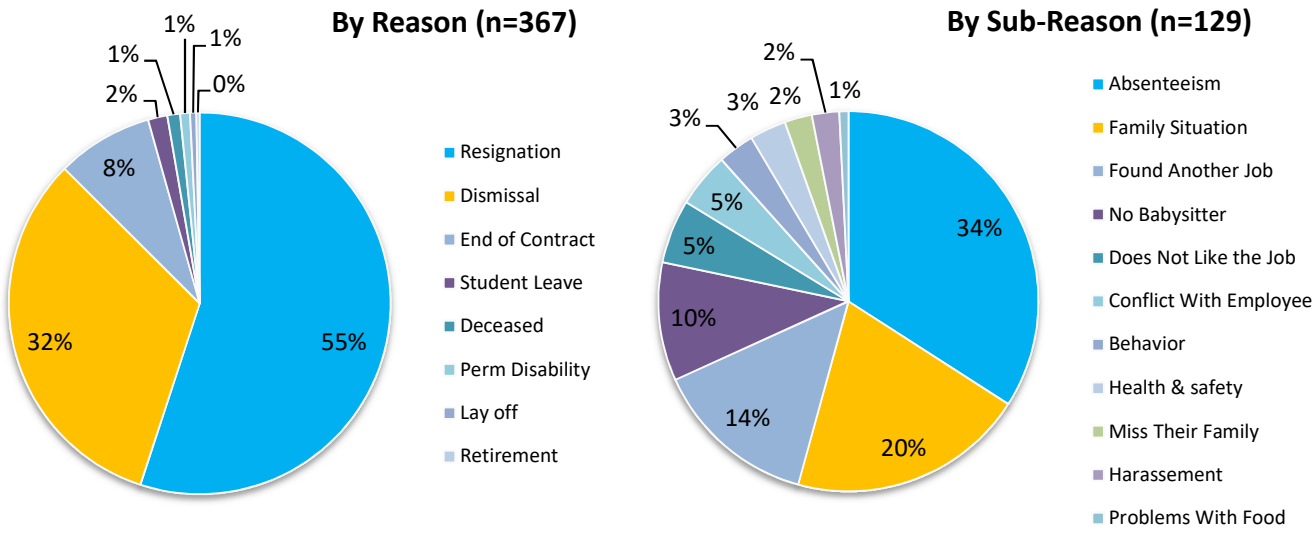
Attribute	Average Turnover Rate (2015 to 2017)
Non-Inuit	14%
Inuit	28%
Total	19%
Inuit Men	26%
Inuit Women	31%
Inuit Semi-Skilled	17%
Inuit Unskilled	34%
Inuit 15 to 24 years old	26%
Inuit 25 to 54 years old	28%

[15] For the purpose of this analysis, MiHR defines turnover as the percentage of the workforce that has left during the course of a year: calculated as: *employee terminations over the year ÷ (standing employees at year end + employee terminations over the year)*.

Source: AEM data on employment terminations (2015; 2016; 2017) AEM, Socio Economic Nunavut Reports for Meadowbank (2015-2017) and Meliadine (2015- 2017); 2018

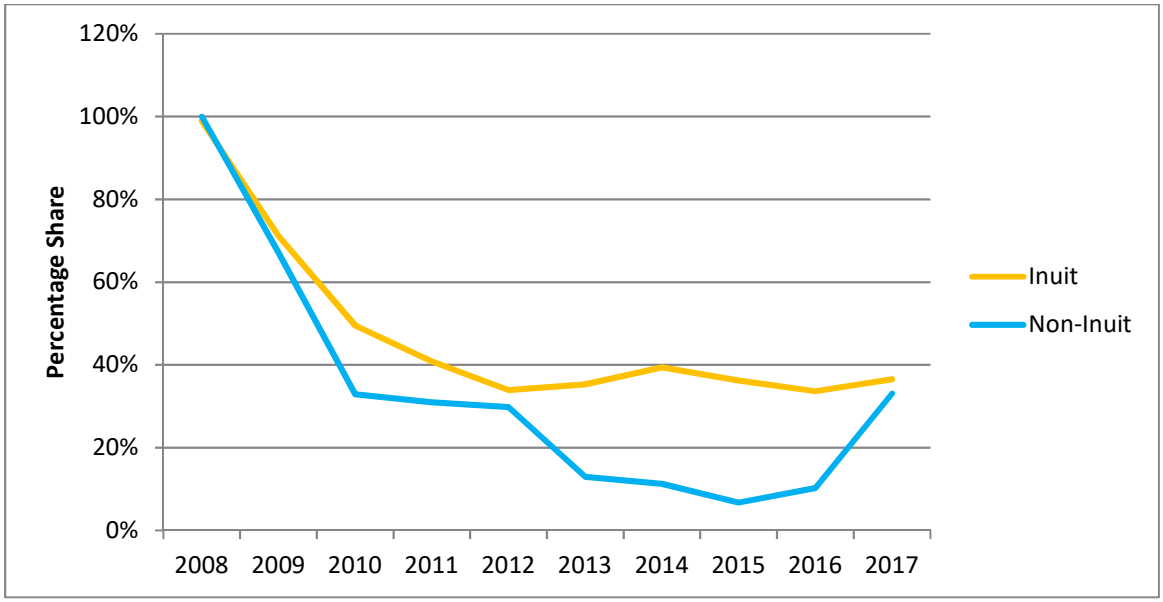
From 2015 to 2017, the majority of Inuit terminations at AEM (Figure 26) were from resignation (55%), followed by dismissal (32%) and because their contract had ended (8%). Absenteeism (34%) and family situation (20%) were among the most frequently cited reasons for termination (Figure 26). AEM employment data for 2008 to 2017 show a greater share of the Inuit workforce (compared to the non-Inuit workforce) have less than one year of employment duration (Figure 27). From 2012 to 2017, between 34% and 39% of Inuit were employed for less than one year compared to 7% to 33% for non-Inuit.

Figure 26: Inuit Employment Termination, by Reason (Average of 2015 to 2017)



Source: AEM data on employment terminations (2015; 2016; 2017); 2018

Figure 27: Share of Workforce With Less Than One Year of Employment Duration, Inuit and Non-Inuit (2008 to 2017)



AEM, Socio Economic Nunavut Reports for Meadowbank (2008-2017) and Meliadine (2012-2017); 2018

Wage Bump for Higher Skill Levels

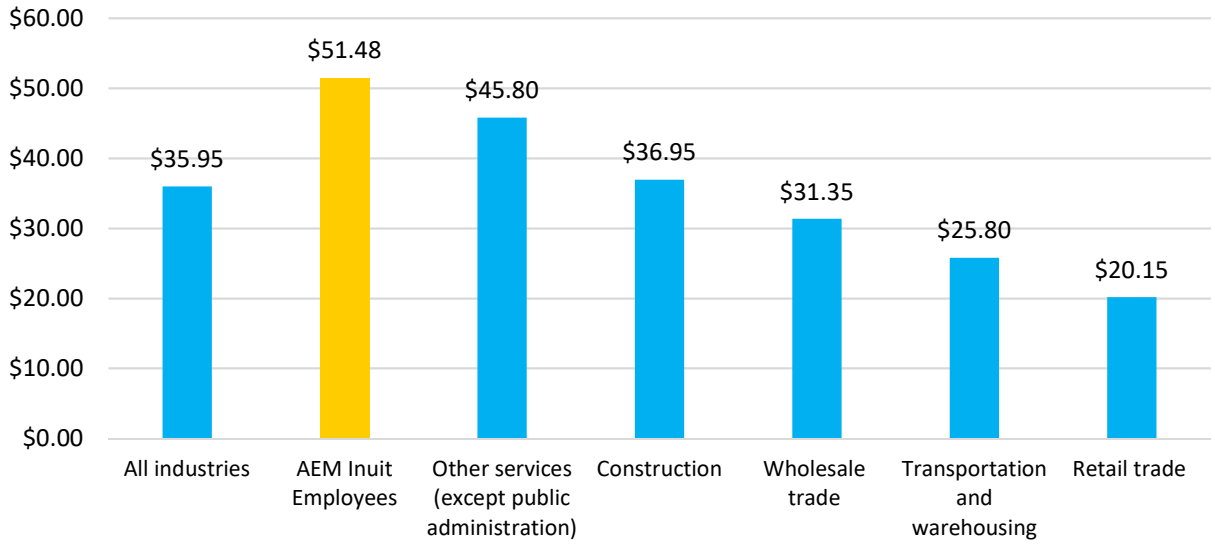
MiHR concludes this section by looking at AEM's wage competitiveness with other industries. AEM's ability to attract the target labour supply will depend on wage differences between AEM and competing employers.

A breakdown of the labour force by industry gives a picture of major competitors for labour in the region. *Public administration* accounted for 23% of the labour force and was the largest industry in the Kivalliq region in 2016, followed by *Retail trade* (13%) and *Educational services* (10%). *Mining, quarrying, and oil and gas extraction* accounted for roughly 7%. (Nunavut Bureau of Statistics)

The average hourly wage of Inuit employed at AEM is roughly $51 per hour, which is comparatively greater than other sectors in Nunavut, (Figure 28). Note that wage data for *Public administration* was not available in this particular dataset.

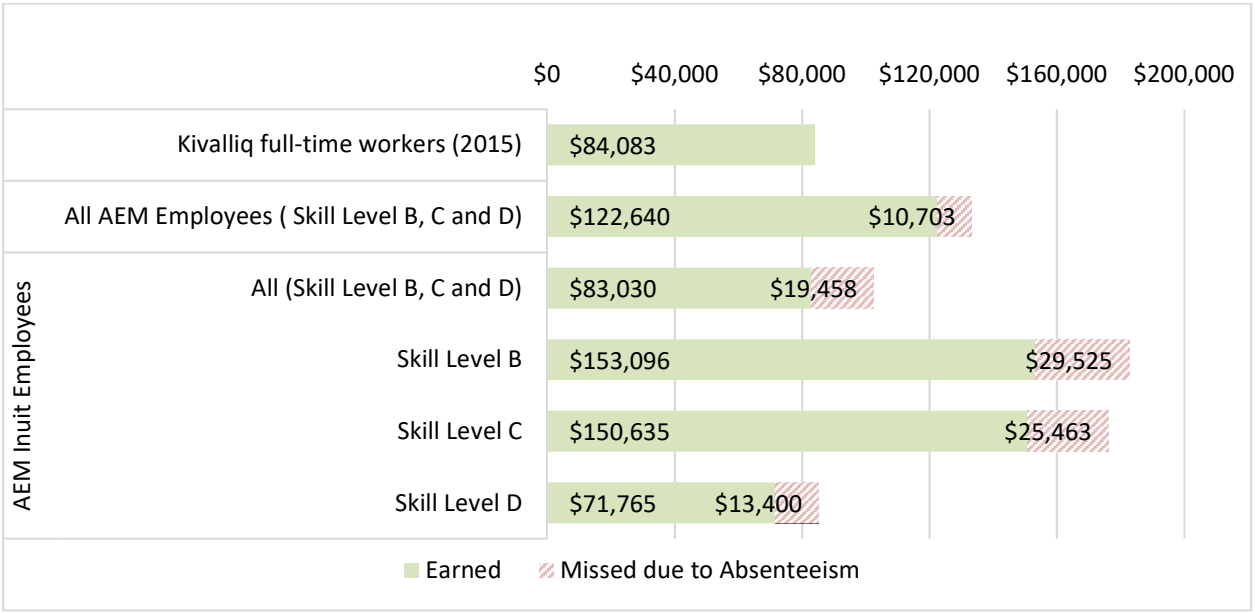
On average, the annual income of Inuit employees at AEM (in all skill levels, excluding *Skill Level A*) is about $83,000, about $1000 less than for full-time worker in Kivalliq (Figure 29). However, the annual income of Inuit employees in *Skill Level D* is roughly $71,700 - about $11,000 less compared to the average full-time worker in Kivalliq. The difference in earnings between AEM Inuit employees in *Skill Level D* and *Skill Level C* is about $78,900, meaning that *Skill Level C* employees earn twice as much as *Skill Level D* employees.

Figure 28: Average Hourly Wage, Inuit AEM Employees and Other Sectors in Nunavut (2016)



Source: Statistics Canada, Job Vacancy and Wage Survey[16] (Table 285-0052), 2018; AEM, AEM Wage Data, 2018; AEM, AEM ECC Report (Meadowbank and Meliadine) (2016); 2018

Figure 29: Average Annual Employment Income by Skill Level, Excluding Skill Level A (2016)



Source: Statistics Canada, Census (2016); AEM, AEM Wage Data, 2018; AEM, AEM ECC Report (Meadowbank and Meliadine), 2016; 2018

[16] Job Vacancy and Wage Survey hourly wage data exclude monetary benefits.

Absenteeism affects the earnings of Inuit employees and thus the Kivalliq community. Inuit employees at AEM (in all skill levels, excluding *Skill Level A*) give up nearly $19,500 through missed work hours (Figure 29). The cumulative effects of absenteeism on earnings are significant: Although Kivalliq Inuit employees worked earnings totaled $32.4 million in 2016; they left $5.7 million unearned because of absenteeism. The problem of lost earnings compounds when the number of missed hours of work increases in tandem with skill level (and thus hourly wage) increases (Figures 29 & Table 14).

Table 14: Hours Worked and Wages by Skill Level (2016)

	Cumulative Inuit 2016 Earnings at AEM	
Skill Level	**Worked Earnings**	**Missed Earnings due to Absenteeism**
Skill level A (Professionals/Management)	NA	NA
Skill level B	$459,288	$88,576
Skill level C	$18,980,009	$3,208,301
Skill level D	$12,989,488	$2,425,460
Total	**$32,428,784**	**$5,722,337**

Source: AEM, AEM Wage Data, 2018; AEM, AEM ECC Report (Meadowbank and Meliadine) (2016); 2018

Summary of Key Findings

- IEGs are tied to AEM labour demand, whereas IEEs consider the labour supply overall and AEM's historic share of the labour force;
- The challenge: labour demand growth is outpacing labour supply growth. Shifts in AEM employment require a re-thinking of best response;
- Under the status quo scenario, AEM will need to increase its share of the Kivalliq baseline labour force by 50 percentage points in order to reach IEGs by 2021;
- The labour markets for *Skill Level C* and *Production Occupations* are relatively tight;
- There are significant surpluses in *Skill Level D* (i.e. requiring on-the-job training) and in *Support Worker* occupations;
- AEM's struggle to recruit in Kivalliq stems from a demand and supply mismatch in particular skills, especially *Skill Level C* (i.e. requiring occupation-specific training);
- The turnover rate at AEM is higher for Inuit workers than for non-Inuit workers, especially among Inuit women and Inuit in the unskilled category;
- Over one-half of Inuit terminations are from resignations; nearly one-third is from dismissals.
- "Absenteeism" and "family situation" are commonly reported reasons for termination;
- A large contingent of Inuit at AEM has employment duration at AEM of less than one year.
- AEM offers highest average hourly wages compared to other sectors in Nunavut;
- The average earned income for AEM Inuit workers in *Skill Level D* is 15% less than the average annual full-time income in the region.

e) Overall labour picture

Section Overview

This section of the report consolidates the results of all previous layers of the KLMA framework (Figure 1), to provide a comprehensive picture of labour supply in the Kivalliq region. Figure 30 offers a reference illustration of the successive layers, starting with the Inuit working age population at the top of the diagram, and moving through each level of disaggregation. The bottom, left corner of the illustration marks Inuit employment at AEM. MiHR considers the following five groups (in addition to those already employed by AEM) as included in AEM's potential labour supply:

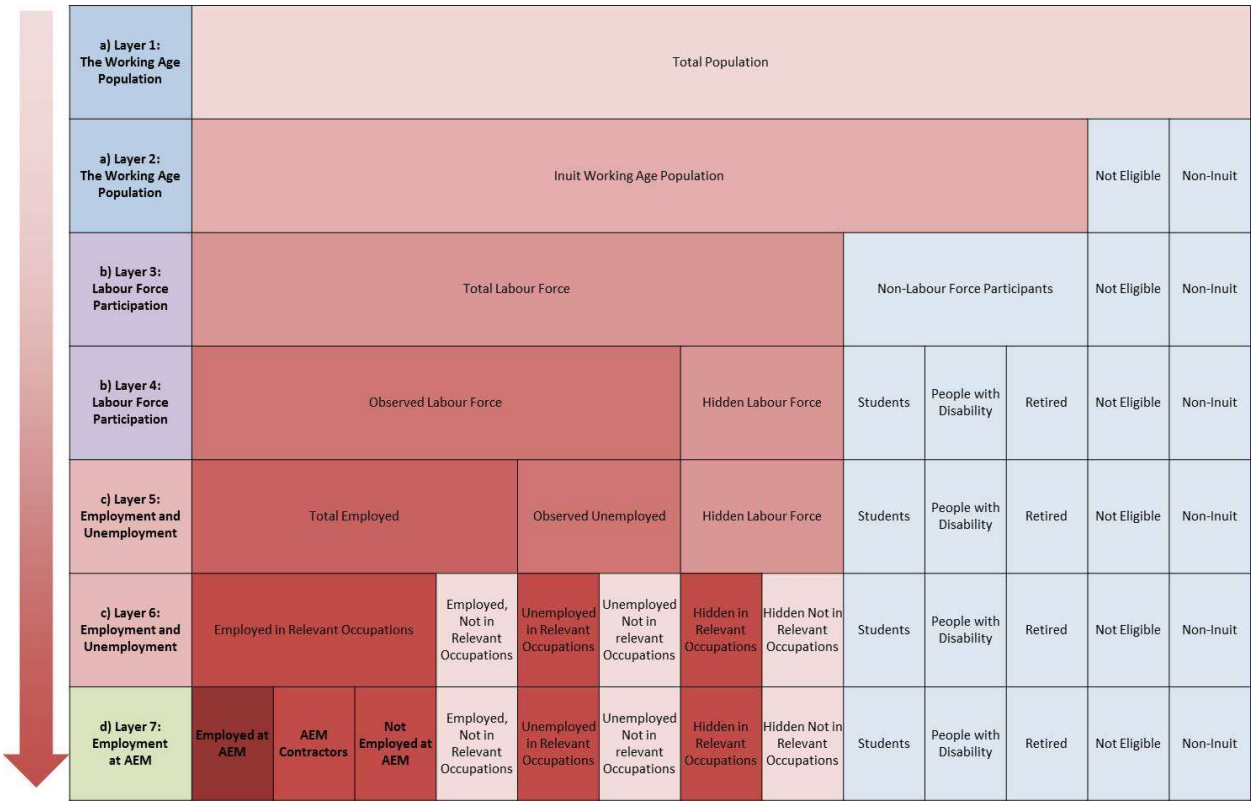
- Employed by AEM
- Employed by AEM contractor
- Not employed at AEM or by AEM contractor, but employed in relevant occupations
- Unemployed in relevant occupations
- Hidden labour force in relevant occupations

Considering these five groups, the KLMA framework estimates that AEM's relevant Inuit labour supply (baseline) represents roughly 12 out of 100 people in the overall population, with 3 out of 100 expected to already be employed by AEM in 2021. Further observed is how a person from the overall population is likely disseminated through the labour force, into employment in a relevant occupation and to employment at AEM.

This section develops a potential "what if" scenario for recruitment among the five groups. The scenario also considers potential recruitment among people in non-relevant occupations (employed, unemployed and hidden) despite this group's exclusion from the relevant labour supply as derived in this report. Recruitment from non-relevant occupations may be a difficult process, requiring additional resources such as awareness campaigns, training, or additional wages and benefits.

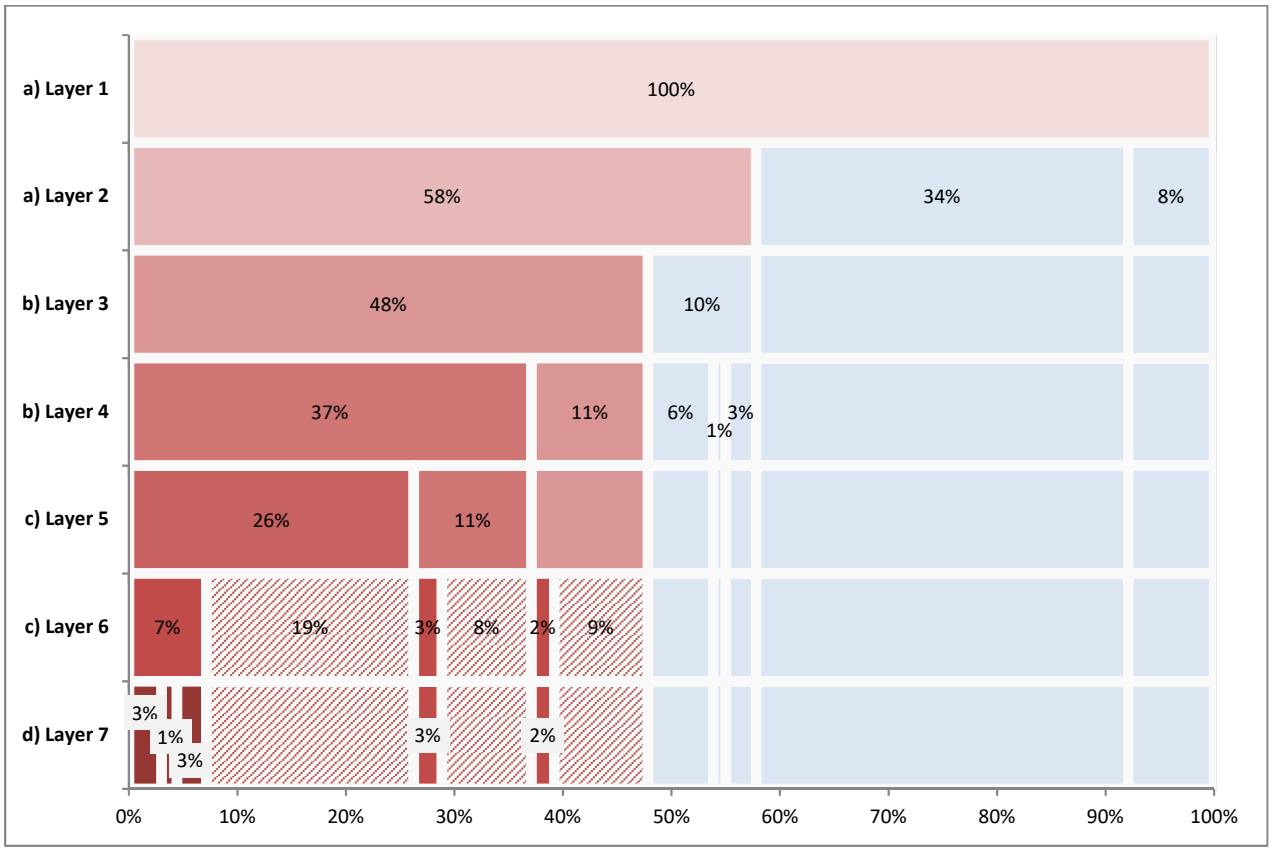
This section concludes with a brief demographic analysis of labour force groups (comparing age, gender and educational attainment) and distribution of the working age population among sub-regions in Kivalliq.

Figure 30: Reference Guide to KLMA Framework, Kivalliq Labour Supply



Source: Mining Industry Human Resources Council; 2018

Figure 31: Kivalliq Labour Supply in the KLMA Framework, Baseline (2021)



Source: Mining Industry Human Resources Council; 2018

Estimate: AEM's Labour Supply in the Kivalliq Region

AEM's potential labour supply (focusing on the five main labour force groups) is roughly 12% of the overall population (Figure 31). This includes the combined share of employees in relevant occupations (AEM employees + AEM contractor employees + employees not employed at AEM = 7%) and the share of both the unemployed (3%) and hidden labour force (2%) in relevant occupations. The 12% share represents a potential relevant labour force (baseline) of 1,350. Appendix C provides a detailed breakdown of the quantities underlying this analysis (Figure 31).

This report introduces a tool for exploring alternative scenarios based on various labour supply groups (Table 15). It enables users of this report to adjust the parameters of the analysis (baseline) so they can see how AEM could possibly change their recruitment outcomes in the region. For example, under the 2021 scenario (Figure 31), AEM is able to capture 345 workers. In an alternative (arbitrary) scenario, where AEM is able to boost recruitment among other labour supply groups from 0% to 5%, an additional 255 Inuit are employed, resulting in an employment outcome of 600 Inuit at AEM.

A strategic recruitment effort could attract potential AEM employees from various untapped labour sources, but recruitment strategies (i.e., competition with other industries, creating awareness, attraction, retention and training, etc.) and required effort (staff, money, and time) would be different for each group, as would the amount of training required for new hires.[17]

Table 15: Possible Recruitment Scenario: 5% of Labour Supply Groups, Based on Baseline Scenario (2021)

	2021	Recruitment Scenario	Possible Additional Employment
Estimated Baseline Employment = 345 in 2021	**345**	**-**	**-**
Employed by AEM contractor	160	5%	10
Not employed at AEM or by AEM contractor	310	5%	15
Unemployed in relevant occupations	295	5%	15
Hidden labour force in relevant occupations	240	5%	10
Employed in non-relevant occupations	2,180	5%	110
Unemployed in non-relevant occupations	940	5%	45
Hidden labour force in non-relevant occupations	985	5%	50
Possible Additional Employment	**5,110**	**5%**	**255**

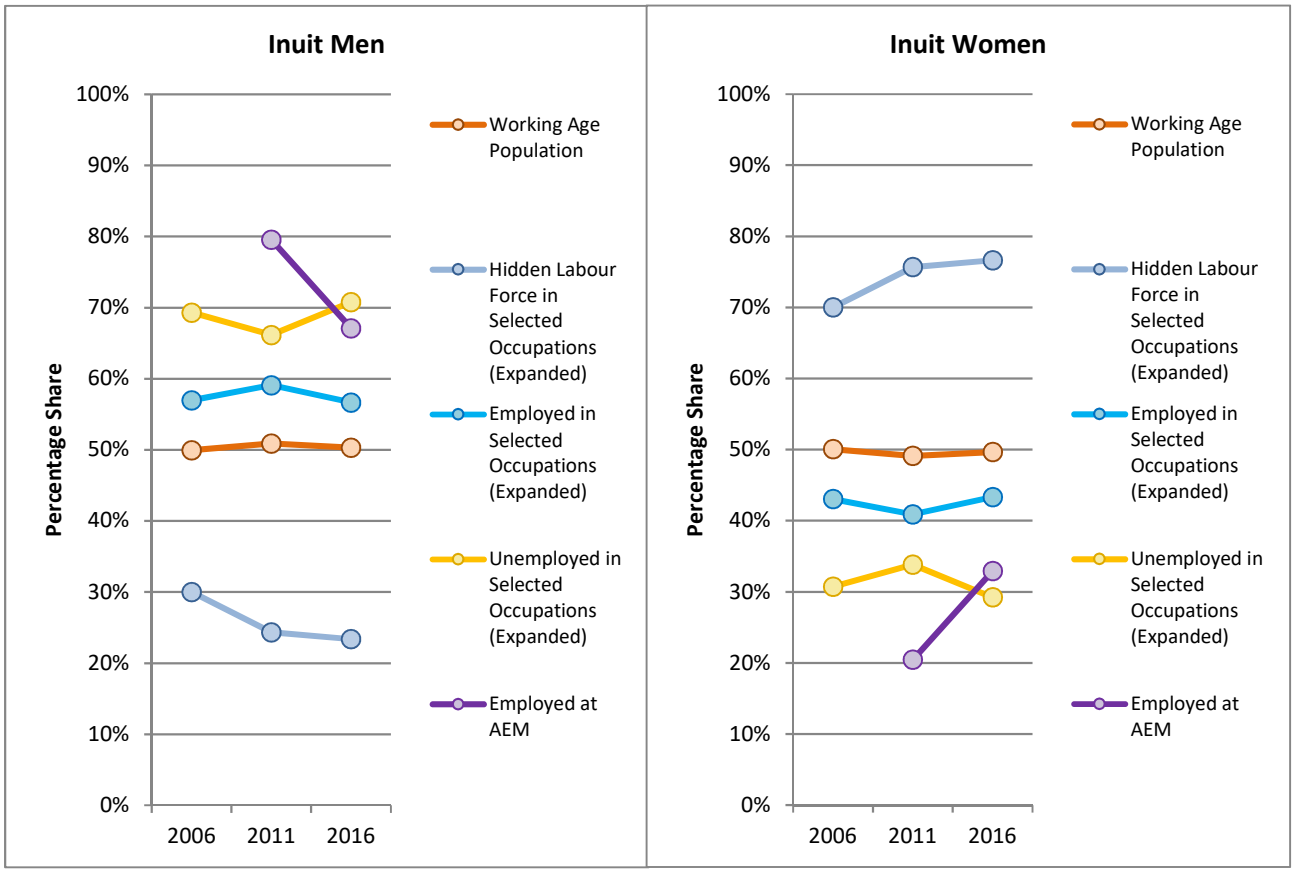
Source: Mining Industry Human Resources Council; 2018

[17] Recruitment effort and training requirements are relatively minimal when targeting labour that is already employed and in a relevant occupation. The unemployed and hidden labour in non-relevant occupations are less identifiable; they require more robust recruitment strategies and, if hired, more intensive training.

Greater Share of Women among the Hidden Labour Force

The ratio between men and women in the working age population is about 50:50. However, the gender ratio in the hidden labour force is relatively disproportionate. In 2016, about 77% of the hidden labour force (expanded)[18] consisted of women (Figure 32). Men are more likely to be in the observed labour market and represent a greater share of the employed and unemployed. AEM employs considerably more men than women, but the share of women among the Inuit workforce at AEM increased from 20% in 2011 to 33% in 2016.

Figure 32: Gender Representation among Labour Force Groups, Expanded (2006 to 2016)



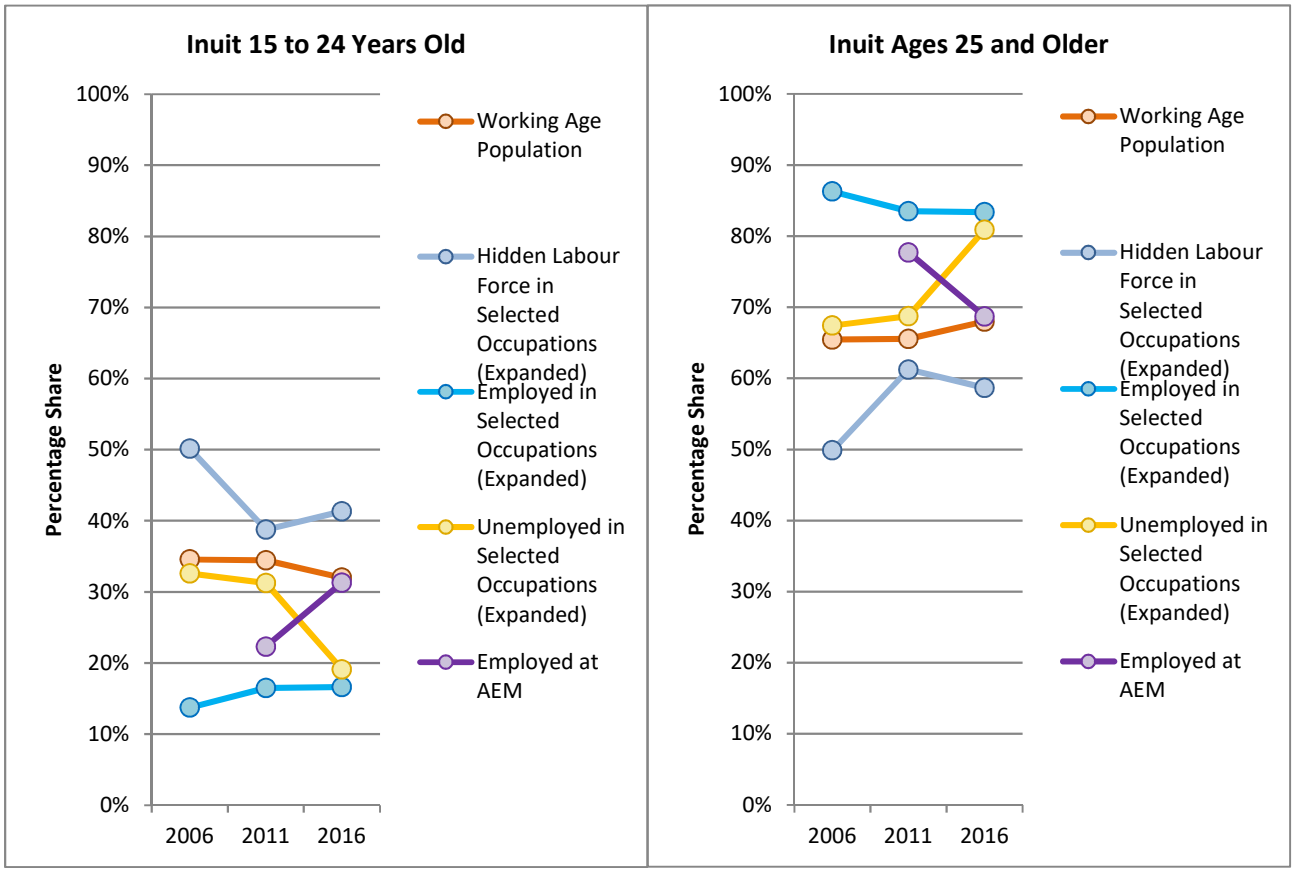
Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; AEM, Socio Economic Nunavut Reports for Meadowbank (2011; 2016) and Meliadine (2011; 2016); 2018

[18] The expanded scenario was used here (instead of the baseline) due to inconsistencies with suppression/small data issues.

Growing Share of 25- to 54-Year-Olds in Hidden Labour Force

A comparison of age groups (15 to 24 years old and 25 years old or older) reveals that about 68% of the working age population and about 83% of the employed are age 25 or older. Over the past decade, the share of hidden labour that is 25 or older increased from 50% to 59%. Most Inuit employed at AEM are over the age of 25; however, the share of Inuit ages 15 to 24 who are employed at AEM increased from 22% in 2011 to 31% in 2016 (Figure 33).

Figure 33: Age Representation among Labour Force Groups, Expanded (2006 to 2016)

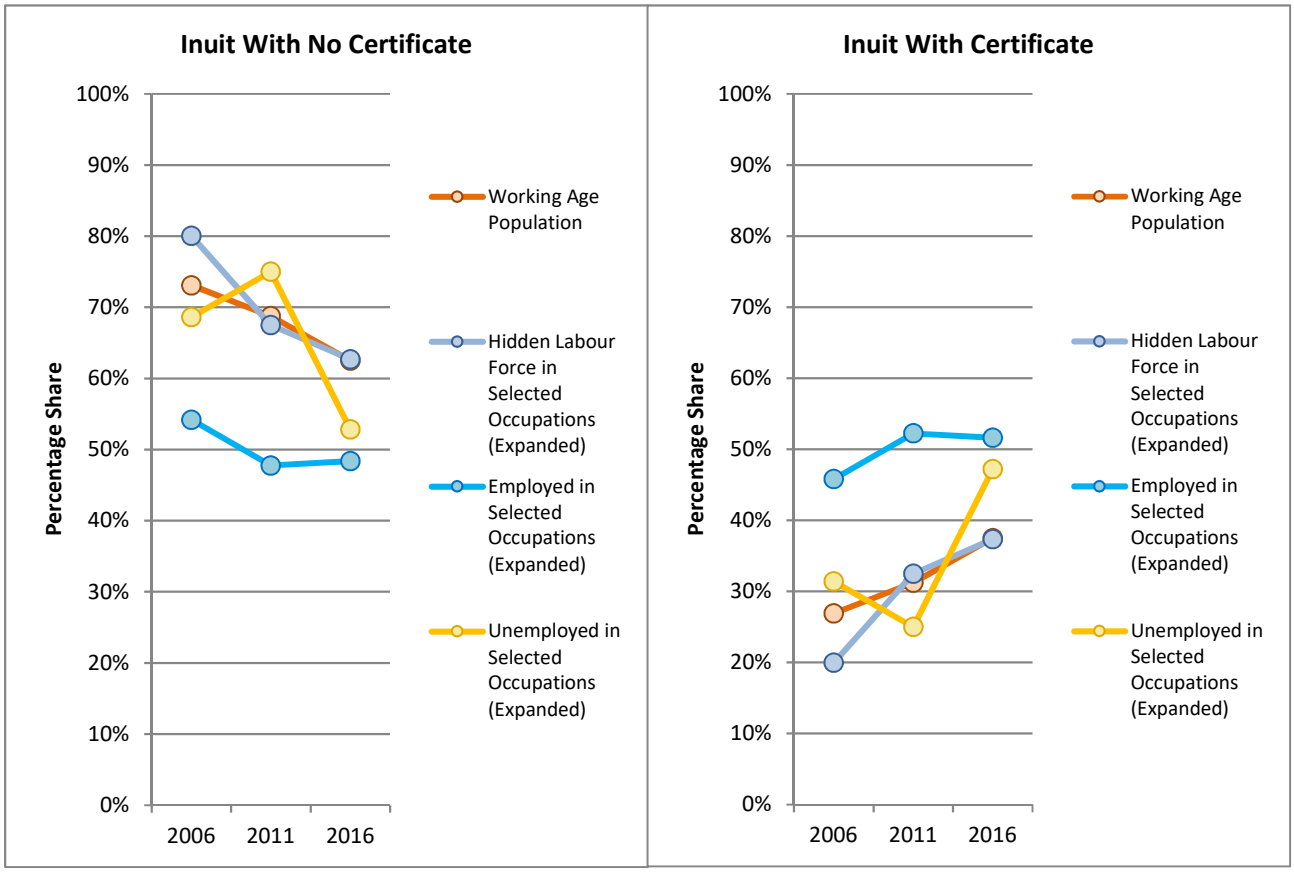


Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; AEM, Socio Economic Nunavut Reports for Meadowbank (2011; 2016) and Meliadine (2011; 2016); 2018

Greater Share with No Certificate

The study compared the potential labour force groups by educational attainment. About 63% of the working age population had no certificate in 2016, but there is a trend toward higher educational attainment among the unemployed and hidden labour force (Figure 34). The significance of this increase is underscored by its potential positive affect on labour force participation (as shown previously in Figure 12 of this report).

Figure 34: Education Representation among Labour Force Groups, Expanded (2006 to 2016)

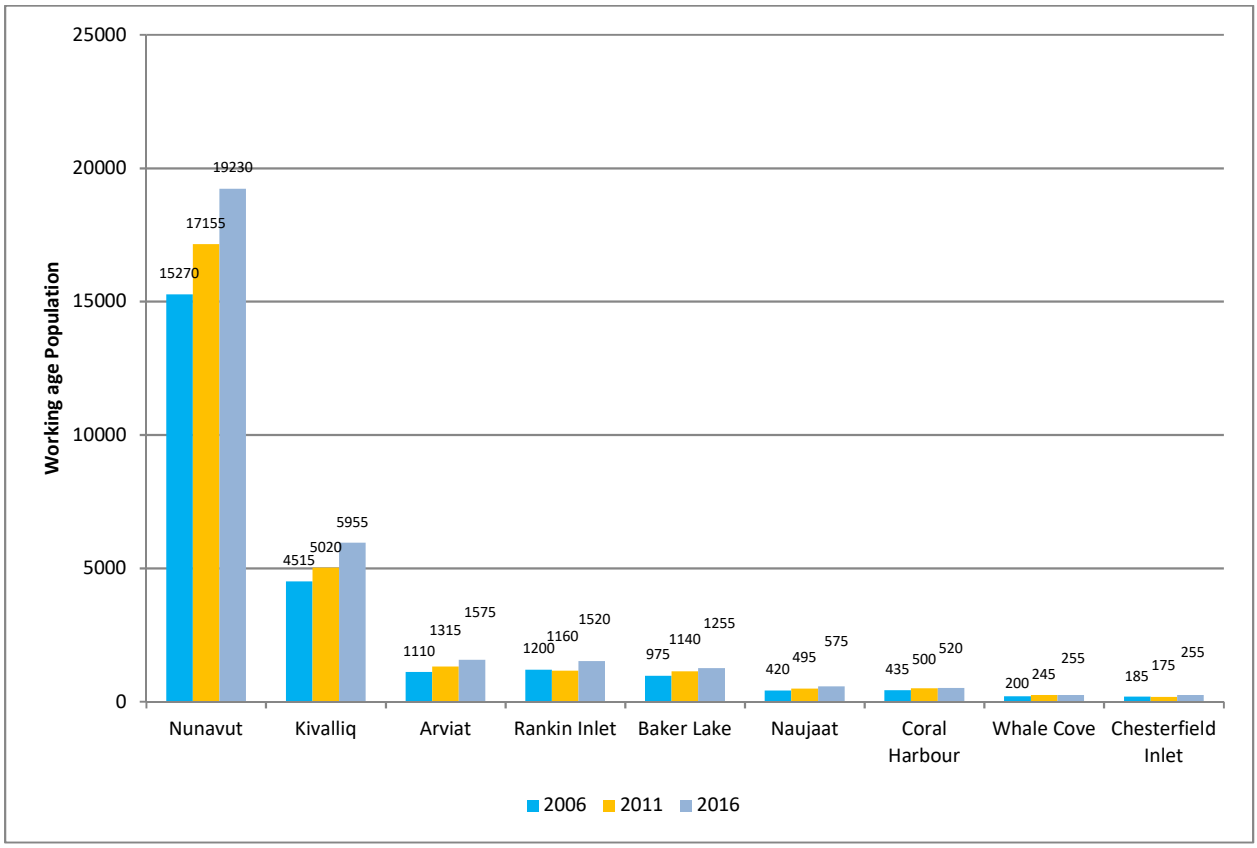


Source: Mining Industry Human Resources Council; Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Consistent Sub-Regional Mix in Kivalliq

A sub-regional analysis of Kivalliq's working age population (Figure 35) shows that some of the sub-regions are very small (~200 people), which can be a challenge to analyse. The proportion of the working age population for each sub-region has remained relatively static over the last three censuses.

Figure 35: Regional Breakdown of Inuit Working Age Population, Nunavut and Kivalliq (2006 to 2016)



Source: Statistics Canada, Census (2006; 2011; 2016), custom data request; 2018

Summary of Key Findings

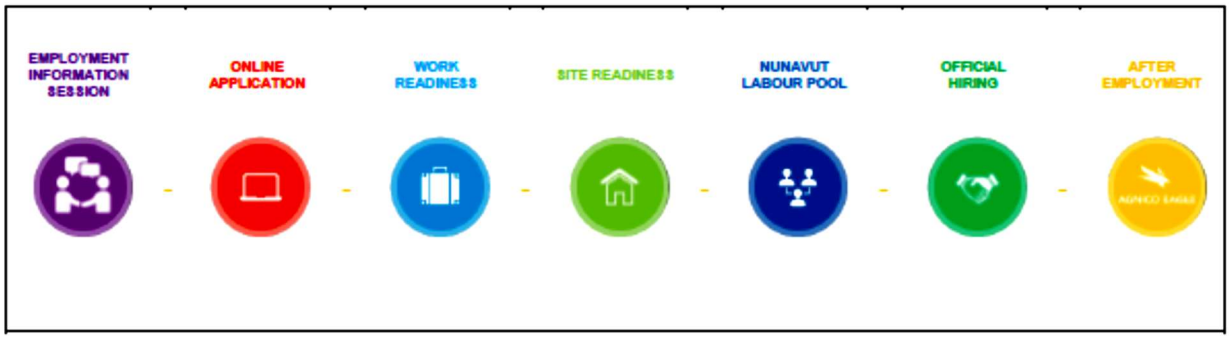
- The KLMA framework identifies five potential labour groups in relevant occupations:
    - Employed by AEM;
    - Employed by AEM contractor;
    - Not employed at AEM or by AEM contractor;
    - Unemployed in relevant occupations;
    - Hidden labour force in relevant occupations;
- The potential labour pool in relevant occupations: 1,350 persons = 12% of region's overall population. AEM can expect to employ 345 Inuit in 2021;
- The study also looked at the potential labour pool in non-relevant occupations:
    - Employed in non-relevant occupations;
    - Unemployed in non-relevant occupations;
    - Hidden labour force in non-relevant occupations;
- Comprehensive potential labour pool = labour in relevant + non-relevant occupations;
- Recruitment scenario: if 5% recruitment from each labour force group (relevant & non-relevant occupations), then 600 Inuit employed in 2021;
- Unique recruitment and training strategies required for each labour group:
    - Minimal recruitment and training required if target existing employed pool in relevant occupations;
    - Intense recruitment and maximum training required if target unemployed and hidden labour;
- Demographic analysis of working age population(expanded scenario):
    - *Gender comparison:*
        - 50/50 split: men and women in the working age population;
        - Men represent a greater share of employed and unemployed;
        - Women represent a greater share of hidden labour force;
        - More women among the Inuit workforce at AEM in 2016 compared to 2011;
    - *Age comparison:*
        - Roughly 30/70 split: ages 15 to 24 and ages 25 and older;
        - A greater share of employed and unemployed are age 25 or older;
        - A greater share of the hidden labour force is 15 to 24 years old;
        - A younger Inuit workforce at AEM in 2016 compared to 2011;
    - *Education comparison:*
        - Roughly 60/40 split: no certificate / with a certificate;
        - About 50% of the employed have a certificate;
        - Trend towards more education among the unemployed and hidden labour force.

f) Labour Pool List

Section Overview

The Labour Pool Program (LPP) is a product of the Inuit Impact and Benefit Agreements with the KIA. Fully implemented in 2016, the program's goal is to pre-qualify candidates from Kivalliq communities for hire at AEM. The program offers candidates a pathway toward employment at the company, which includes a voluntary employment information session, and compulsory work-readiness and site-readiness training programs (Figure 36).

Figure 36: Labour Pool Program, Recruitment Pathway



Source: AEM, 2016 Development Partnership Agreement Report

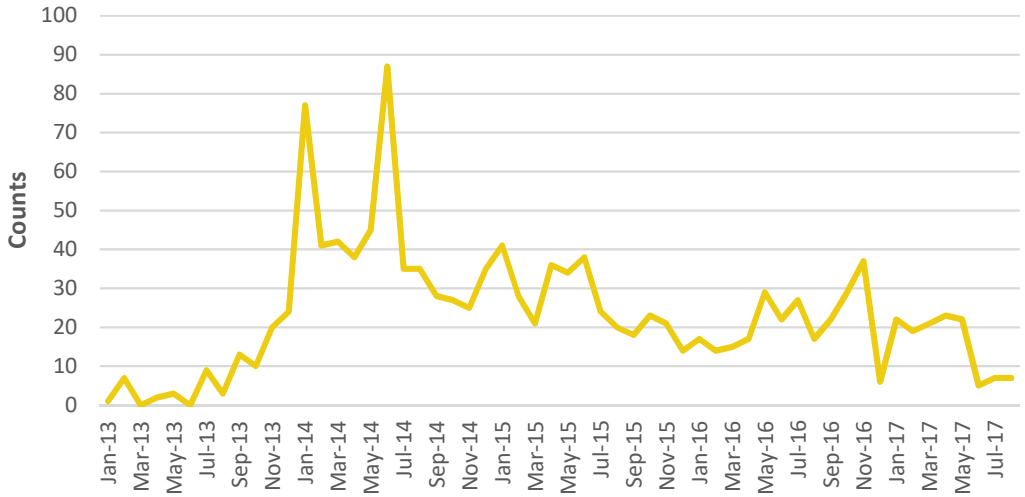
AEM maintains a labour pool database on participants throughout every stage of the recruitment process, starting from when a person first enters their candidacy to when they are hired. Analysis of this data can help to identify opportunities for strengthening the recruitment process.

This section explores the labour pool database in order to determine: (1) where applicants are being lost in the process, and (2) the resulting success rate of the labour pool program. The first step in this analysis is to estimate active participants (applicants who are still engaged in the process) based on their status in the recruitment process. The next step evaluates the retention of active participants through the work readiness and site readiness programs, and provides insight on how wait times between steps in the recruitment process impact the retention of labour pool participants. The section concludes by providing the expected outcomes for all applicants in the recruitment process.

Active Participants

From January 2013 to August 2017, the program attracted 1,303 applicants. For most of this period, applications were relatively modest except for a spike of 77 applicants in January 2014 and 87 in June 2014 (Figure 37).

Figure 37: Labour Pool Program Applicants (January 2013 to August 2017)



Source: AEM, Labour Pool List (as of August 2017); 2018

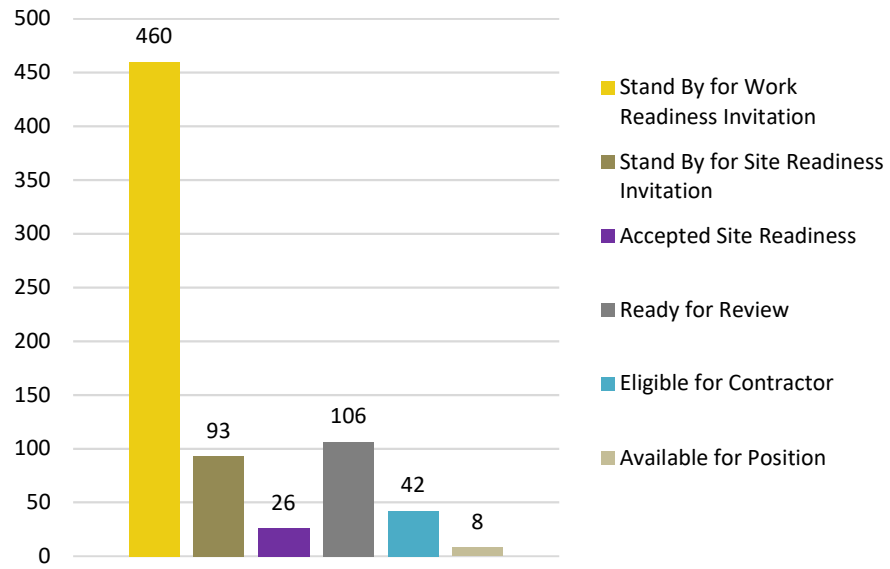
An applicant's status is assessed at every step in the recruitment process, which can help determine how active an applicant is in completing the process. Based on the applicant's status, MiHR has identified the active applicants, including the following categories: : standby for work/site readiness invitation, accepted site readiness, ready for review, eligible for contractor, and available for position. Any applicant whose status indicated non-progression, ineligibility, or already employed at AEM were not considered to be active applicants. Of the 1,303 labour pool applicants, 735 are active applicants;63% of active applicants are at the work readiness step (Table 16 and Figure 38).

Table 16: Active Applicants by Current Status and Labour Pool Step (2013 to 2017)

	Current Step: Work Readiness	Current Step: Site Readiness	Current Step: Stand By	Current Step: Labor Pool	Total
Labour Pool Applicants	**613**	**206**	**198**	**286**	**1,303**
Current Status					
Incomplete Work Readiness	51	0	0	0	51
Incomplete Site Readiness	0	22	0	0	22
Non-Eligible for All	0	0	44	0	44
Inactive Candidate	8	8	0	4	20
Candidate Withdrew	94	26	6	4	130
Not Fit to Work	0	31	0	0	31
On-Call	0	0	0	42	42
Nunavut Offer Accepted	0	0	0	228	228
Active Applicants	**460**	**119**	**148**	**8**	**735**

Source: AEM, Labour Pool List (as of August 2017); 2018

Figure 38: Active Applicants by Status (as of 2017)



Source: AEM, Labour Pool List (as of August 2017); 2018

Participation in Work Readiness Programs

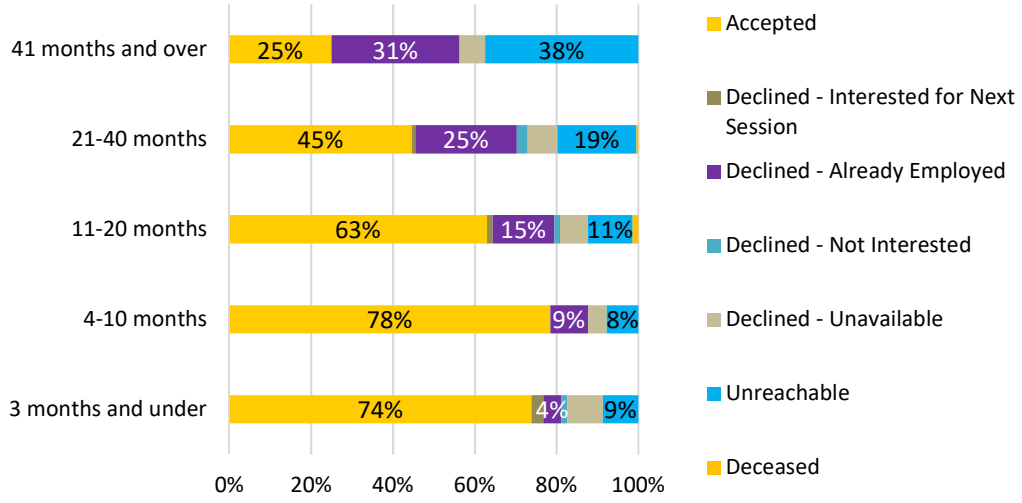
The first step to becoming a labour pool candidate is successful participation in the work readiness program. Implemented in April 2013, the work readiness program is delivered at the community level over a five-day period throughout the year and provides coaching in the following areas:

- Insight into personal beliefs that drive behaviors in participants' social lives
- Awareness of employer's unspoken expectations
- Self-control skills for managing strong emotions
- Communication skills for dealing with difficult social interactions
- Problem-solving skills for logically resolving interpersonal workplace issues

Based on the labour pool database and results from 2017's work readiness program,[19] only 200 out of 460 active applicants at the work readiness step are expected to attend work readiness training, giving a retention rate of 44%.

Lengthy wait times are associated with lower rates of applicant retention. Of those who waited 21 to 40 months, 45% accepted the work readiness invitation. In contrast, 74% accepted among those who waited three months or less (Figure 39). Long wait times are negatively correlated with the overall retention of applicants at the work readiness step because most (54%) of work readiness invitees wait 21 months or more to receive a work readiness invitation (Figure 40).

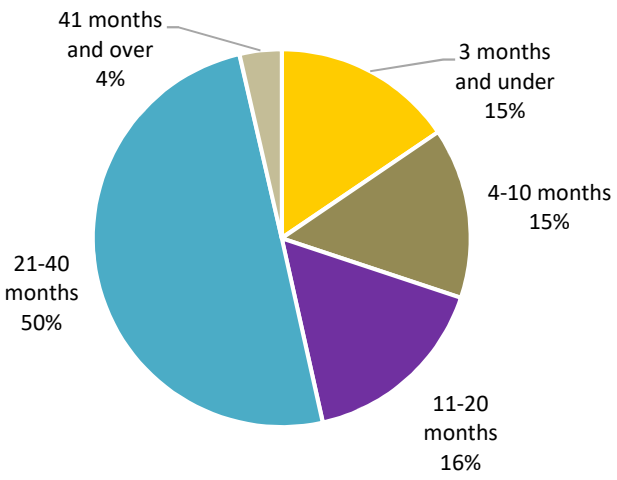
Figure 39: Work Readiness Responses by Wait Time (2013 to 2017)



Source: AEM, Labour Pool List (as of August 2017); 2018

[19] 361 of the 460 active applicants at the work readiness step in the labour pool database did not give a work readiness response. Their responses were estimated by assuming similar response rates recorded in 2017's Work Readiness Invitation Form (sample size of 413).

Figure 40: Share of Work Readiness Invitees by Wait Time (2013 to 2017)



Source: AEM, Labour Pool List (as of August 2017); 2018

Participation in Site Readiness Program

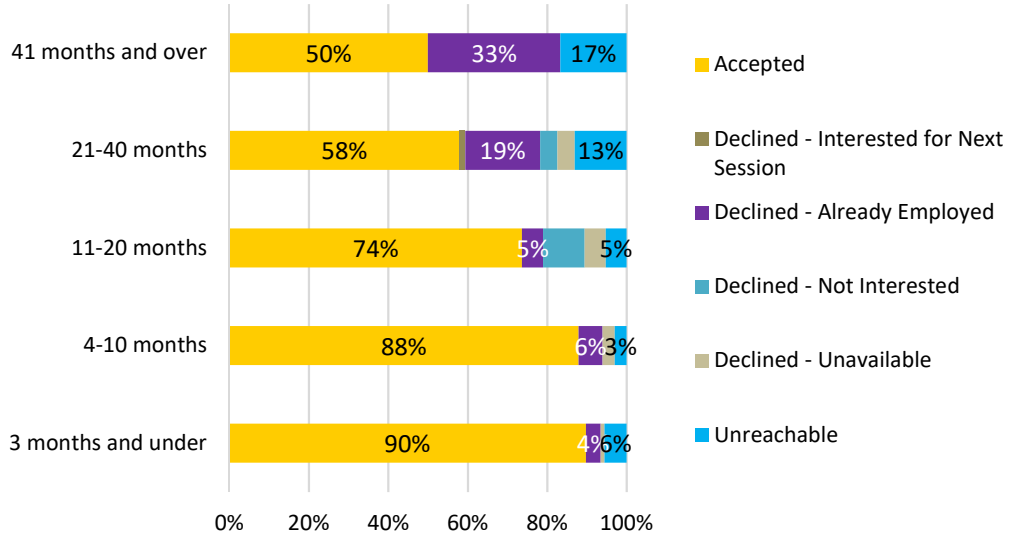
The site readiness program is a five-day training provided at the Meadowbank site and is the final required step toward being a successful labour pool candidate. Participants are required to attend the entire site readiness program, which includes mandatory training sessions, site visits, job initiation, information sessions on training and career opportunities. As well, candidates meet with a human resources representative to discuss career ambitions and identify work interests. Candidates wanting to work for the camp department are given short-term, on-call assignments. All other applicants become part of the labour pool list until a job opportunity matching their interest and competencies becomes available.

Based on the labour pool database and results from 2017's site readiness program,[20] MiHR estimates that 96 out of 119 persons currently at this stage in the recruitment process will attend the site readiness program, a retention rate of 81%.

Again, longer wait times between steps are associated with lower rates of retention. Of those who waited 21 to 40 months to receive a site readiness invitation, 58% accepted. In contrast, of those who waited three months or less, 90% accepted (Figure 41). Long wait times had less of an impact on the overall retention of applicants at the site readiness step since most (61%) of site readiness invitees waited less than 10 months after completing the work readiness program to receive a site readiness invitation (Figure 42).

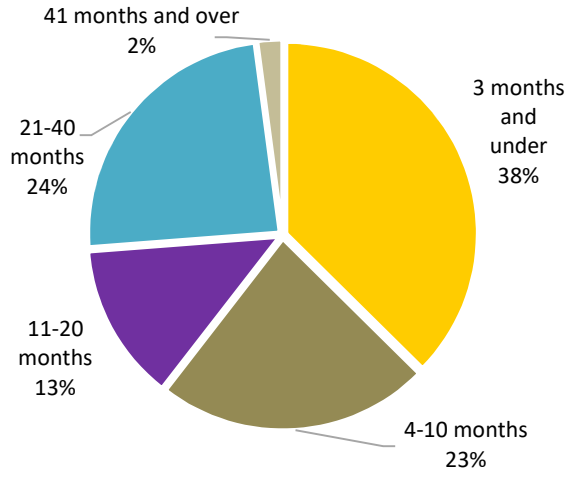
[20] 75 of the 119 active applicants at the site readiness step in the labour pool database did not give a site readiness response. Their responses were estimated by assuming similar response rates recorded in 2017's Site Readiness Invitation Form (sample size of 184).

Figure 41: Site Readiness Responses by Wait Time (2013 to 2017)



Source: AEM, Labour Pool List (as of August 2017); 2018

Figure 42: Share of Site Readiness Invitees by Wait Time (2013 to 2017)



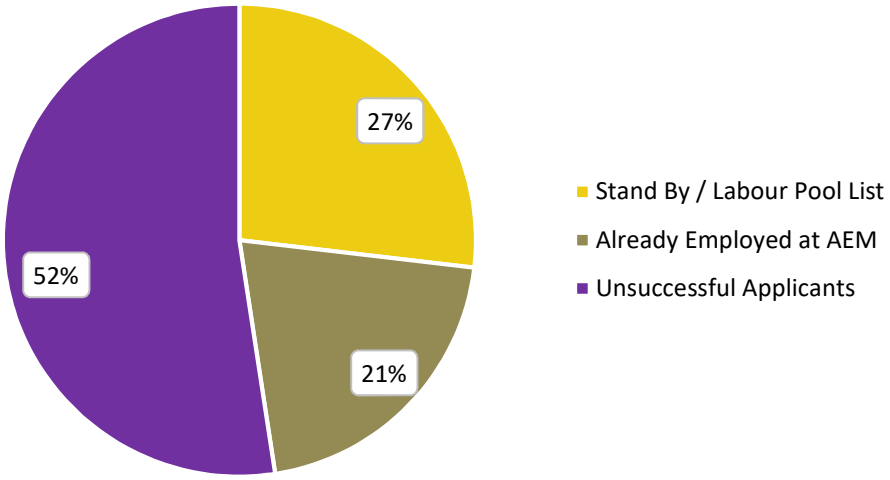
Source: AEM, Labour Pool List (as of August 2017); 2018

Labour Pool Program Expected Success Rate

According to the labour pool database, 156 out of 735 active applicants have already completed the labour pool program (as shown in Table 16). Given current applicant retention rates through each labour pool program step, MiHR estimates that an additional 194 out of the remaining 579 active applicants currently at the work readiness and site readiness steps will successfully complete the labour pool program.[21] Together with existing 156 successful active applicants, the actual and projected successful completions totals 350 persons on standby or on the labour pool list.

Of all 1,303 applicants, 156 have already successfully completed the labour pool program, 270 have already accepted employment at AEM, and expectations are that 194 applicants will successfully complete the labour pool program. Therefore, based on this trajectory, 683 (or 52%) of the remaining applicants are expected to not make it to the end of the recruitment process (Figure 43).

Figure 43: Estimated Labour Pool Program Outcomes (2013 to 2017)



Source: MiHR; AEM, Labour Pool List (as of August 2017); 2018

[21] The rates at which candidates successfully complete the work readiness (WR) training and the site readiness (SR) training are 70% and 93%, respectively. This is the average completion rate over the years 2016 and 2017, calculated using: *AEM, 2016 Labour Pool Numbers Powerpoint (2016). AEM, 2017 Work Readiness and Site Readiness Numbers Powerpoint (2017).* (Sample sizes: 280 for WR and 219 for SR.)

5. Summary and Conclusions

The KLMA framework is an effective analytical tool for understanding the complexity of labour supply in Kivalliq, as demonstrated by the findings presented in this report. The framework enabled MiHR to glean insights into the market behaviours and outcomes of specific segments of the population, and to inform expectations of AEM's Inuit employment based on the likely available labour in the region. This section of the report summarizes the key labour supply challenges and opportunities that lie ahead, setting the stage for subsequent reiterations of the KLMA framework.

Key Findings: Challenges and Opportunities in the Kivalliq Region

1. Aligning IEGs with AEM demand will require a greater share of the labour force:
    - In 2016, AEM labour force share was 26% (baseline); AEM Inuit employment was 35%;
    - In 2021, 78% AEM labour force share is required to meet an Inuit employment target of 50%, a significant increase and key challenge;
2. Fundamental skills mismatches:
    - Skills gap, especially in *Skill Level C* (requiring occupation-specific training) and in *Supervisors, Coordinators and Foremen* occupations;
    - Skill surplus in *Skill Level D* (requiring on-the-job training) and in *Support Worker* occupations;
3. High rates of absenteeism and turnover:
    - About 380 hours per Inuit worker per year on average (about 1 month assuming 12-hour shifts);
    - "Absenteeism" and "family situation" are commonly cited as reasons for termination.
    - Over one-half of Inuit terminations are from resignations; nearly one-third from dismissals;
    - A large contingent of Inuit at AEM with less than one year of employment at AEM;
    - Turnover rate is higher among Inuit workers, especially among women and in *Skill Level D*;
4. The hidden labour force represents a source of potential labour supply:
    - Estimated at about 1,000 people in 2016;
    - Many in prime working age group: about 59% (under the expanded scenario) are 25 years and older;
    - Many are less likely to have a formal certificate, but a trend toward more education;
    - Some may be engaged in the non-wage economy;
5. The observed labour force spiked in 2016:
    - Increases in participation for those under 30 years old and over 50 years old;
6. AEM recruitment scenario considers potential untapped sources of labour:
    - AEM's relevant labour supply (baseline) is expected to represent about 12 out of 100 in the overall population with 3 out of 100 expected to already be employed by AEM in 2021;
    - Relevant labour force groups (baseline) sum to about 1,000 people, notwithstanding projected AEM employment;
    - Non-relevant labour force groups sum to about additional 4,100 people, not-withstanding projected employment. However, this category is likely more difficult to recruit;
    - A 5% recruitment scenario - possible increase of 255 new hires, resulting in AEM employment of 600 Kivalliq Inuit in 2021.

6. Updating the KLMA

One objective of the KLMA is to establish a foundation for ongoing labour analyses that can continually monitor and support the success of IEGs in the Kivalliq region. This report introduced a framework for developing a comprehensive picture of the Kivalliq labour market, one that can be built upon and updated in future iterations. The KLMA has uncovered a wide range of research topics and investigations, several of which would benefit from further research in the future.

This section of the report provides a preliminary outline for updating the KLMA, and points to opportunities to improve the research capacity in the future. This section also identifies potential research questions not fully explored in the current iteration of the KLMA.

Building on the Existing KLMA

An ongoing awareness of the KLMA's strengths, weaknesses and challenges will be useful to future iterations. There are several opportunities to improve the integrity and capacity of the KLMA moving forward. The first recommendation is to review the key assumptions and data sources contained in this report in order to identify opportunities to improve the analysis. Below are examples of items that could be up for review:

- A scan of the NOC codes used would ensure that the codes are consistent with AEM job titles and that the NOC code list accurately reflects AEM's relevant labour supply as much as possible;
- A review of the data sources used would ensure the data are as accurate and consistent as possible. For example, there may be other data (and opportunities to custom-order data) on the hidden labour force and non-labour force participants (i.e., students, retired and people with disability) that could improve the integrity of the analysis;
- A review of the key assumptions used would further ensure methodological integrity and affirm that the findings presented in this report are indeed robust;

Appendix B summarizes the key data sources and assumptions used throughout this analysis. This information serves as a roadmap or template for reproducing analyses similar to those presented in this report. The majority of the figures and tables shown in this report can also be derived from the summary shown in Appendix B.

Updating on an Annual Basis

The main analysis in the report is structured to reflect the selective use of census data; this data was selected because it is the most dependable data set that can support the analyses. However, the use of the census presents a trade-off given that the survey is only produced once every five years.

The ECC has expressed its intentions to update the KLMA on an annual basis. Of course, an annual update would need supportive annual data from sources such as the Labour Force Survey. The use of an annual survey, however, would likely diminish the level of detail that is possible from the census. In particular, only data from broader NOC codes would likely be available.

Yet, there are two potential options for incorporating annualized data (such as the LFS), that may be worth exploring:

- The first option is to follow the methodology framework presented in this report (and summarized in Appendix B), but with an annual data source and adjusting for differences in detail; note that these differences are, to an extent, unknown until such a data set is acquired;
- The second option is to develop a hybrid — the census-oriented analysis found in this report and the integration of annualized data; specifically, the annualized data would be used to fill in the trend gaps between census periods (which would serve as anchoring data points).

Potential Research Topics to Explore

The Hidden Labour Force: There is an apparent gap in knowledge regarding the hidden labour force (as defined in this report). MiHR estimated the size of this particular group, yet specific characteristics remain unknown and require further investigation. A more in-depth analysis of the hidden labour force would aim to profile people in this category and distinguish among them those who are engaged in the informal (non-wage) economy, those who are primary caregivers and those who are discouraged workers.

Sub-Regional Analysis: Further KLMA research could develop similar analyses focused on Kivalliq's sub-regions and main population centers. Regional-specific KLMA findings could inform geographical strategies to support IEGs that may differ among sub-regions. It is important to note that population counts in certain Kivalliq sub-regions are fairly small and could likely present challenges related to data suppression and small numbers, creating inconsistencies in the analyses.

Flow Analysis: In this report, the KLMA is primarily presented as a 'stock analysis'— meaning that the findings are mainly captured as snapshots in time. Further research could explore how people may move between the statuses depicted in Figure 1 (i.e., a 'flow' analysis). For instance, the transition into employment will vary among other status groups such as the unemployed and the hidden labour force. A flow analysis would observe and predict the rate of these movements and the potential factors that may influence them.

Sensitivity Analysis: There is also an opportunity to conduct a sensitivity analysis that expands on the findings in this report, particularly regarding the 2021 scenario. This scenario reflects a likely outcome based on historical observations. A sensitivity analysis would investigate how the expected outcomes might differ under alternative assumptions. For example, what if the education profile was different in 2021 compared to 2016?

Build Capacity for Occupational and Skill Levels: This report features analyses for particular occupational categories (e.g. *Trades Occupations*) and skill levels (e.g. *Skill Level D*). Yet, there is an opportunity to develop capacity to estimate Inuit employment expectations for specific occupations or skill levels. An effort to translate AEM job titles into specific 4-digit NOC codes will allow stronger occupational analysis of the relationship between Kivalliq labour supply and AEM demand.

Other Factors Related to Labour Supply: This iteration of the KLMA has examined only some of the factors that may affect the supply of labour in Kivalliq, such as the impact of a formal education certificate on likely participation in the labour force. Other factors (e.g., cost of living, family and marital status, size of household) might also affect the likelihood of participation. There is an opportunity to explore these factors in the future, and within the KLMA framework.

Labour Pool List (LPL): AEM's labour pool list data offers a potential to better profile Kivalliq's labour supply and the manner in which it has interacted with AEM's recruitment process. MiHR offers the following recommendations for better aligning this data set for future KLMA analysis (note that some of these may already be underway):

- Making the LPL data (for analysis purposes) strictly cross-sectional in time: This means that the data set in each period is capturing one moment in time, and any ensuing amendments (a change in status, phone number etc.) would not overwrite existing data. With several years/quarters of cross-sectional data, an analyst could then create a 'panel' dataset that would track the same individuals through the labour pool process over time.
- Tracking an individual's labour market status: For those in the labour pool process, keeping a record of whether a person is employed or unemployed would help to align the labour pool list data with the KLMA framework presented in this report. In addition, tracking their current or last occupation (by 4-digit NOC code) could be used to profile AEM's labour supply within the KLMA framework.
- Eliminating LPL blind spots: To the extent that this is possible, the ability to collect data from individuals who have withdrawn from the labour pool process will help to understand the bottlenecks and leaky stages in the process. Within the LPL dataset there is a natural bias toward individuals who have advanced through the system as their information is relatively easier to collect compared to candidates who have departed from the process.
- Connecting the LPL database to the employee database: This would provide seamless tracking of persons across the system, from their recruitment experience through to their employment outcomes after they are hired.

Appendix A: NOC Codes in this Report

List of NOC Codes Used in this Report

NOC Title	Skill Level	Broad Occupational Category
071 Managers in construction and facility operation and maintenance	Skill level A (Management): Occupations usually require university education	Supervisors, Coordinators and Foreman
0714 Facility operation and maintenance managers	Skill level A (Management): Occupations usually require university education	Supervisors, Coordinators and Foreman
081 Managers in natural resources production and fishing	Skill level A (Management): Occupations usually require university education	Supervisors, Coordinators and Foreman
0811 Managers in natural resources production and fishing	Skill level A (Management): Occupations usually require university education	Supervisors, Coordinators and Foreman
11 Professional occupations in business and finance	Skill level A (Professionals): Occupations usually require university education	Human Resources, Administrative, Supply Chain Logistics and Financial Occupations
1121 Human resources professionals	Skill level A (Professionals): Occupations usually require university education	Human Resources, Administrative, Supply Chain Logistics and Financial Occupations
12 Administrative and financial supervisors and administrative occupations	Skill level B: Occupations usually require college education or apprenticeship training	Human Resources, Administrative, Supply Chain Logistics and Financial Occupations
1225 Purchasing agents and officers	Skill level B: Occupations usually require college education or apprenticeship training	Human Resources, Administrative, Supply Chain Logistics and Financial Occupations
152 Supply chain logistics, tracking and scheduling co-ordination occupations	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Human Resources, Administrative, Supply Chain Logistics and Financial Occupations
1524 Purchasing and inventory control workers	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Human Resources, Administrative, Supply Chain Logistics and Financial Occupations
21 Professional occupations in natural and applied sciences	Skill level A (Professionals): Occupations usually require university education	Professional, Physical Science and Technical Occupations
2113 Geoscientists and oceanographers	Skill level A (Professionals): Occupations usually require university education	Professional, Physical Science and Technical Occupations
2115 Other professional occupations in physical sciences	Skill level A (Professionals): Occupations usually require university education	Professional, Physical Science and Technical Occupations
2143 Mining engineers	Skill level A (Professionals): Occupations usually require university education	Professional, Physical Science and Technical Occupations
2154 Land surveyors	Skill level A (Professionals): Occupations usually require university education	Professional, Physical Science and Technical Occupations
2171 Information systems analysts and consultants	Skill level A (Professionals): Occupations usually require university education	Professional, Physical Science and Technical Occupations

List of NOC Codes Used in this Report (Continued)

NOC Title	Skill Level	Broad Occupational Category
22 Technical occupations related to natural and applied sciences	Skill level B: Occupations usually require college education or apprenticeship training	Professional, Physical Science and Technical Occupations
2212 Geological and mineral technologists and technicians	Skill level B: Occupations usually require college education or apprenticeship training	Professional, Physical Science and Technical Occupations
30 Professional occupations in nursing	Skill level A (Professionals): Occupations usually require university education	Community Support Workers
3012 Registered nurses and registered psychiatric nurses	Skill level A (Professionals): Occupations usually require university education	Community Support Workers
40 Professional occupations in education services	Skill level A (Professionals): Occupations usually require university education	Community Support Workers
4021 College and other vocational instructors	Skill level A (Professionals): Occupations usually require university education	Community Support Workers
41 Professional occupations in law and social, community and government services	Skill level A (Professionals): Occupations usually require university education	Community Support Workers
4161 Natural and applied science policy researchers, consultants and program officers	Skill level A (Professionals): Occupations usually require university education	Community Support Workers
42 Paraprofessional occupations in legal, social, community and education services	Skill level B: Occupations usually require college education or apprenticeship training	Community Support Workers
4212 Social and community service workers	Skill level B: Occupations usually require college education or apprenticeship training	Community Support Workers
63 Service supervisors and specialized service occupations	Skill level B: Occupations usually require college education or apprenticeship training	Support Workers
6322 Cooks	Skill level B: Occupations usually require college education or apprenticeship training	Support Workers
65 Service representatives and other customer and personal services occupations	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Support Workers
6541 Security guards and related security service occupations	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Support Workers
67 Service support and other service occupations, n.e.c.	Skill level D: On-the-job training is usually provided for occupations	Support Workers
6711 Food counter attendants, kitchen helpers and related support occupations	Skill level D: On-the-job training is usually provided for occupations	Support Workers
6733 Janitors, caretakers and building superintendents	Skill level D: On-the-job training is usually provided for occupations	Support Workers

List of NOC Codes Used in this Report (Continued)

NOC Title	Skill Level	Broad Occupational Category
72 Industrial, electrical and construction trades	Skill level B: Occupations usually require college education or apprenticeship training	Trades Occupations
7237 Welders and related machine operators	Skill level B: Occupations usually require college education or apprenticeship training	Trades Occupations
7242 Industrial electricians	Skill level B: Occupations usually require college education or apprenticeship training	Trades Occupations
7251 Plumbers	Skill level B: Occupations usually require college education or apprenticeship training	Trades Occupations
7271 Carpenters	Skill level B: Occupations usually require college education or apprenticeship training	Trades Occupations
73 Maintenance and equipment operation trades	Skill level B: Occupations usually require college education or apprenticeship training	Trades Occupations
7311 Construction millwrights and industrial mechanics	Skill level B: Occupations usually require college education or apprenticeship training	Trades Occupations
7312 Heavy-duty equipment mechanics	Skill level B: Occupations usually require college education or apprenticeship training	Trades Occupations
7372 Drillers and blasters - surface mining, quarrying and construction	Skill level B: Occupations usually require college education or apprenticeship training	Production Occupations
74 Other installers, repairers and servicers and material handlers	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Production Occupations
7452 Material handlers	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Production Occupations
75 Transport and heavy equipment operation and related maintenance occupations	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Production Occupations
7521 Heavy equipment operators (except crane)	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Production Occupations
76 Trades helpers, construction labourers and related occupations	Skill level D: On-the-job training is usually provided for occupations	Production Occupations
7611 Construction trades helpers and labourers	Skill level D: On-the-job training is usually provided for occupations	Production Occupations
82 Supervisors and technical occupations in natural resources, agriculture and related production	Skill level B: Occupations usually require college education or apprenticeship training	Supervisors, Coordinators and Foreman
8221 Supervisors, mining and quarrying	Skill level B: Occupations usually require college education or apprenticeship training	Supervisors, Coordinators and Foreman
8231 Underground production and development miners	Skill level B: Occupations usually require college education or apprenticeship training	Production Occupations

List of NOC Codes Used in this Report (Continued)

NOC Title	Skill Level	Broad Occupational Category
84 Workers in natural resources, agriculture and related production	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Production Occupations
8411 Underground mine service and support workers	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Production Occupations
86 Harvesting, landscaping and natural resources labourers	Skill level D: On-the-job training is usually provided for occupations	Production Occupations
8614 Mine labourers	Skill level D: On-the-job training is usually provided for occupations	Production Occupations
923 Central control and process operators in processing and manufacturing	Skill level B: Occupations usually require college education or apprenticeship training	Production Occupations
9231 Central control and process operators, mineral and metal processing	Skill level B: Occupations usually require college education or apprenticeship training	Production Occupations
94 Processing and manufacturing machine operators and related production workers	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Production Occupations
9411 Machine operators, mineral and metal processing	Skill level C: Occupations usually require secondary school and/or occupation-specific training	Production Occupations
96 Labourers in processing, manufacturing and utilities	Skill level D: On-the-job training is usually provided for occupations	Production Occupations
9611 Labourers in mineral and metal processing	Skill level D: On-the-job training is usually provided for occupations	Production Occupations

NOC Code Development from Digit 1 to 4

Construction of NOC 8441: "Underground Mine Service and Support Workers"

The National Occupation Classification (NOC) system standardized method for identifying occupational categories, using a NOC code of 1 to 4 digits and an occupational title. Statistics Canada labour market data are organized by NOC code.

A 1-digit NOC code denotes a broad level of classification, whereas a 4-digit NOC code is more specific. The construction of NOC 8441 ("Underground Mine Service and Support Workers") is shown below:

A unique, 1-digit NOC is assigned to denote 1 of 10 broad occupational groups.
→ *NOC 8 = "Natural resources, agriculture and related production occupations"*

The 2-digit NOC denotes the broad occupational group AND skill level.
→ *NOC 84 = "Workers in natural resources, agriculture and related production"*

The 3-digit NOC includes the "minor" occupational group.
→ *NOC 841 = "Mine service workers and operators in oil and gas drilling"*

The 4-digit NOC specifies the occupational unit group (there are 500 in total).
→ *NOC 8441 = "Underground mine service and support workers"*

Appendix B: KLMA Data, Assumptions and Estimations

Table 1: Inuit Working Age Population of Kivalliq (2006 to 2021)

		2006	2011	2016	2021
	a) The Working Age Population				
a.1	What is the overall population?	2006 Census (obtained through the Nunavut Bureau of Statistics)	2011 Census (obtained through the Nunavut Bureau of Statistics)	2016 Census (obtained through the Nunavut Bureau of Statistics)	A scenario for 2021 was derived from population projections from the Nunavut Bureau of Statistics. The population was grown from the 2016 census number
a.2	What share is eligible?	Calculated (a.3 ÷ a.1)	Calculated (a.3 ÷ a.1)	Calculated (a.3 ÷ a.1)	Calculated (a.3 ÷ a.1)
a.3	Working age population	2006 Census (custom order)	2011 Census (custom order)	2016 Census (custom order)	A scenario for 2021 was derived from working age population projections from the Nunavut Bureau of Statistics. The population was grown from the 2016 census number
a.4	What share is Inuit?	Calculated (a.5 ÷ a.3)	Calculated (a.5 ÷ a.3)	Calculated (a.5 ÷ a.3)	Calculated (a.5 ÷ a.3)
a.5	**Inuit working age population**	**2006 Census (custom order)**	**2011 Census (custom order)**	**2016 Census (custom order)**	**A 2021 scenario for the Inuit working age population was constructed from the overall working age population (a.3) and with the following assumptions: Age profile: use Nunavut Bureau of Statistics forecast by age (for the overall working age population); Inuit share: assume status quo from 2016 census data; Gender profile: assume status quo from 2016 census data; Education profile: assume status quo from 2016 census data. Then the Inuit working age population is the sum of 96 separate population segments (Age profile (8) × Inuit share (1) × Gender profile (2) × Education profile (6)**

Table 2: Observed Labour Force Participants in Kivalliq (2006 to 2021)

		2006	2011	2016	2021
	b) Labour Force Participation				
b.1	Observed Inuit labour force	2006 Census (custom order)	2011 Census (custom order)	2016 Census (custom order)	A 2021 scenario for the Inuit observed labour force was constructed with the following assumptions: Working age population: use population scenario from a.5 (considering 96 population segments); Observed participation rates: assume status quo from 2016 census data (x 96 population segments); Then the Inuit observed labour force is the sum of the observed labour force in 96 separate population segments (each calculated as working age population x observed labour force participation rate)
b.2	**Observed Inuit non-labour force participants**	**Calculated (a.5 - b.1)**	**Calculated (a.5 - b.1)**	**Calculated (a.5 - b.1)**	**Calculated (a.5 - b.1)**

Table 3: The Potential Hidden Labour Force (2006 to 2021)

		2006	2011	2016	2021
b.2 (above)	Size of the observed non-labour force participants	Same as b.2 above	Same as b.2 above	Same as b.2 above	Same as b.2 above
	Categories of Non-Participation				
b.3	Students: estimated non-labour force participants	Nunavut Bureau of Statistics and Arctic College, Annual Report (2006; 2015-2016); estimated using 2006 school enrollment (ages 15 to 34; grades 10, 11 and 12 and in college) who are expected to be out of the labour force (using participation rates from 2011 NHS data - attended school in Kivalliq)	Nunavut Bureau of Statistics and Arctic College, Annual Report (2006; 2015-2016); estimated using 2011 school enrollment (ages 15 to 34; grades 10, 11 and 12 and in college) who are expected to be out of the labour force (using participation rates from 2011 NHS data - attended school in Kivalliq)	Nunavut Bureau of Statistics and Arctic College, Annual Report (2006; 2015-2016); estimated using 2014 (proxy for 2016) school enrollment (ages 15 to 34; grades 10, 11 and 12 and in college) who are expected to be out of the labour force (using participation rates from 2011 NHS data - attended school in Kivalliq)	A scenario for 2021 assumes that the share of students in the population (ages 15 to 34) will remain the same as 2016, using the same participation rates from the 2011 NHS.
b.4	People with disability: estimated non-labour force participants	Statistics Canada, Canadian Disability Survey (2012) and Census (2006; 2011; 2016) obtained through custom data request; estimated as the share of the 2006 Kivalliq Inuit population (15 to 64 years old) with a disability who are non-labour force participants (using the 2012 Nunavut disability rate by age group and participation rates for people with disability)	Statistics Canada, Canadian Disability Survey (2012) and Census (2006; 2011; 2016) obtained through custom data request; estimated as the share of the 2011 Kivalliq Inuit population (15 to 64 years old) with a disability who are non-labour force participants (using the 2012 Nunavut disability rate by age group and participation rates for people with disability)	Statistics Canada, Canadian Disability Survey (2012) and Census (2006; 2011; 2016) obtained through custom data request; estimated as the share of the 2016 Kivalliq Inuit population (15 to 64 years old) with a disability who are non-labour force participants (using the 2012 Nunavut disability rate by age group and participation rates for people with disability)	A scenario for 2021 assumes the share of people with disability (and not in the labour force) among the 2021 working age population will remain the same as that estimated for 2016.
b.5	Retired: estimated non-labour force participants	Statistics Canada, Census (2006; 2011; 2016) obtained through custom data request; an estimate for 2006 retirement considers those who are over 55 years and who are non-labour force participants; for 55- to 64-year- olds, an adjustment was made to not include 'regular' non-participants as retirees (measured as the share of non-participants in the 25 to 54 age category)	Statistics Canada, Census (2006; 2011; 2016) obtained though custom data request; an estimate for 2011 retirement considers those who are over 55 years and who are non-labour force participants; for 55- to 64-year- olds, an adjustment was made to not include 'regular' non-participants as retirees (measured as the share of non-participants in the 25 to 54 age category)	Statistics Canada, Census (2006; 2011; 2016) obtained though custom data request; an estimate for 2016 retirement considers those who are over 55 years and who are non-labour force participants; for 55- to 64-year- olds, an adjustment was made to not include 'regular' non-participants as retirees (measured as the share of non-participants in the 25 to 54 age category)	A forecast for 2021 utilizes the working age population derived in a.5 and the labour force derived in b.1 (which assumed consistent participation rates as 2016)
b.6	***Total not in the labour force***	**Calculated (b.3 + b.4 + b.5)**	**Calculated (b.3 + b.4 + b.5)**	**Calculated (b.3 + b.4 + b.5)**	**Calculated (b.3 + b.4 + b.5)**
b.7	***Possible hidden labour force participants***	**Calculated (b.2 - b.6)**	**Calculated (b.2 - b.6)**	**Calculated (b.2 - b.6)**	**Calculated (b.2 - b.6)**

Table 4: The Labour Force Adjusted (2006 to 2021)

		2006	2011	2016	2021
	b) Labour Force Participation				
a.5 (above)	Working age population	Same as a.5 above	Same as a.5 above	Same as a.5 above	Same as a.5 above
b.1 (above)	Observed labour force	Same as b.1 above	Same as b.1 above	Same as b.1 above	Same as b.1 above
b.8	Labour force participation rate (observed through Stats Canada)	Calculated (b.1 ÷ a.5)	Calculated (b.1 ÷ a.5)	Calculated (b.1 ÷ a.5)	Calculated (b.1 ÷ a.5)
b.7 (above)	Hidden labour force participants	Same as b.7 above	Same as b.7 above	Same as b.7 above	Same as b.7 above
b.9	**Adjusted labour force (observed + hidden)**	**Calculated (b.1 + b.7)**	**Calculated (b.1 + b.7)**	**Calculated (b.1 + b.7)**	**Calculated (b.1 + b.7)**
b.10	**Adjusted participation rate (observed + hidden)**	**Calculated (b.9 ÷ a.5)**	**Calculated (b.9 ÷ a.5)**	**Calculated (b.9 ÷ a.5)**	**Calculated (b.9 ÷ a.5)**

Table 5: Occupational Ranges by Labour Force Group (2006 to 2021)

		2006	2011	2016	2021
	C) Employment and Unemployment				
c.1	Employed	2006 Census (custom order)	2011 Census (custom order)	2016 Census (custom order)	A scenario for 2021 was constructed by assuming a consistent employment rate (i.e. employment / working age population) as 2016; That is, the 2016 employment rate was rate was applied to the previously derived 2021 Inuit working age population
c.2	Relevant occupations (expanded)	Calculated (c.1 x % employed in relevant 2-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); In this case, the 2011 NOC % was assumed for consistency as there were significant changes made to NOC codes from 2006 to 2011.	Calculated (c.1 x % employed in relevant 2-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data.	Calculated (c.1 x % employed in relevant 2-digit NOC codes); the latter % is estimated with the 2016 census data (custom order); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data.	Calculated (c.1 x % employed in relevant 2-digit NOC codes); the latter % is estimated with the 2016 census data (custom order)
c.3	Relevant occupations (baseline)	Calculated (c.1 x % employed in relevant 4-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); In this case, the 2011 NOC % was assumed for consistency as there were significant changes made to NOC codes from 2006 to 2011.	Calculated (c.1 x % employed in relevant 4-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data.	Calculated (c.1 x % employed in relevant 4-digit NOC codes); the latter % is estimated with the 2016 census data (custom order); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data.	Calculated (c.1 x % employed in relevant 4-digit NOC codes); the latter % is estimated with the 2016 census data (custom order)
c.4	Percentage range	Calculated % range ((c.3 ÷ c.1) x 100 to (c.2 ÷ c.1) x 100)	Calculated % range ((c.3 ÷ c.1) x 100 to (c.2 ÷ c.1) x 100)	Calculated % range ((c.3 ÷ c.1) x 100 to (c.2 ÷ c.1) x 100)	Calculated % range ((c.3 ÷ c.1) x 100 to (c.2 ÷ c.1) x 100)

Table 5 Continued

		2006	2011	2016	2021
c.5	Unemployed	Available in the census (custom order) but calculated from this table for rounding consistency (b.1 - c.1)	Available in the census (custom order) but calculated from this table for rounding consistency (b.1 - c.1)	Available in the census (custom order) but calculated from this table for rounding consistency (b.1 - c.1)	Calculated (b.1 - c.1)
c.6	Relevant occupations (expanded)	Calculated (c.5 x % unemployed in relevant 2-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); In this case, the 2011 NOC % was assumed for consistency as there were significant changes made to NOC codes from 2006 to 2011.	Calculated (c.5 x % unemployed in relevant 2-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data.	Calculated (c.5 x % unemployed in relevant 2-digit NOC codes); the latter % is estimated with the 2016 census data (custom order); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data.	Calculated (c.5 x % unemployed in relevant 2-digit NOC codes); the latter % is estimated with the 2016 census data (custom order)
c.7	Relevant occupations (baseline)	Calculated (c.5 x % unemployed in relevant 4-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); In this case, the 2011 NOC % was assumed for consistency as there were significant changes made to NOC codes from 2006 to 2011.	Calculated (c.5 x % unemployed in relevant 4-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data.	Calculated (c.5 x % unemployed in relevant 4-digit NOC codes); the latter % is estimated with the 2016 census data (custom order); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data.	Calculated (c.5 x % unemployed in relevant 4-digit NOC codes); the latter % is estimated with the 2016 census data (custom order)
c.8	Percentage Range	Calculated % range ((c.7 ÷ c.5) x 100 to (c.6 ÷ c.5) x 100)	Calculated % range ((c.7 ÷ c.5) x 100 to (c.6 ÷ c.5) x 100)	Calculated % range ((c.7 ÷ c.5) x 100 to (c.6 ÷ c.5) x 100)	Calculated % range ((c.7 ÷ c.5) x 100 to (c.6 ÷ c.5) x 100)

Table 5 Continued

		2006	2011	2016	2021
c.9	Hidden Labour Force	Same as b.7 above	Same as b.7 above	Same as b.7 above	Same as b.7 above
c.10	Relevant occupations (expanded)	Calculated (c.9 x % hidden labour force in relevant 2-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); In this case, the 2011 NOC % was assumed for consistency as there were significant changes made to NOC codes from 2006 to 2011.	Calculated (c.9 x % hidden labour force in relevant 2-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); this occupational estimate was derived from those who identified as having a particular occupation but were not employed or looking for work (unemployed) (i.e., subtract labour force from labour force status); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data	Calculated (c.9 x % hidden labour force in relevant 2-digit NOC codes); the latter % is estimated with the 2016 census data (custom order); this occupational estimate was derived from those who identified as having a particular occupation but were not employed or looking for work (unemployed) (i.e., subtract labour force from labour force status); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data	Calculated (c.9 x % hidden labour force in relevant 2-digit NOC codes); the latter % is estimated with the 2016 census data (custom order)
c.11	Relevant occupations (baseline)	Calculated (c.9 x % hidden labour force in relevant 4-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); In this case, the 2011 NOC % was assumed for consistency as there were significant changes made to NOC codes from 2006 to 2011.	Calculated (c.9 x % hidden labour force in relevant 4-digit NOC codes); the latter % is estimated with the 2011 census data (custom order); this occupational estimate was derived from those who identified as having a particular occupation but were not employed or looking for work (unemployed) (i.e., subtract labour force from labour force status); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data	Calculated (c.9 x % hidden labour force in relevant 4-digit NOC codes); the latter % is estimated with the 2016 census data (custom order); this occupational estimate was derived from those who identified as having a particular occupation but were not employed or looking for work (unemployed) (i.e., subtract labour force from labour force status); this estimate was also slightly adjusted to correct for rounding inconsistencies in the underlying data	Calculated (c.9 x % hidden labour force in relevant 4-digit NOC codes); the latter % is estimated with the 2016 census data (custom order)
c.12	Percentage range	Calculated % range ((c.11 ÷ c.9) x 100 to (c.10 ÷ c.9) x 100)	Calculated % range ((c.11 ÷ c.9) x 100 to (c.10 ÷ c.9) x 100)	Calculated % range ((c.11 ÷ c.9) x 100 to (c.10 ÷ c.9) x 100)	Calculated % range ((c.11 ÷ c.9) x 100 to (c.10 ÷ c.9) x 100)
c.13	Total Labour Force	Same as b.9 above	Same as b.9 above	Same as b.9 above	Same as b.9 above
c.14	Relevant occupations (expanded)	Calculated (c.2 + c.6 + c.10)	Calculated (c.2 + c.6 + c.10)	Calculated (c.2 + c.6 + c.10)	Calculated (c.2 + c.6 + c.10)
c.15	Relevant occupations (baseline)	Calculated (c.3 + c.7 + c.11)	Calculated (c.3 + c.7 + c.11)	Calculated (c.3 + c.7 + c.11)	Calculated (c.3 + c.7 + c.11)

c.16	Percentage range	Calculated % range ((c.15 ÷ c.13) x 100 to (c.14 ÷ c.13) x 100)	Calculated % range ((c.15 ÷ c.13) x 100 to (c.14 ÷ c.13) x 100)	Calculated % range ((c.15 ÷ c.13) x 100 to (c.14 ÷ c.13) x 100)	Calculated % range ((c.15 ÷ c.13) x 100 to (c.14 ÷ c.13) x 100)

Table 7: Employment at AEM and Estimating IEEs, Baseline (2011 to 2021)

		2006	2011	2016	2021
	d) Employment at AEM				
	Overall Employment				
d.1	Meadowbank mine (including Whale Tail)	No data available for 2006 (Meadowbank)	2011 Socio economic report data (Meadowbank)	2016 Socio economic report data (Meadowbank)	2017 Socio economic report data (Meadowbank) + AEM's Manpower projections to 2021; note the manpower projections reflect additional hiring needs, which were added to the most recent employment figures from the 2017 socio economic report
d.2	Meliadine mine	No data available for 2006 (Meliadine)	No data available for 2011 (Meliadine)	2016 Socio economic report data (Meliadine)	2018 Socio economic report data (Meliadine) + AEM's Manpower projections to 2021; note the manpower projections reflect additional hiring needs, which were added to the most recent employment figures from the 2017 socio economic report
d.3	Total AEM employment	No data available for 2006	Calculated (d.1 + d.2)	Calculated (d.1 + d.2)	Calculated (d.1 + d.2)
	Inuit Employment				
d.4	Meadowbank mine (including Whale Tail)	No data available for 2006 (Meadowbank)	2011 Socio economic report data (Meadowbank)	2016 Socio economic report data (Meadowbank)	Inuit employment is not estimated by mine site
d.5	Meliadine mine	No data available for 2006 (Meliadine)	No data available for 2011 (Meliadine)	2016 Socio economic report data (Meliadine)	Inuit employment is not estimated by mine site
d.6	Total Inuit AEM employment; Inuit employment expectations (IEEs) in 2021	No data available for 2006	Calculated (d.4 + d.5)	Calculated (d.4 + d.5)	**Calculated (d.7 x d.8); the scenario for 2021 assumes AEM will employ the same share of the labour force as they did in 2016**
	AEM's Share of the Inuit Labour Force				
d.7	Labour force in relevant occupations (baseline)	Not applicable for 2006	Same as c.15 above (baseline scenario)	Same as c.15 above (baseline scenario)	Same as c.15 above (baseline scenario)
d.8	AEM's share of the labour force (%)	Not applicable for 2006	Calculated (d.6 ÷ d.7)	Calculated (d.6 ÷ d.7)	A scenario for 2021 assumes the same share of labour force as 2016
	Inuit Employment Goals and Expectations				
d.9	Inuit employment goals (IEG) (%)	Not applicable for 2006	Target based on IIBA	Target based on IIBA	Target based on IIBA

d.10	Inuit employment outcomes (%); 2021 based on Inuit employment expectations (IEEs)	Not applicable for 2006	Calculated (d.6 ÷ d.3)	Calculated (d.6 ÷ d.3)	**Calculated (d.6 ÷ d.3)**

Table 8: Employment at AEM Contractors and Estimating IEEs, Baseline (2011 to 2021)

		2006	2011	2016	2021
	AEM Contractors				
d.11	Total contractor employment	No data available for 2006	Meadowbank: 2011 contractor data (headcount) provided by AEM; Meliadine: No data available for 2011	Meadowbank: 2016 contractor data (headcount) provided by AEM; Meliadine: 2017 contractor hours data provided by AEM; converted hours to headcounts using the AEM (2016) Development Partnership Agreement Report	A scenario for 2021 assumes the ratio of contractor employees to AEM employees will be consistent to that at Meadowbank (average from 2010 to 2016); data on contractor employees (2010 to 2016) was provided by AEM and employment data was obtained through the socio economic reports
d.12	Inuit AEM contractor employment; Inuit employment expectations (IEEs) in 2021	No data available for 2006	Meadowbank: 2011 contractor data (headcount) provided by AEM; Meliadine: No data available for 2011	Meadowbank: 2016 contractor data (headcount) provided by AEM; Meliadine: approximated using 2017 contractor hours data provided by AEM; converted hours to headcounts using the AEM, 2016 Development Partnership Agreement Report	Calculated (d.7 x d.13); the scenario for 2021 assumes AEM contractors will employ the same share of the labour force as they did in 2016
d.13	Contractor share of the labour force (baseline) (%)	Not applicable for 2006	Calculated (d.12 ÷ d.7)	Calculated (d.12 ÷ d.7)	A scenario for 2021 assumes the same share of labour force as 2016
d.14	Inuit employment outcomes (%); 2021 based on Inuit employment expectations (IEEs)	Not applicable for 2006	Calculated (d.12 ÷ d.11)	Calculated (d.12 ÷ d.11)	Calculated (d.12 ÷ d.11)

Appendix C: Summary of Kivalliq Labour Supply

	2006	2011	2016	2021
a) The Working Age Population				
Overall population	8,350 (100%)	9,265 (100%)	10,415 (100%)	11,400 (100%)
Working Age Population	5,240 (63%)	5,735 (62%)	6,765 (65%)	7,490 (66%)
Not eligible to work	3,110 (37%)	3,530 (38%)	3,650 (35%)	3,910 (34%)
Inuit Working Age Population	4,515 (54%)	5,020 (54%)	5,955 (57%)	6,590 (58%)
Non-Inuit Working Age Population	725 (9%)	715 (8%)	810 (8%)	900 (8%)
b) Labour Force Participation				
Total labour force (observed + hidden)	3,695 (44%)	4,020 (43%)	4,890 (47%)	5,455 (48%)
Observed Inuit labour force	2,590 (31%)	2,950 (32%)	3,860 (37%)	4,230 (37%)
Hidden labour force participants	1,105 (13%)	1,070 (12%)	1,030 (10%)	1,225 (11%)
Not in the labour force	820 (10%)	1,000 (11%)	1,065 (10%)	1,135 (10%)
Students: estimated non labour force participants	535 (6%)	690 (7%)	680 (7%)	685 (6%)
People with disability: estimated non labour force participants	85 (1%)	95 (1%)	115 (1%)	130 (1%)
Retired: estimated non labour force participants	200 (2%)	215 (2%)	270 (3%)	320 (3%)
C) Employment and Unemployment				
Total employed	2,105 (25%)	2,260 (24%)	2,720 (26%)	2,995 (26%)
Employed in relevant occupations	590 (7%)	635 (7%)	740 (7%)	815 (7%)
Employed in non-relevant occupations	1,515 (18%)	1,625 (18%)	1,980 (19%)	2,180 (19%)
Total observed unemployed	485 (6%)	690 (7%)	1,140 (11%)	1,235 (11%)
Unemployed in relevant occupations	130 (2%)	185 (2%)	275 (3%)	295 (3%)
Unemployed in non-relevant occupations	355 (4%)	505 (5%)	865 (8%)	940 (8%)
Hidden labour force participants	1,105 (13%)	1,070 (12%)	1,030 (10%)	1,225 (11%)
Hidden labour force in relevant occupations	210 (3%)	205 (2%)	200 (2%)	240 (2%)
Hidden labour force in non-relevant occupations	895 (11%)	865 (9%)	830 (8%)	985 (9%)
d) Employment at AEM				
Employed at AEM	-	270 (3%)	310 (3%)	345 (3%)
Employed by AEM contractor	-	60 (1%)	145 (1%)	160 (1%)
Not employed at AEM or by AEM contractor	-	305 (3%)	285 (3%)	310 (3%)

Source: Mining Industry Human Resources Council; 2018