



Mining Labour Market Transition Project

Final Report

Canada 

Funded by the Government of Canada's Sector Council Program

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I. Executive Summary

This report identifies barriers and opportunities in the mining industry. Specifically, it assesses the current human resource needs in the sector, as well as the expected future needs. The findings are used to form the basis for a series of recommendations. The ultimate goal is to help maintain the strength of the minerals and metals sector well into the future. This summary provides a brief overview of the main findings, which are explained in detail in the body of the report.

The study was conducted over the course of 7 months, from November 2006 to June 2007. The project was managed by the Mining Industry Human Resources Sector Canada (MiHR) and funded by the Government of Canada's Sector Council Program.

The MiHR Council wishes to convey its appreciation to the individuals who contributed their time and effort to this report. Throughout the research, individuals from mining companies, colleges, associations and unions offered up their time to talk with researchers and participate in focus groups. The Council gratefully acknowledges the members of the project advisory committee who provided invaluable feedback and guidance throughout the project.

I.1 Key Findings

Global Competition

The Canadian mining industry is growing, mainly due to the expansion of the global economy. This global expansion, however, is placing increased pressure on mining companies to recruit workers from around the world. Australian and Brazilian firms, to take only two examples, are recruiting in Canada. The domestic industry, on the other hand, has been slow to recruit abroad.

Growing the Talent Pool

The mining industry doesn't operate in a human resources vacuum. There are skills shortages throughout Canadian industry, not just in mining but also in petroleum, electricity, construction and others. These sectors are also looking at ways of attracting workers from other industries. In the end, no single industry will come out ahead. At some point, with many employers pursuing the same limited pool of potential workers, the only long-term solution will be to find a way of making the pool bigger.

Productivity Challenge

The Canadian mining industry is in the midst of a remarkable period of prosperity. The value of raw materials – especially minerals – has soared in recent years. Yet the industry hasn't seen an increase in productivity. In fact, productivity has decreased. There are a few likely reasons for this:

- ***new investment and new workers at many Canadian mines.*** It will take time – possibly up to five years – for the value of these new resources to bear fruit and make a full contribution to improving productivity;
- ***the hoarding of existing employees.*** During a period of economic growth, many employers don't have the luxury of temporarily laying off employees, out of fear that they won't return; and
- ***the mining of hard-to-find or extract minerals.*** High prices make previously uneconomic deposits more attractive.

Skills and Knowledge Challenge

Many veteran mining industry workers are going to retire in the next decade and they will take with them a tremendous amount of experience. If companies don't want to lose this valuable knowledge, it is vital that a process be put in place to make sure that it is preserved and passed on to younger workers.

The Right Training Balance

The mining industry, like other industries, needs to pay more attention to the training needs of both current workers and possible future workers. Potential employees need to be aware of training opportunities and requirements. Existing employees must be given access to training and development resources; otherwise, they'll begin to explore other work options.

Supply Challenge – Engaging Youth

Young people still have a limited awareness and a lot of misconceptions about the modern mining industry and the occupational opportunities it offers. Too many of them think of it as a dirty, difficult job involving low-tech tools.

Supply Challenge – Education and Training Programs

As stated in the *Prospecting the Future* report, the number of people enrolling in mining-related post-secondary programs is well below industry demand. Another problem is that the industry cannot make full use of Statistics Canada's Expanded Student Information System (ESIS) to get college and university enrolment and graduation data. This means that there is no single, updated source of information on labour supply for positions such as technologist and technician. College enrolment data hasn't been updated since 1998-99, and there is no national organization or association gathering data for the industry.

Supply Challenge – Retaining Existing Employees

Competition from industries like oil and gas, electricity, utilities, and construction is a big concern, especially in the west. This competition makes retaining workers a challenge. The oil and gas industry, in particular, is competing for some of the same professionals (i.e., engineers and tradespeople) and can usually offer better compensation and benefits packages for, in

many cases, fewer hours of work. On a related note, the increasing frequency of overtime in the mining sector is a concern. In the mining sector, 12% of earnings in 2006 came from overtime and other forms of premium pay – this is much higher than the national average of 2%.

Supply Opportunity

Declining industries might be able to provide the mining industry with a source of new recruits. Forestry and farming are areas of particular interest. In the case of forestry, the basic skills are similar and easily transferable to mining, and many forestry-related operations and mines are located in the same regions. The farming industry, like forestry, shows little sign of improving in the near future, and many individuals with a farming background have skills and attributes which are of value to the mining industry.

Training Opportunity

Many of the workers left in declining industries are mature workers who have benefited from a significant amount of on-the-job training. These people often are accustomed to shift work and are willing to move to the mining sector. Mining industry representatives, working with organized labour representatives, could develop a series of re-training programs and provide financial rewards to help attract these people.

1.2 Recommendations

Based on the results of the research, a series of recommendations was developed. These include measures for recruiting and retaining workers targeted at the mining industry and provincial and national associations. There are also measures aimed at groups who tend to be under-represented in the industry (e.g., Aboriginal Canadians), at workers from declining industries, and at industry or association partners.

The recommendations are divided into two distinct objectives:

1. Developing tools and services to help move workers from declining industries into the mining industry
2. Growing the talent pool which the mining industry can draw on

1.2.1 Developing Tools and Services

Recommendation 1: Create a marketing campaign aimed at declining industries with the same type of workers.

Recommendation 2: Create a series of recruitment pilot projects aimed at workers from declining industries.

Recommendation 3: Ensure that the Mining Attraction, Recruitment and Retention Strategy (MARS) project solicits input and involvement from labour market adjustment committees and local training boards.

- Recommendation 4:** Create and distribute a catalogue of promising practices, lessons learned, and potential barriers for workers moving from declining industries into mining and other sectors.
- Recommendation 5:** Work with industry representatives to develop a set of nationally recognized occupational and training standards.
- Recommendation 6:** Work with schools and labour union representatives to develop and disseminate mining career information for various mining-related occupations.

1.2.2 Growing the Talent Pool

- Recommendation 7:** Re-brand the mining industry.
- Recommendation 8:** Promote and foster lifelong learning in the mining industry.
- Recommendation 9:** Conduct national and international labour market research for the mining industry.
- Recommendation 10:** Ensure acareerinmining.ca is the main hub for mining career and training information.
- Recommendation 11:** Establish education incentives for Aboriginal youth.
- Recommendation 12:** Establish mentorship programs to help reach Aboriginal youth in high schools.
- Recommendation 13:** Develop and distribute promising practices in recruiting and retaining older workers.

2. Introduction

2.1 Background

In 2005, the Mining Industry Training and Adjustment Council (now the Mining Industry Human Resources Council - MiHR) released *Prospecting the Future: Meeting Human Resource Challenges of Canada's Minerals and Metals Sector*, a report on short- and mid-term human resource issues faced by the mining industry. The study projected a future need of up to 81,000 new workers to meet the industry's human resource demands.

In response to the study, MiHR broadened its mandate. Today, MiHR contributes to the strength, competitiveness and sustainability of the Canadian mining industry by collaborating with all the communities of interest in the development and implementation of solutions to the industry's national human resources challenges. MiHR has partners in all areas of the mining industry, and has taken the lead on implementing many of the recommendations in the *Prospecting the Future* report.

In 2006, Human Resources and Social Development Canada (HRSDC) provided funds to five sector councils (Canadian Trucking Human Resources Council, Electricity Sector Council, the Environmental Careers Organization of Canada, the Petroleum Human Resources Council of Canada, and the Mining Industry Human Resources Sector Council) to conduct a series of labour market transition research projects.

2.2 Project Purpose

The goal of this project was to gain a better understanding of the barriers and opportunities related to short- and mid-term labour market demand in the mining sector. In particular, the project was designed to consider the possibility of recruiting workers from sectors with a surplus of labour. The report also sought to provide insight into the tools and services needed to help workers who want to make the transition to the mining industry.

The study involved the following activities:

- analyzing data on the minerals and metals industry, paying particular attention to labour force characteristics;
- reviewing domestic and international literature on labour market transitions;
- conducting telephone interviews with 60 key informants throughout the mining and metals community; and
- organizing five focus groups with former workers in declining industries. The focus groups took place in Mississauga (Ontario), Prince Albert (Saskatchewan), and Thunder Bay (Ontario).

These four activities enabled a better understanding of human resource pressure points in the mining industry. They also provided more information on the educational, skills, and training backgrounds of workers in declining industries. Finally, they helped in the development of recommendations on how the mining industry can remain competitive in a heated labour market.

2.3 Organization of the Report

The report begins with Chapter 3, a summary of recent key data and indicators for the mining industry. Chapter 4 provides an overview of both domestic and international labour market transition programs. Chapter 5 reviews the evidence collected during the interviews and provides an overview of attitudes toward pivotal labour market subjects among employers, association representatives, labour officials, and training representatives. In Chapter 6, the focus group material is analyzed and salient findings highlighted. The document concludes with Chapter 7, a set of recommendations meant to provide future direction for the Mining Industry Human Resource Sector Council and the mining industry.

3. The State of Mining in Canada: A Summary

3.1 Contribution to Gross Domestic Product¹

The Canadian mining industry is in the midst of a remarkable period of prosperity. The value of raw materials in general and minerals in particular has soared in the last few years. To cite one example, the non-ferrous minerals component of Statistics Canada's Raw Material Price Index² grew by 63% in 2006. The overall value of mineral products extracted in Canada went from \$20.0 billion in 2003 to an estimated \$26.4 billion in 2005 and was expected to increase again in 2006.³ Some of the largest increases were for copper and nickel (in the metals category) and potash (in the non-metals category).

World demand for commodities, largely fuelled by a massive demand from Asia, is the driver of the recent price increases. Most observers feel that demand will remain high over the short to medium term, but they expect no further large increases in prices.

Even though figures in the databases are not always sufficiently up to date to document the most recent increases, they confirm this growth in the value of goods produced by the Canadian mining industry. The Gross Domestic Product (GDP) for the mining industry, including mining support services, was \$14.8 billion in 2003, compared with \$11.6 billion in 1999 (see Figure 3.1.1).

1 The database is intended as an update to the previous research conducted for the Mining Industry Training and Adjustment Council and published in 2005 as *Prospecting the Future*. Readers are encouraged to refer to that document for a more comprehensive review of human resource issues.

2 Source: Statistics Canada.

3 Source: Canadian Minerals Yearbook, Natural Resources Canada, 2005.

Figure 3.1.1 Gross Domestic Product in Millions of Nominal Dollars

Year	GDP in Millions of Nominal Dollars			GDP in Millions of Constant Dollars (1997)				
	Mining Industry	Support Services	Total	Mining Industry	Support	Total	Total Economy	Percentage of Total Economy
1991	\$8,161	\$2,032	\$10,193	-	-	-	-	-
1992	\$7,703	\$1,521	\$9,224	-	-	-	-	-
1993	\$6,878	\$1,920	\$8,798	-	-	-	-	-
1994	\$7,724	\$2,523	\$10,247	-	-	-	-	-
1995	\$9,579	\$2,637	\$12,216	-	-	-	-	-
1996	\$8,907	\$3,388	\$12,295	-	-	-	-	-
1997	\$8,700	\$4,032	\$12,732	\$8,700	\$4,032	\$12,732	\$816,756	1.6%
1998	\$8,330	\$3,740	\$12,070	\$8,815	\$3,761	\$12,576	\$848,414	1.5%
1999	\$8,253	\$3,297	\$11,550	\$9,181	\$3,345	\$12,526	\$896,069	1.4%
2000	\$9,387	\$4,524	\$13,911	\$9,481	\$4,404	\$13,885	\$943,738	1.5%
2001	\$8,732	\$5,125	\$13,857	\$9,535	\$4,814	\$14,349	\$957,258	1.5%
2002	\$8,559	\$4,987	\$13,546	\$9,195	\$4,552	\$13,747	\$982,843	1.4%
2003	\$9,149	\$5,612	\$14,761	\$9,565	\$5,197	\$14,762	\$1,002,936	1.5%
2004	-	-	-	\$9,981	\$5,430	\$15,411	\$1,034,024	1.5%
2005	-	-	-	\$9,892	\$6,067	\$15,959	\$1,062,951	1.5%

Adjusting for the change in commodity prices yields a different story, however, because the increase in the value of minerals produced is almost exclusively related to price. Real GDP – that is, GDP adjusted for inflation⁴ or the “value added” by the industry – has grown by an average of 2.8% per year from 2001 to 2005. In other words, the strong performance of the sector since the turn of the decade is largely the result of increases in the value rather than the volume of production.

There is evidence, however, that the industry is seeking to increase production to take advantage of the higher prices. Evidence of this is found in the fact that mining support services, including exploration activity, is growing more quickly than mining extraction. Some of this growth in support services could be indicative of more outsourcing of mining production, but it likely represents an increase in exploration activity.

⁴ In the economic accounts, real GDP is measured by surveying the volume of production in the sector, whereas GDP is measured by surveying the value of that production. The difference between these two measures yields a “deflator” that is unique to the mining sector and represents the change in prices of minerals extracted.

More evidence is found in the growth of capital investment by the mining industry. Investment in new plants and equipment over the past two years has been over \$4 billion per year, and a further \$4.5 billion is expected this year (see Figure 3.1.2). This compares with an average of \$2.4 billion per year of such investment during the 1990s.

Figure 3.1.2 Capital Investment, Mining Industry, \$ millions

Year	New machinery and construction			Repair work			Grand Total
	Machinery	Constr.	Total	Machinery	Constr.	Total	
1991	\$559	\$1,324	\$1,883	...	...	...	...
1992	\$475	\$1,027	\$1,502	...	...	...	...
1993	\$561	\$1,084	\$1,644	...	...	...	...
1994	\$674	\$1,284	\$1,958	\$1,490	\$170	\$1,660	\$3,617
1995	\$1,007	\$1,672	\$2,679	\$1,647	\$198	\$1,845	\$4,523
1996	\$976	\$1,914	\$2,890	\$1,655	\$150	\$1,805	\$4,695
1997	\$1,075	\$2,253	\$3,329	\$1,644	\$192	\$1,837	\$5,165
1998	\$1,074	\$1,897	\$2,971	\$1,494	\$140	\$1,634	\$4,605
1999	\$1,108	\$1,460	\$2,567	\$1,307	\$191	\$1,499	\$4,066
2000	\$911	\$2,150	\$3,061	\$1,298	\$178	\$1,476	\$4,537
2001	\$801	\$2,106	\$2,906	\$1,301	\$214	\$1,514	\$4,420
2002	\$730	\$1,801	\$2,531	\$1,405	\$159	\$1,564	\$4,094
2003	\$672	\$1,539	\$2,211	\$1,420	\$221	\$1,641	\$3,851
2004	\$1,107	\$2,419	\$3,526	\$1,731	\$262	\$1,992	\$5,518
2005	\$1,447	\$2,814	\$4,260	\$1,788	\$235	\$2,023	\$6,284
2006 estimate	\$1,775	\$2,510	\$4,285	...	...	...	...
2007 intended	\$1,941	\$2,546	\$4,487	...	...	...	...

Notes: The three dots (...) represent data that is not available or suppressed

A higher proportion is being funnelled toward mining support services, a large proportion of which is likely going into mine exploration activities (it is worth noting that a percentage is likely also going into oil and gas exploration in western Canada), and to machinery and equipment rather than the construction of new mines.

- Investment in mining support services increased by 132% from 1996 to 2006, compared with 48% in the mining industry during the same time.
- Investment in machinery and equipment accounts for more than 40% of new capital investment in the mining industry in 2006 and 2007, compared with an average of 30% from 2000 to 2005.

This has several implications for the mining labour market:

- Not surprisingly, employment in the production side of the mining industry has not been growing, because it takes the same number of employees to extract the ore regardless of its value.
- The increase in capital investment means that there will be a demand for new workers in the short to medium term. This will be tempered somewhat by the fact that much of the new investment is in machinery and equipment; this kind of investment typically increases labour productivity.
- The higher profit margins arising from the higher commodity prices will enable the mining industry to compete with other industries to attract employees in a tight labour market. While there is little empirical evidence of an increase in mining sector wage rates at this time, there is anecdotal evidence of significant increases in total compensation across many occupations.

Terminology for Industry Groupings used in the Database

The term “Mining Industry” is used for NAICS 212. This industry group includes coal mining, metal, and non-metal mining.

The term “Mining Support Services” or simply “Support Services” is used for NAICS 213. This industry group includes support services for mining and oil and gas extraction. In Western Canada, a significant proportion of support services are for oil and gas extraction.

The term “Mining and Support Services” is used for the combination of NAICS 212 and 213.

3.2 Employment and Earnings

3.2.1 Employment

The pattern of employment in the mining and mining support sectors over the past five years can be summarized as follows:

- Employment is declining slowly in the mining sector and increasing rapidly in the mining support services sector. The increase in the mining support services sector more than offsets the decline in the mining sector, so employment is growing overall.
- Within the mining sector, employment is increasing among hourly paid workers and declining among salaried workers.
- Within the mining services sector, employment is increasing among both salaried and hourly paid employees.

Total employment in the mining industry has declined slightly since 2001, when there were 51,200 employees; the estimated number in 2006 is 50,600. Over the same period, employment in mining support services has increased by an average of over 10% per year to reach an estimated 82,800 in 2006. Overall employment growth in the sector has thus been increasing, but the increase is concentrated in the mining services group and many of these new hourly paid workers are likely oil patch workers.

The strongest growth from 2001 to 2006 has been among hourly paid employees, sometimes referred to as production workers. Over the five years, the number of production workers has grown by 11.1% per year, on average, compared with 1.5% per year for salaried employees. The growth in production workers is not limited to the mining services industry – there has been an annual increase of 6% per year among those in the mining industry as well.

Although one half of workers in the mining industry are in Ontario and Quebec, the highest growth rate is in Saskatchewan (see Figure 3.2.1). Paid employment in Manitoba, Alberta, and British Columbia declined from 2001 to 2006.

Figure 3.2.1 Paid Employment in the Mining Industry, by Province

Year	Quebec	Ontario	Manitoba	Sask	Alberta	B.C.	All other	Canada
1991	11,765	20,003	3,947	4,661	5,420	11,271	12,364	69,431
1992	11,785	19,077	4,005	4,911	4,937	8,757	11,484	64,956
1993	10,547	19,616	3,774	4,024	5,072	7,414	10,680	61,126
1994	11,790	17,961	3,543	4,254	4,966	8,017	10,629	61,160
1995	11,162	19,157	3,179	4,680	5,028	9,294	10,035	62,536
1996	10,620	18,890	2,705	4,662	5,590	8,720	9,577	60,764
1997	11,813	18,893	3,487	5,664	5,442	9,342	9,695	64,337
1998	11,921	16,833	3,388	5,515	4,528	8,867	9,039	60,090
1999	11,591	16,859	2,561	5,366	4,502	7,034	9,440	57,353
2000	11,894	15,887	2,875	5,219	4,896	6,687	9,240	56,698
2001	9,788	14,834	2,265	5,398	3,565	6,964	8,400	51,213
2002	10,448	13,680	1,851	4,481	3,368	6,591	7,753	48,172
2003	10,441	13,700	1,722	4,463	3,023	6,468	8,110	47,928
2004	10,386	14,429	...	5,109	2,428	6,657	...	47,706
2005	9,195	14,305	1,740	5,606	2,653	6,774	7,122	47,394
2006 est	9,966	15,155	1,773	6,144	2,785	6,710	8,022	50,556
Average annual increase, 2001-2006	0.4%	0.4%	-4.8%	2.6%	-4.8%	-0.7%	-0.9%	-0.3%

3.2.2 Earnings

The data on earnings in the sector measure both the base earnings and the earnings including overtime and other premium pay. The base earnings figures are typically used for inter-industry comparisons. Earnings including overtime and premium pay represent the amount in the average worker's pay packet and may be the best measure for production workers. It is important to note that the extra hours or shift work involved in earning some of the premium pay may not be viewed positively by all workers.

Earnings for paid workers in the mining industry are well above the national average. The average weekly paycheque (gross before deductions) was almost \$1,250 in 2006, half again as much as the Canadian average of \$750 per week (see Figure 3.2.2) This is particularly true in mining services, where the average weekly paycheque was \$1,325 in 2006.

Figure 3.2.2 Average Weekly Earnings, Mining and Support Services, Canada

Year	Average Weekly Earnings Including Overtime				Average Weekly Earnings Excluding Overtime			
	Mining Industry	Support Services	Total	All industries	Mining Industry	Support Services	Total	All industries
1991	\$865	\$726	\$814	\$553	\$803	\$634	\$741	\$540
1992	\$899	\$741	\$848	\$573	\$836	\$662	\$779	\$559
1993	\$905	\$818	\$874	\$583	\$842	\$710	\$795	\$568
1994	\$922	\$816	\$881	\$593	\$853	\$700	\$793	\$577
1995	\$964	\$817	\$911	\$599	\$884	\$723	\$826	\$583
1996	\$1,002	\$894	\$963	\$611	\$924	\$809	\$882	\$595
1997	\$999	\$948	\$980	\$624	\$914	\$827	\$881	\$604
1998	\$1,054	\$977	\$1,022	\$633	\$964	\$877	\$929	\$614
1999	\$1,040	\$970	\$1,012	\$641	\$928	\$854	\$898	\$622
2000	\$1,094	\$1,014	\$1,059	\$656	\$1,015	\$931	\$979	\$635
2001	\$1,091	\$1,049	\$1,070	\$667	\$1,008	\$965	\$987	\$647
2002	\$1,084	\$1,074	\$1,079	\$681	\$969	\$960	\$964	\$661
2003	\$1,085	\$1,087	\$1,086	\$691	\$935	\$947	\$942	\$669
2004	\$1,103	\$1,217	\$1,169	\$706	\$996	\$1,116	\$1,065	\$684
2005	\$1,098	\$1,321	\$1,231	\$728	\$979	\$1,194	\$1,108	\$707
2006 est	\$1,108	\$1,325	\$1,243	\$750	\$981	\$1,191	\$1,112	\$726
Average annual increase, 2001-2006	0.3%	4.8%	3.0%	2.4%	-0.5%	4.3%	2.4%	2.3%

Somewhat surprisingly, the base earnings for workings in the mining industry have not increased in recent years. It is important to remember that this does not include any overtime or premium pay and is also simply an average of earnings for all employees. There are on-site mining employees who are doubling their base salary through various forms of bonus associated with production levels and high commodity prices. Average base earnings in the mining industry have increased by only 0.3% per year from 2001 to 2006. This compares with average increases of 4.8% per year in mining support services and 2.4% in the general Canadian economy.

Adjusted for inflation, earnings in the mining industry have declined from 2001 to 2006, whereas they have increased in the mining support services industry. Excluding overtime and other premium pay, average earnings have dropped by an average of 0.5% per year from 2001 to 2006 in the mining industry and increased by 4.3% per year in mining support services. The lack of growth in earnings is concentrated among hourly paid workers.

The slow growth in gross earnings is widespread across Canada (see Figure 3.2.3). The highest rates of increase from 2001 to 2006 were in Quebec (+2.5% per year) and the “other” category (+3.0%), which includes the Atlantic provinces and the territories. Declines in average earnings were evident in Alberta (-0.6%), Saskatchewan (-0.7%), and Ontario (-2.6%).

Figure 3.2.3 Employment in Mining and Support Services, 2006, by Region

	Atlantic	Quebec	Ontario	Manitoba	Sask	Alberta	B.C.	Canada
Total employment	11,700	16,300	24,100	4,800	16,700	68,900	15,100	
By Gender								
Men	10,700	14,300	21,800	4,200	15,200	56,800	12,700	
Women	1,000	2,000	2,300	600	1,500	12,100	2,400	
Percent Women	9%	12%	10%	13%	9%	18%	16%	14%
Age Group								
15-24	1,000	1,100	1,300	700	3,500	12,800	1,800	
25-34	2,400	2,600	4,600	900	4,000	20,700	3,400	
35-44	2,800	4,600	6,800	1,200	4,000	15,600	2,800	
45-54	3,600	4,900	7,300	1,500	3,600	13,800	4,800	
55+	1,900	3,100	4,100	500	1,600	6,000	2,300	
Percent 55 or older	16%	19%	17%	10%	10%	9%	15%	12%

	Atlantic	Quebec	Ontario	Manitoba	Sask	Alberta	B.C.	Canada
Completed Education								
<i>Less Than High School</i>	2,000	3,500	4,300	800	3,500	13,300	2,600	
<i>High School Some Post-Sec</i>	2,200	3,900	6,100	2,000	6,600	26,200	5,100	
<i>Certificate or Diploma</i>	6,100	6,900	10,300	1,500	5,400	23,700	5,400	
<i>University Degree</i>	1,300	2,100	3,500	500	1,200	5,700	2,000	
<i>Percent with less than high school</i>	17%	21%	18%	17%	21%	19%	17%	
<i>Percent with a post-secondary education</i>	64%	55%	57%	42%	40%	43%	49%	48%
Family Structure								
<i>Unattached individuals</i>	1,200	2,000	3,600	800	3,300	14,400	2,100	
<i>Lone parents</i>	...	...	...	...	...	3,100	...	
<i>Spouse in single earner family</i>	3,200	5,300	6,000	700	2,400	11,700	3,400	
<i>Spouse in multiple earner family</i>	6,300	8,000	11,800	2,700	9,600	37,000	8,600	
<i>Other</i>	600	...	1,800	...	1,000	2,800	...	
<i>Percent in single earner family</i>	27%	33%	25%	15%	14%	17%	23%	21%
Employment by class of worker								
<i>Paid</i>	11,500	16,000	23,200	4,600	14,600	53,700	12,900	
<i>Self Employed</i>	200	300	900	200	2,200	15,200	2,200	
<i>Percent Self Employed</i>	2%	2%	4%	4%	13%	22%	15%	13%
Employment by job permanence (paid workers only)								
<i>Permanent</i>	9,200	13,800	21,400	4,300	13,400	50,400	11,800	
<i>Non-Permanent</i>	2,300	2,200	1,800	...	1,100	3,300	...	
<i>Percent Permanent</i>	80%	86%	92%	93%	92%	94%	91%	91%

	Atlantic	Quebec	Ontario	Manitoba	Sask	Alberta	B.C.	Canada
Union membership								
<i>Union members or covered by collective agreements</i>	4,900	6,900	10,600	2,500	4,100	5,300	4,500	
<i>Not union members or covered</i>	6,800	9,500	13,500	2,300	12,600	63,500	10,600	
<i>Percent union</i>	42%	42%	44%	52%	25%	8%	30%	25%

With the recent declines, the mining and mining support services industry has the lowest average weekly earnings in Ontario and Quebec, where earnings are 8% below the national average. Earnings in British Columbia are the highest in the industry, at 16% above the national average.

The extensive use of overtime in the mining sector is evident in the figures. Compared with a national average of 2%, fully 12% of earnings in the sector arose from overtime and other forms of premium pay in 2006.

3.3 Labour Force Characteristics

Recent data about those who work in the mining industry and the mining services industry are available from Statistics Canada's Labour Force Survey (LFS). In an average month in 2006, approximately 157,600 people reported employment in the mining and mining services industry, with 38% of those in mining and 62% in mining services (see Table 3.3.1). Employment has been growing in coal and non-metal mining and mining services and decreasing in metal mining. By 2006, approximately 1% of employment in Canada was in the mining and mining services category.⁵

Just over one half (55%) of mining industry workers live (and probably work) in Ontario and Quebec, with the remaining 45% spread across the rest of Canada. Since 2001, employment has grown in Quebec and British Columbia and declined in Manitoba and Ontario. The growth in the mining services category is dominated by oil patch workers in Alberta, where employment grew rapidly in both 2005 and 2006.

Those working in mining and mining services are similar in some ways to the national labour force (i.e., employed workers in all industries in Canada) and markedly different in others (see Figure 3.3.1).

⁵ The LFS excludes the population living on reserves and in the northern territories, so total employment will be somewhat understated.

Figure 3.3.1 Characteristics of Employees in Mining and Support Services, Canada

Mining and Support Services							All industries
	2001	2002	2003	2004	2005	2006	2006
Total employment	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
By Gender							
Men	107,100	97,700	103,500	107,300	121,800	135,600	8,727,100
Women	13,400	10,300	12,900	15,100	16,500	22,000	7,757,200
Total	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
Percent Women	11%	10%	11%	12%	12%	14%	47%
Age Group							
15-24	15,200	10,900	12,700	16,500	18,500	22,100	2,535,800
25-34	26,700	25,400	29,400	28,700	34,800	38,600	3,528,000
35-44	39,600	33,800	34,900	34,700	32,800	37,900	4,082,700
45-54	29,100	26,900	28,500	29,400	34,200	39,500	4,008,900
55+	9,800	11,100	10,900	13,100	18,000	19,400	2,328,900
Total	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
Percent Under 25	13%	10%	11%	13%	13%	14%	15%
Percent 55 or older	8%	10%	9%	11%	13%	12%	14%
Completed Education							
Less Than High School	26,600	22,400	22,200	23,600	24,700	30,000	2,232,500
High School Some Post-Sec	36,200	32,800	36,700	43,600	47,000	52,100	4,749,700
Certificate or Diploma	47,300	40,500	46,400	43,800	52,600	59,300	5,693,300
University Degree	10,400	12,400	11,100	11,400	14,000	16,200	3,808,800
Total	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
Percent with less than high school	22%	21%	19%	19%	18%	19%	14%
Percent with a post-secondary education	48%	49%	49%	45%	48%	48%	58%

Mining and Support Services							All industries
	2001	2002	2003	2004	2005	2006	2006
Family Structure							
<i>Unattached individuals</i>	20,100	20,700	21,100	21,400	24,100	27,400	2,622,400
<i>Lone parents</i>	4,400	2,800	4,000	4,500	5,200	6,000	1,121,000
<i>Spouse in single earner family</i>	27,700	23,300	23,600	28,400	30,500	32,500	2,283,400
<i>Spouse in multiple earner family</i>	63,800	56,400	62,200	62,600	71,500	84,000	9,208,900
<i>Other</i>	4,500	4,800	5,400	5,500	6,900	7,800	1,248,500
Total	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
<i>Percent in single earner family</i>	23%	22%	20%	23%	22%	21%	14%
With Multiple Jobs?							
<i>Yes</i>	3,700	4,000	4,100	4,300	4,000	5,300	857,500
<i>No</i>	116,800	104,000	112,300	118,100	134,300	152,300	15,626,800
Total	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
<i>Percent with multiple jobs</i>	3%	4%	4%	4%	3%	3%	5%
School Attendance (8 winter months only)							
<i>Student</i>	1,700	2,000	2,200	2,800	2,300	2,700	1,572,700
<i>Non-student</i>	115,600	105,600	111,500	119,000	133,100	151,700	14,437,800
Total	117,800	108,400	114,700	123,000	136,800	156,400	16,329,100
<i>Percent students</i>	1.4%	1.8%	1.9%	2.3%	1.7%	1.7%	9.6%

Some of the key points are:

- Workers in mining and mining services are much less likely to be women (14% vs. 47% for the general labour force). The proportion has increased slightly in the past five years. Women make up a slightly larger proportion of the industry's employees in Alberta (18%) and a slightly lower proportion (9%) in Saskatchewan and the Atlantic provinces.
- The age distribution is similar to the general labour force, with 12% aged 55 and older and 14% aged 35 or less. The proportion of older workers in the industry is increasing. The highest proportions of older workers can be found east of the Manitoba border with, for example, 19% in Ontario and 17% in Quebec, compared to 9% or 10% in the Prairie provinces.
- Levels of formal education among industry workers tend to be lower than in the general labour market – 48% of mining and mining services workers have a post-secondary degree, diploma, or certificate, compared with 58% for all industries. At the other end of the scale, 19% have less

than a high school education, compared with 14% for all industries. The proportion with a post-secondary education is highest in the Atlantic provinces (64%) and lowest in Saskatchewan (40%).

- In mining and mining services, 21% of the employed are spouses in a single earner family, compared with 14% for all industries. Single parents, most of whom are women, are less common than in the general labour force.
- Mining workers are less likely than those in other industries to hold two jobs simultaneously (only 3% do so) and less likely to be students while employed.

Positions in mining and mining services also differ in some respects from those in the national labour force (see Figure 3.3.2 and Figure 3.3.3):

Figure 3.3.2 Characteristics of Positions in Mining and Support Services, Canada

Mining and Support Services							All industries
	2001	2002	2003	2004	2005	2006	2006
Total employment	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
Employment by class of worker							
Paid	109,900	98,900	102,700	108,100	120,100	136,400	13,986,300
Self Employed	10,600	9,100	13,700	14,300	18,200	21,200	2,498,000
Total	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
Percent Self Employed	9%	8%	12%	12%	13%	13%	15%
Employment by job permanence (paid workers only)							
Permanent	98,800	87,500	92,100	97,700	107,200	124,300	12,163,100
Non-Permanent	11,100	11,300	10,600	10,400	13,000	12,100	1,823,200
Total	109,900	98,800	102,700	108,100	120,200	136,400	13,986,300
Percent Permanent	90%	89%	90%	90%	89%	91%	87%
Union membership							
Union members or covered by collective agreements	32,900	29,800	32,200	32,600	34,300	38,700	4,428,600
Not union members or covered	87,600	78,200	84,200	89,800	104,000	118,900	12,055,700
Total	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
Percent union	27%	28%	28%	27%	25%	25%	27%

Mining and Support Services							All industries
	2001	2002	2003	2004	2005	2006	2006
“Usual” Hours Worked							
<i>Under 30 (part time)</i>	3,500	3,600	3,900	4,200	4,400	6,100	2,974,700
<i>30 to 40</i>	73,400	65,400	70,300	70,300	74,100	88,000	10,944,800
<i>More than 40</i>	43,600	39,000	42,300	48,000	59,800	63,600	2,568,500
Total	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
<i>Percent more than 40</i>	36%	36%	36%	39%	43%	40%	16%
Actual Hours Worked							
<i>Under 30</i>	20,000	18,300	20,700	19,900	23,000	27,400	4,903,600
<i>30 to 40</i>	45,900	41,300	44,200	44,800	45,600	54,400	7,819,000
<i>More than 40</i>	54,600	48,700	51,600	57,900	70,000	76,000	3,804,500
Total	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
<i>Percent more than 40</i>	45%	45%	44%	47%	51%	48%	23%
<i>Average hours/ week</i>	42.8	41.9	42.4	43.6	44.0	43.3	33.3
Establishment size (paid employees only)							
<i>Less than 20 employees</i>	26,900	25,500	25,600	27,900	27,800	31,900	4,586,000
<i>20 to 99 employees</i>	30,500	25,900	27,500	31,500	35,500	45,700	4,583,300
<i>100 or more employees</i>	52,500	47,500	49,600	48,700	56,800	58,800	4,817,000
Total	109,900	98,900	102,700	108,100	120,100	136,400	13,986,300
<i>Percent in large (100+) firms</i>	48%	48%	48%	45%	47%	43%	34%

Figure 3.3.3 Employment in Mining and Support Services, Canada

Mining and Support Services							All industries
	2001	2002	2003	2004	2005	2006	2006
Total employment	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
Employment by Occupation Group							
Management	4,700	6,300	5,700	7,300	4,600	7,300	1,509,300
Business, finance, administration	10,600	9,400	10,900	11,900	13,800	20,000	2,988,800
Trades, transport and equipment operators	33,100	25,400	29,100	28,800	32,400	34,200	2,453,900
Occupations unique to the primary sector	52,900	52,800	54,400	59,300	69,400	76,900	583,700
All others	19,200	14,100	16,300	15,100	18,100	19,200	8,948,600
Total	120,500	108,000	116,400	122,400	138,300	157,600	16,484,300
Occupation Distribution							
Management and administration	12.7%	14.5%	14.3%	15.7%	13.3%	17.3%	27.3%
Trades, transport and equipment operators	27.5%	23.5%	25.0%	23.5%	23.4%	21.7%	14.9%
Occupations unique to the primary sector	43.9%	48.9%	46.7%	48.4%	50.2%	48.8%	3.5%
All others	15.9%	13.1%	14.0%	12.3%	13.1%	12.2%	54.3%
Average hourly earnings (paid employees only)							
Under \$10/hour	5,700	4,000	4,300	4,700	4,200	4,600	2,194,200
\$10 to \$19.99	41,600	32,700	36,000	34,600	36,900	38,500	6,094,600
\$20 to \$29.99	49,000	45,100	46,800	50,000	56,000	61,600	3,491,000
\$30 or more	13,600	17,100	15,600	18,800	23,000	31,700	2,206,500
Total	109,900	98,900	102,700	108,100	120,100	136,400	13,986,300
Percent \$20 or more	57%	63%	61%	64%	66%	68%	41%
Average wage rate per hour for paid employees	\$21.38	\$22.88	\$22.31	\$23.11	\$23.68	\$24.66	\$19.72

- Mining positions are somewhat less likely to be held by the self employed than are positions in the national labour force (13% vs. 15%) and somewhat more likely to be permanent (79% vs. 74%). The proportion of workers in Alberta who are self-employed is 33%, which reflects the relative dominance of oil and gas exploration services in the province.
- Collective agreements cover 25% of the mining workforce, compared with 27% for all industries, 19% in the resource sector generally, 70% in utilities, and 22% in construction. The proportion of workers who are covered by a collective agreement varies widely by region, from a low of 8% in Alberta to a high of 52% in Manitoba.
- Just under one half (43%) of workers work at locations with 100 or more employees.
- Many mining positions involve long hours.⁶ The “usual” work week is longer than 40 hours in 40% of positions and nearly one-half (48%) of respondents reported that they actually worked more than 40 hours. In other industries, only 23% reported working more than 40 hours per week. In 2006, average hours per week were 43.3 in the mining industry, compared with 33.3 in all industries, 40.8 in the resource sector generally, 35.2 in utilities, and 37.1 in construction. Hours of work are high across all provinces, although the average is the highest in Alberta and Saskatchewan (45 hours per week) and lowest in Quebec (38 hours per week).
- Just under one-half (48%) of the occupations reported are unique to the primary industry. Managers and other administrative staff make up 17%, and most of the remaining 35% are in the trades and transport operators group.
- The average hourly wage rate in 2006 was \$24.66, compared with \$19.72 for all industries. Twenty-three per cent of paid workers reported rates in excess of \$30 per hour, and 31% reported rates below \$20 per hour. Average hourly rates are relatively uniform across the provinces, with the highest rates being in Ontario (\$26.60) and the lowest in Manitoba and the Atlantic provinces (less than \$23 per hour).

In summary, workers in the mining and mining services industry are not unlike workers in other industries except that they tend to be male, have a lower level of completed education, work long hours, and have a high rate of pay which is augmented by premium pay for overtime.

3.4 Capital Investment

Capital investment in goods producing sectors in general and mining in particular will yield long-term growth. This growth could occur if investment is in new mines, yielding an increase in production, or if investment is in new machinery and equipment, yielding higher productivity from existing mines.

Investment in mining over the past two decades or so can be divided into three distinct phases. From the early to the mid-1990s, capital investment increased from \$1.9 billion to \$3.3 billion. This was followed by a six-year period with a downward trend – by 2003, capital investment had declined to \$2.2 billion. Since then, capital investment has doubled, increasing to an estimated \$4.3 billion in 2006. Capital investment is expected to grow again in 2007.

⁶ Because of the way that the LFS measures hours, higher weekly hours may be overstated. Fly-in/out arrangements will register as a period of long hours followed by a period of zero hours. While this will not affect the average hours worked, it will show a large proportion of workers with long hours and no hours at all.

The most recent increase includes a large component of machinery and equipment; earlier investment was concentrated more on new facilities. More than one half of recent investment is located west of the Ontario border.

3.5 Engineering Graduates

The information in section 5⁷ centres on the number of engineering students and graduates in Canada. It shows that the profession is becoming more popular in this country, with an increasing number of full-time students. This is particularly true in the western and Atlantic provinces. A declining proportion of students are women.

The number of engineering students enrolled in mining-related disciplines is increasing, although the number of undergraduate degrees awarded is not. This could be explained by these students tending to transfer into other disciplines after a few years or being more likely than other students to drop out before graduating. There may also be a time lag – that is, the recent increase in students may yield a higher number of graduates in the next few years.

3.6 National Graduate Survey Results

This section describes the characteristics of a particular group of individuals surveyed in the 2002 *National Graduate Survey (NGS)*, namely those

- who graduated from a Canadian post-secondary institution in 2000; and
- who were employed in the mining industry or mining services industry in 2002.

A large proportion of post-secondary graduates have training in fields of study unrelated to the mining sector. To make the comparison more meaningful, post-secondary graduates working in the mining sector were compared with graduates employed in similar heavy industries, that is, the non-agricultural goods-producing industries: forestry, mining, utilities, oil and gas, construction, and manufacturing.

Some of the notable findings from the NGS are:

- Approximately 60% of those employed had a certificate or diploma, while 40% had a university degree.
- Alberta was the destination province for many graduates, accounting for 35% of graduates employed in the mining industry, even though only 27% had graduated from Alberta institutions and only 23% were Alberta residents before going to post-secondary school.
- Degrees in engineering and technical training in engineering technologies accounted for 38% of graduates employed in the industry. The next largest field of study was business management, accounting, and marketing.
- One-quarter of the recent graduates were women and 17% were over the age of 31 when they graduated, compared to 30% and 19% respectively for non-agricultural goods-producing industries.

⁷ This section does not include any information on community college graduates due to a lack of data (the last data update was for the 1999-2000 academic year).

- Relatively few of these graduates were members of a visible minority group (5%), immigrants (5%), or reported an Aboriginal identity (3%). The non-agricultural goods-producing sector was more likely than the mining sector to hire members of a visible minority group and immigrants.
- One in nine graduates (11%) were in a low-skill occupation, suggesting that their education was not related to the mining industry or that their occupation was not allowing them to make full use of their education. This is notably higher than the 4% in non-agricultural goods-producing industries.
- More than three-quarters of graduates (78%) employed in the mining and mining services group reported that their job was closely or somewhat related to their education. This compares with 81% in non-agricultural goods-producing industries.

3.7 Outlook and Projection

Any forecast of employment demand requires assumptions about three key variables:

- growth in real GDP (i.e., the volume of output);
- growth in labour productivity, typically measured in value of output per hour worked; and
- changes in hours worked per person employed.

For the sake of simplicity, the projections shown in section 3.7 assume no change in average hours worked per week – that is, they remain at 43 hours per week in both mining and mining services.

Changes in labour productivity arise from a variety of factors that are often difficult to predict. A recent paper by Statistics Canada⁸ analyzes the decline in labour productivity in the resource sector generally and highlights the mining industry specifically. This paper attributes the recent downward trend in labour productivity in the mining part of the resource sector to two general trends. The first is a long-term trend toward deposits being either more difficult to mine or being located in more remote locations. The second is a short-term phenomenon caused by reductions in output with no corresponding decline in employment (called labour “hoarding”) in the last couple of years. Some of the short-term events influencing this were:

- a warm winter in the Northwest Territories reducing use of ice roads;
- strikes or lockouts in nickel and copper mines;
- flooding in a major uranium mine; and
- protracted negotiations between potash producers and China.

Over the long term, growth in labour productivity will be hampered by mineral deposits that are increasingly difficult to exploit and a reduction in the quality of the workforce because of a shortage of workers. On the other hand, labour productivity will be enhanced by technological improvements.

From 1997 to 2005, mining GDP measured in constant dollars grew by an average of 1.6% per year and labour productivity (measured as GDP per hour worked) grew by 5.2%, in spite of the decline in

8 Recent Trends in Output and Employment, Catalogue #13-604-MIE.

2005.⁹ Over the same period, GDP in mining support services grew by 5.2% per year, whereas labour productivity declined slightly. Figure 3.7.1 shows that in the unlikely event that this trend continues, the mining labour force will grow by an average of 2.9% per year for the next ten years, with all of the growth being in mining services rather than mining.

The employment figures in this section differ from those in section 3.2 and section 3.3. The figures in section 3.2 and 3.3 measure the number of employees and/or total employees including the self-employed. The figures in this section are calculated full-time equivalents (FTEs), that is, neither paid employees, nor all employees, because the productivity figures published by the Canadian Centre for Living Standards publishes GDP per hour worked rather than GDP per person employed. To convert from hours worked to employment, a figure of 2,236 hours per year was used - the equivalent of 43 hours per week for 52 weeks per year.

9 These data are not meant to correspond perfectly with data from the aforementioned Statistics Canada report. That report labels the oil sands as “mining,” which creates some confusion. Although, as the definition states, a portion of the activity has a component of mining, it is not the primary focus. In the NAICS scheme, “oil and gas extraction” is defined as an industry comprised of establishments primarily engaged in operating oil and gas field properties. Such activities may include exploration for crude petroleum and natural gas; drilling, completing and equipping wells; operating separators, emulsion breakers, desilting equipment and field gathering lines for crude petroleum; and all other activities in the preparation of oil and gas up to the point of shipment from the producing property. This includes the production of oil, the mining and extraction of oil from oil shale and oil sands, and the production of gas and hydrocarbon liquids, through gasification, liquefaction, and pyrolysis of coal at the mine site.

Figure 3.7.1 Scenario # I – Long Term Trend

Assumptions, 2006 to 2016	Mining Industry	Mining Support Services
Annual growth in real GDP	1.6%	5.2%
Annual growth in GDP per hour worked	5.2%	0.0%
Hours worked per week	43	43

Year	Mining Industry			Mining Support Services			
	GDP in \$1997 (millions)	GDP per Hour worked	Calculated Number of Employees	GDP in \$1997 (millions)	GDP per Hour worked	Calculated Number of Employees	
<i>Actual</i>	1997	\$8,700	\$62	62,467	\$4,032	\$32	56,498
	1998	\$8,815	\$63	62,537	\$3,761	\$34	49,272
	1999	\$9,181	\$73	56,591	\$3,345	\$33	45,947
	2000	\$9,481	\$75	56,333	\$4,404	\$37	53,593
	2001	\$9,535	\$84	51,007	\$4,814	\$31	70,330
	2002	\$9,195	\$84	48,828	\$4,552	\$35	57,753
	2003	\$9,565	\$93	46,053	\$5,197	\$33	70,128
	2004	\$9,981	\$100	44,756	\$5,430	\$30	81,093
	2005	\$9,892	\$85	52,084	\$6,067	\$30	90,835
<i>Estimate Projected</i>	2006	\$10,050	\$89	50,289	\$6,385	\$30	95,595
	2007	\$10,211	\$94	48,557	\$6,720	\$30	100,604
	2008	\$10,374	\$99	46,884	\$7,072	\$30	105,876
	2009	\$10,540	\$104	45,268	\$7,442	\$30	111,424
	2010	\$10,709	\$110	43,709	\$7,832	\$30	117,263
	2011	\$10,880	\$115	42,203	\$8,243	\$30	123,408
	2012	\$11,055	\$121	40,749	\$8,675	\$30	129,875
	2013	\$11,231	\$128	39,345	\$9,129	\$30	136,680
	2014	\$11,411	\$134	37,989	\$9,607	\$30	143,843
	2015	\$11,594	\$141	36,680	\$10,111	\$30	151,380
2016	\$11,779	\$149	35,416	\$10,641	\$30	159,313	

A more realistic scenario is shown in Figure 3.7.2, where real GDP is assumed to grow at an average annual rate of 3% in both mining and mining services and labour productivity is assumed to grow by 2% in mining and 1% in mining services. In this scenario, labour demand would grow by an average of 1.6% per year. Employment in full-time, full-year equivalents would increase from 145,000 in 2006 to 170,000 by 2016. In this case, the industry will require, in addition to replacements for retirements and turnover:

- 790 additional trades workers and equipment operators per year over the next ten years; and
- 230 additional workers in natural and applied sciences per year, many of whom would be engineering or engineering technology graduates.

Figure 3.7.2 Scenario # 2 Strong GDP Growth and Modest Productivity Growth

Assumptions, 2006 to 2016	Mining Industry	Mining Support Services
Annual growth in real GDP	3.0%	3.0%
Annual growth in GDP per hour worked	2.0%	1.0%
Hours worked per week	43	43

Year		Mining Industry			Mining Support Services		
		GDP in \$1997 (millions)	GDP per Hour worked	Calculated Number of Employees	GDP in \$1997 (millions)	GDP per Hour worked	Calculated Number of Employees
Actual	1997	\$8,700	\$62	62,467	\$4,032	\$32	56,498
	1998	\$8,815	\$63	62,537	\$3,761	\$34	49,272
	1999	\$9,181	\$73	56,591	\$3,345	\$33	45,947
	2000	\$9,481	\$75	56,333	\$4,404	\$37	53,593
	2001	\$9,535	\$84	51,007	\$4,814	\$31	70,330
	2002	\$9,195	\$84	48,828	\$4,552	\$35	57,753
	2003	\$9,565	\$93	46,053	\$5,197	\$33	70,128
	2004	\$9,981	\$100	44,756	\$5,430	\$30	81,093
	2005	\$9,892	\$85	52,084	\$6,067	\$30	90,835
Estimate Projected	2006	\$10,189	\$87	52,594	\$6,249	\$30	92,634
	2007	\$10,494	\$88	53,110	\$6,436	\$30	94,468
	2008	\$10,809	\$90	53,631	\$6,630	\$31	96,339
	2009	\$11,134	\$92	54,156	\$6,828	\$31	98,246
	2010	\$11,468	\$94	54,687	\$7,033	\$31	100,192
	2011	\$11,812	\$96	55,224	\$7,244	\$32	102,176
	2012	\$12,166	\$98	55,765	\$7,462	\$32	104,199
	2013	\$12,531	\$100	56,312	\$7,685	\$32	106,262
	2014	\$12,907	\$102	56,864	\$7,916	\$33	108,367
	2015	\$13,294	\$104	57,421	\$8,154	\$33	110,512
2016	\$13,693	\$106	57,984	\$8,398	\$33	112,701	

In the third scenario, shown in Figure 3.7.3, the recent increase in mining services is assumed to be a short-term phenomenon and future growth is limited to the mining sector. Real GDP in mining grows by 6% per year and labour productivity by 3% per year. In this case, total employment would grow by 1.1% per year from 2006 to 2016.

Figure 3.7.3 Strong Growth in Mining, Decline in Mining Support Services

Assumptions, 2006 to 2016	Mining Industry	Mining Support Services
Annual growth in real GDP	6.0%	0.9%
Annual growth in GDP per hour worked	3.0%	0.0%
Hours worked per week	43	43

Year		Mining Industry			Mining Support Services		
		GDP in \$1997 (millions)	GDP per Hour worked	Calculated Number of Employees	GDP in \$1997 (millions)	GDP per Hour worked	Calculated Number of Employees
Actual	1997	\$8,700	\$62	62,467	\$4,032	\$32	56,498
	1998	\$8,815	\$63	62,537	\$3,761	\$34	49,272
	1999	\$9,181	\$73	56,591	\$3,345	\$33	45,947
	2000	\$9,481	\$75	56,333	\$4,404	\$37	53,593
	2001	\$9,535	\$84	51,007	\$4,814	\$31	70,330
	2002	\$9,195	\$84	48,828	\$4,552	\$35	57,753
	2003	\$9,565	\$93	46,053	\$5,197	\$33	70,128
	2004	\$9,981	\$100	44,756	\$5,430	\$30	81,093
	2005	\$9,892	\$85	52,084	\$6,067	\$30	90,835
Estimate Projected	2006	\$10,486	\$87	53,601	\$6,067	\$30	90,835
	2007	\$11,115	\$90	55,162	\$6,067	\$30	90,835
	2008	\$11,782	\$93	56,769	\$6,067	\$30	90,835
	2009	\$12,488	\$96	58,422	\$6,067	\$30	90,835
	2010	\$13,238	\$98	60,124	\$6,067	\$30	90,835
	2011	\$14,032	\$101	61,875	\$6,067	\$30	90,835
	2012	\$14,874	\$104	63,677	\$6,067	\$30	90,835
	2013	\$15,766	\$108	65,532	\$6,067	\$30	90,835
	2014	\$16,712	\$111	67,440	\$6,067	\$30	90,835
	2015	\$17,715	\$114	69,405	\$6,067	\$30	90,835
2016	\$18,778	\$118	71,426	\$6,067	\$30	90,835	

In Figures 3.7.4 to 3.7.6, these three projected scenarios for economic and productivity growth are combined with expected turnover rates to estimate the number of people who will need to be recruited in the mining and mining services sector over the next ten years.

Figure 3.7.4 Forecasted Hiring Requirements, Mining and Mining Support Services (Scenario # 1)

	Year	Employment*	Annual Hires Arising from:				Grand Total (5)
			Growth (1)	Turnover		Total (4)	
				Non-Retire (2)	Retirement (3)		
<i>Employment Projections</i>	2006	145,884	2,965	2,918	4,230	7,148	10,113
	2007	149,161	3,277	2,983	4,325	7,308	10,585
	2008	152,760	3,599	3,055	4,430	7,485	11,084
	2009	156,692	3,933	3,134	3,135	6,269	10,201
	2010	160,972	4,279	3,219	3,220	6,440	10,719
	2011	165,610	4,639	3,312	3,313	6,625	11,264
	2012	170,623	5,013	3,412	3,413	6,826	11,839
	2013	176,025	5,402	3,520	3,521	7,042	12,444
	2014	181,832	5,807	3,637	3,638	7,274	13,081
	2015	188,060	6,229	3,761	3,762	7,523	13,752

Notes * Total projected employment in mining and mining support services

- (1) New hires because of general growth in the sector
- (2) Estimated at 2% per year from *Prospecting the Future Report*
- (3) Estimates from *Prospecting the Future Report*
- (4) Sum of retirement and non-retirement turnover (2 plus 3)
- (5) Sum of hires arising from turnover and growth (1 plus 4)

Figure 3.7.5 Forecasted Hiring Requirements, Mining and Mining Support Services (Scenario # 2)

	Year	Employment*	Annual Hires Arising from:				Grand Total (5)
			Growth (1)	Turnover		Total (4)	
				Non-Retire (2)	Retirement (3)		
Employment Projections	2006	145,228	2,309	2,905	4,211	7,116	9,425
	2007	147,578	2,350	2,952	4,279	7,231	9,581
	2008	149,969	2,391	2,999	4,349	7,348	9,739
	2009	152,403	2,433	3,048	3,049	6,097	8,530
	2010	154,879	2,476	3,098	3,098	6,196	8,672
	2011	157,399	2,520	3,148	3,149	6,297	8,817
	2012	159,964	2,565	3,199	3,200	6,399	8,964
	2013	162,574	2,610	3,251	3,252	6,504	9,114
	2014	165,230	2,656	3,305	3,306	6,610	9,266
	2015	167,934	2,703	3,359	3,360	6,718	9,422

Notes * Total projected employment in mining and mining support services

- (1) New hires because of general growth in the sector
- (2) Estimated at 2% per year from *Prospecting the Future Report*
- (3) Estimates from *Prospecting the Future Report*
- (4) Sum of retirement and non-retirement turnover (2 plus 3)
- (5) Sum of hires arising from turnover and growth (1 plus 4)

Figure 3.7.6 Forecasted Hiring Requirements, Mining and Mining Support Services (Scenario #3)

Year		Employment*	Annual Hires Arising from:				Grand Total (5)
			Growth (1)	Turnover		Total (4)	
				Non-Retire (2)	Retirement (3)		
Employment Projections	2006	144,436	1,517	2,889	4,188	7,077	8,594
	2007	145,997	1,561	2,920	4,234	7,153	8,715
	2008	147,603	1,607	2,952	4,280	7,232	8,839
	2009	149,257	1,653	2,985	2,986	5,971	7,625
	2010	150,959	1,702	3,019	3,020	6,039	7,741
	2011	152,710	1,751	3,054	3,055	6,109	7,860
	2012	154,512	1,802	3,090	3,091	6,181	7,983
	2013	156,367	1,855	3,127	3,128	6,256	8,110
	2014	158,275	1,909	3,166	3,166	6,332	8,241
	2015	160,240	1,964	3,205	3,206	6,410	8,375

Notes * Total projected employment in mining and mining support services

- (1) New hires because of general growth in the sector
- (2) Estimated at 2% per year from *Prospecting the Future Report*
- (3) Estimates from *Prospecting the Future Report*
- (4) Sum of retirement and non-retirement turnover (2 plus 3)
- (5) Sum of hires arising from turnover and growth (1 plus 4)

All three scenarios used the following assumptions from *Projecting the Future* regarding turnover:

- non-retirement turnover is estimated at an annual rate of 2% of the workforce;¹⁰ and
- retirement turnover is estimated at 2.9% per year until 2009 and 2.0% per year thereafter.

Using these assumptions, the sector would have to recruit from 8,000 to 14,000 people per year, depending on the assumptions made regarding economic and productivity growth. Under the second – and perhaps most probable – scenario, recruitment would be approximately 10,000 people per year. These would occur across a range of skill levels, in various sub-sectors, and in different regions.

¹⁰ This estimate is undoubtedly low. In an average month over the past five years, the proportion of those working in the resource sector (mining, forestry, oil and gas) who reported in the Labour Force Survey that they have been with their current employer for less than a year was approximately 25%. This implies an annual turnover of 25% in the sector. Even taking into account summer employment and higher turnover in the oil patch, the turnover in the mining sector will surely be higher than 2% per year.

There could be other scenarios – for example, rapid growth in total employment in mining and mining services – but these examples indicate that the demand for labour in the sector will be relatively modest in the coming years. In other words, the human resource challenges facing the industry in the future will only partly be the result of expansion. Replacing retiring employees and maintaining a qualified workforce in a tight labour market with increased competition will overall pose a much bigger challenge.

4. Labour Market Transition Projects

4.1 Historical Overview

Promoting viable employment is an important task of governments in developed countries. Policies related to the labour market can be labelled as *active* or *passive*. Active policies are aimed at individuals and have a direct effect on the labour market. They include job search assistance, labour market training, wage subsidies, youth programs, and public job creation. In contrast, passive policies have a more indirect effect; they are mainly related to unemployment benefits and early retirement plans.

Many countries have dozens or even hundreds of active labour market policies (ALMPs), although there are large differences in how each country spends money on such measures. Countries generally spend between one-third and one-half of all labour market expenditures on active policies. In 2000, spending on ALMPs ranged from 1.58% of GDP in the Netherlands to 0.15% in the U.S.A. In between, Germany was at 1.23%, Canada at 0.45%, and the U.K. at 0.32% (Heckman et al 1999).

Many studies have tried to evaluate the effectiveness of various programs. The best work in the field is an OECD working paper entitled *What Works and for Whom*, by Martin and Grubb (2001). This paper is a summary of ongoing OECD research into the effectiveness of ALMPs. In general, the focus of evaluation is on net impacts in terms of employment and/or earnings for participants (OECD sourcebook 2003).

Fay (1996) notes that an ideal evaluation process should answer three basic questions:

- What are the estimated impacts of the program on individuals?
- Are the impacts significant enough to yield an overall social gain?
- Is this the best outcome that could have been achieved with the money spent?

Unfortunately, most evaluations focus completely on only the first question, partially examine the second, and completely ignore the third. As noted by Martin and Grubb (2001), the best work in the field relates to Canada and to the United States, where the evaluation of labour market programs is more or less required. In contrast, European countries such as Sweden, Germany, and the U.K. are just starting to rigorously evaluate their ALMPs.

Martin and Grubb (2001) also note that a number of problems make proper evaluation somewhat difficult. These include:

- There is no stable set of ALMPs to evaluate, because countries are constantly modifying them.
- Evaluations are almost always devoted to short-term results (i.e., within two years).
- Most programs are small scale, and do not lend themselves to extrapolation or generalization.
- The literature tells us what works and for whom, but not why it works.

With these caveats in mind, the consensus is that most ALMPs are generally ineffective. At best, the successes are minor; at worst, these programs either harm the participants or fail to pass basic cost-benefit tests (Heckman et al 1999).

4.2 Active Labour Market Policies

Public Training Programs

These are programs designed to make up for a lack of general skills or to provide the skills necessary for a particular job (Heckman et al 1999). They tend to be very expensive to operate, and the results are mixed – some programs in Canada, Ireland, and the U.S. yield negative rates of return. Those training programs that do work tend to: (a) be tightly focused on participants, (b) be small scale, (c) result in an accepted qualification or credential, and (d) have a strong on-the-job component that establishes links with local employers (Martin and Grubb 2001).

Job Search Assistance

This involves many services, including job counselling, resume services, access to job boards, re-employment bonuses, and so on. These tend to be inexpensive and have somewhat positive outcomes (Martin and Grubb 2001).

Youth Measures

The results for ALMPs aimed at bringing youth into the labour market are not very impressive, and programs targeted at disadvantaged youth are particularly ineffective. The one exception is the U.S. Job Corps, which is an intense, high-cost program; even then, it had to rely on savings from reduced crime among the target group to yield a positive net result (Martin and Grubb 2001).

Grubb (1999) does glean a number of principles for effective programs aimed at disadvantaged youth. They must have:

- close links to the local labour market;
- academic education integrated with on-the-job training; and
- a range of support services tailored to the youth and their families.

With respect to youth programs in general, the most significant results from the U.S. and Canadian evaluations suggest the following:

- Even the successful programs have modest impacts.

- Labour market success is strongly linked to educational success.
- The biggest returns come from early and sustained interventions. That is, it is far more effective to prevent youth from dropping out of school and/or the job market than it is to bring them back in (HRDC 1997).

Private Sector Subsidies

These are subsidies such as wage supplements or fixed payments to private firms designed to introduce unemployed people – usually young persons – into the world of work. Most of these schemes have small or negative net employment gains. One type of wage subsidy that appears to be successful for a very small minority of participants is small business loans, which have had positive results for educated men between the ages of 30 and 40 (Martin and Grubb 2001).

Public Sector Job Creation

This is one of the oldest forms of ALMP, long tried but, unfortunately, not very successful. Studies from virtually every country point to the conclusion that public sector job creation does not help unemployed people get permanent jobs in the open market. Perhaps this is why OECD countries are finally moving away from this sort of ALMP, with average spending dropping from 23% of all active measures in 1985 to 17.4% in 1993 (Martin and Grubb 2001).

General Conclusions

Active policies can be of some benefit, especially if they use the following principles:

- They should rely as much as possible on job search assistance programs.
- Public training programs must be small, local, and tightly targeted on both participants and employers.
- Interventions for disadvantaged youth must be early and sustained.
- Subsidies to private employment should be local, targeted, short-term, and closely monitored.
- Job creation schemes should be avoided as much as possible. Those that are used should be short and targeted at the most disadvantaged workers.

4.3 Labour Mobility for Transiting Workers

Labour mobility is inevitable in a free market economy. Competition and technological advances kill off firms and even entire industries, while giving birth to new ones. Because of this, labour mobility – between occupations, industries, and regions – is always needed. Labour moves from declining industries to growing industries, although this movement is influenced by many factors. These include the demographic composition of the labour force, the role of unions, the nature of corporate ownership, international trade flows, and government welfare, unemployment insurance, and regional development programs.

Researchers have found some parallels between workers who change occupations and workers who relocate. In both cases,

- younger workers move far more frequently than older workers (Rogers 1986; Markey and Parks 1989);
- workers with high socioeconomic status and education levels move far more frequently than those further down the ladder (Ellis et al 1993); and
- women overall hold jobs that are lower in skill and compensation than men, so they are less likely than males to change jobs or locations (Felmlee 1982), although women who are the primary breadwinners in their household are just as likely to relocate as men (Markham et al 1983).

The factors affecting geographic mobility have been widely studied in Canada, focusing on both movement between cities (Shaw 1985) and between provinces (Day 1992). Less attention has been paid to inter-industry mobility, although that is changing (Picot and Baldwin 1990). The tendency has been to treat both issues separately, but some recent work considers geographic and inter-industry mobility as alternatives that are simultaneously evaluated by workers (Macias 2006; Lin and Christiadi 2002; Osberg et al 2004).

Osberg et al (2004) found that the key factor in inter-industry mobility is the availability of jobs and employment hours, with wage differences being statistically insignificant. In contrast, wage differences are a significant (though small) factor in inter-regional migration. This helps make sense of the fact that far more people change industries than change regions, since the costs and risks of moving between local industries are much lower than those of changing regions.

4.4 Displaced Workers, Employment, and Earnings

Since 1984, the U.S. Bureau of Labor Statistics and the Bureau of the Census have jointly administered the Displaced Workers Survey (DWS), as a biannual supplement to the Current Population Survey (CPS). The DWS is the most comprehensive source of information on the nature of job loss in the United States, which has by far the most flexible and fluid job market in the developed world (Farber 2005; Fallick 1996). “Displaced workers” do not in this case mean people fired with cause or who lose their jobs due to the misfortunes of a specific firm. Rather, they are workers who, after at least three years on the job, lose their job due to decreases in production, plant closures, shift cancellations, or plant relocations caused by wider economic changes related to international trade, technology, or government policy (Hamermesh 1989).

Displacement is a serious economic and social issue. According to the DWS, in each five-year period between 1984 and 1992, between 4.1 and 5.6 million workers were displaced (Fallick 1996). Displacement increased between 2001 and 2003 in the United States, when roughly 11 million workers were displaced (Farber 2005). Not surprisingly, displaced workers are clustered in declining industries and industries suffering through a trough in the business cycle. Displaced workers tend to be less educated than average, with the rate of displacement of those with only a high school education being double that of those with a college diploma. Earlier research indicated that older workers have less chance of being displaced than younger workers, but recent studies have shown that the key factor is tenure, not age (Fallick 1996).

Re-employment rates for displaced workers depend heavily on cyclical factors, but even in good times the rates are not very high. Post-displacement employment also varies according to a number of other factors, the most important of which are gender, education, and age:

- Women and men have similar cyclical patterns of displacement, but women have both lower post-displacement employment and unemployment rates than men. This is because a much higher proportion of women drop out of the labour force altogether after displacement.
- Higher education does not protect workers from displacement, but educated job losers have higher employment rates after being displaced and are more likely to find full-time employment (Farber 2005).
- Prime-age job losers (aged 25 to 54) have much higher levels of post-displacement employment than older job losers (aged 55 to 64). They are also much less likely to drop out of the workforce altogether (Farber 2005).
- Older workers have lower displacement rates than younger workers. The usual explanation for this is that older workers have acquired more firm-specific skills and knowledge (Becker 1975), and firms are reluctant to lay off older workers and train new ones because it would involve losing their investment and hurting productivity (Munnell et al 2006).
- At the same time, older job losers tend to spend a longer period without work. Older workers become attached to a sector and are more likely to limit their job search. They are also more likely to “sit out” a bad spell and wait for the industry to recover, rather than looking for new work (Fallick 1993).

All workers suffer substantial losses in earnings after being displaced. Overall, full-time job losers who find subsequent full-time employment earn about 13% less in their new jobs, not to mention any income lost during the period of unemployment (Farber 2005).

Unlike joblessness, whose effects fade after four years, these declines in earnings tend to be permanent (Fallick 1996). Again, the standard explanation for this is the loss of industry- or firm-specific experience and knowledge – the specific skills that justified higher wages in the old job are not valued by the new employers. This is confirmed by research indicating that re-employed workers who change industries suffer earnings losses that are 16% to 20% more than those for workers who are re-employed in the same industry (Jacobson et al 1993).

4.5 Labour Mobility for Displaced Workers

Inter-industry mobility among displaced workers is quite high. Some studies show that as many as three-quarters of displaced workers eventually find work outside their previous industry (Devens 1986). This, of course, is largely due to a lack of job prospects in the original industry rather than a general transferability of skills across the labour market (Fallick 1993). Indeed, tenure and earnings at the old job have a negative effect on mobility across industries: the longer you were at your old job and the more you earned, the less likely you are to find work outside your old industry.

Most studies on displacement and declining industries examine the behaviour of firms – i.e., the decisions of employers to lay workers off. The behaviour of workers within a declining industry and the factors influencing their decision to either remain or leave is a crucial but under-studied issue.

One study of the U.S. textile and apparel industry suggests that, as the possibility of being displaced increases, the first to leave are those who are most mobile and have the best offers with respect to wages and security (Schumacher and Schippen 1999).

The fact that the workers with the best opportunities elsewhere are most likely to leave is hardly a surprise, but the important point is that the effect is strongest for highly skilled workers. That is, workers with higher skills are more sensitive to gaps between what they are earning and what they could be earning somewhere else. For a declining industry, it cannot be welcome news to learn that its most skilled workers are the ones most likely to be coaxed elsewhere early on in the decline.

All else remaining equal, one would expect declining industries to suffer from an age imbalance, as the existing workforce ages and is not replaced by younger workers. However, this is not supported by the evidence. In Canada, for example, the declining forestry industry has an age profile that is virtually the same as that of the economy as a whole. Growing sectors, especially services, often require highly skilled (and hence older) workers, while declining sectors, especially industry, often need unskilled labour, which is most usefully performed by younger men. Declining industries also have an incentive to shed expensive older workers (through lay-offs or early retirement) and replace them with younger staff. The low cost of shedding workers enhances efficiency, leading to higher overall output. But the costs of this are borne disproportionately by the workers themselves, who are frequently thrown out of work with only the flimsiest of safety nets beneath them (Bernanke 2007).

The advantage of this is that employers in declining sectors are offloading the problem onto the public, leaving society to deal with the issue of older worker unemployment (OECD 1989). The solution favoured by most economists and public officials is for the government to cushion the impact of displacement through a number of policy instruments. These include the usual passive and active labour market policies, as well as more controversial ideas such as relocation aid to encourage workers to move to where the jobs are (Farber 2005).

Older employees are a particularly difficult class of displaced workers. Between 1984 and 2004, older workers made up an increasingly large proportion of displaced workers. A recent study concluded, however, that this increase reflected the growing proportion of older workers in the labour force as a whole, not an increase in the displacement rate for older workers. If anything, the employment prospects for older workers have improved slightly in recent years, probably thanks to a shift from defined benefit pension plans (i.e., years of service/age) to defined contribution benefits (i.e., a percentage of earnings) in pension plans (Munnell et al 2006; Farber 2005).

4.6 Labour Market Transition - Conclusions

On the basis of this labour market literature review, a number of conclusions can be drawn about the challenges and prospects of attracting workers from declining sectors into the mining industry.

To begin with, recruiting individuals from declining industries should not be viewed as a long-term labour solution for the mining industry. Declining industries are likely to provide only a small pool of labour. Recruitment initiatives such as mobility subsidies or flexible shift options (e.g., week on, week off) are likely necessary. This is because the factors affecting the re-employment of displaced workers

or the transfer of workers from one sector to another are quite diverse, with the transferability of skills playing only a small role. For most workers, the question of skills transfer is of secondary importance compared to considerations such as family life, home ownership, quality of life, attachment to a sector or firm, and so on.

Also, many of the younger, more mobile workers in declining industries are likely to have left closer to the beginning of the decline. These workers often have less capital invested in either the community or firm. As a result, a significant number of the remaining employees are likely to be mature workers.

Mature workers from declining industries present a series of particular recruitment challenges. These individuals have a series of options open to them, including retirement and part-time work. They are often only looking for employment for a short period of time (average five to seven years). When they do change industries, they suffer a substantial – and permanent – decrease in income. This reflects the fact that they have built up a great deal of firm- or sector-specific human capital and also how relatively unproductive they will be at first in their new jobs. Mature workers also often require additional training. It would therefore be imperative to engage local educational institutions to ensure a smooth transition for workers.

It is also important to note that female displaced workers, similar to mature workers, could present a recruitment challenge for the mining industry. Female workers in declining industries are often not the primary breadwinner and may not face the same pressure to find a new job immediately. Historically, female workers from declining industries either temporarily exit the labour market altogether or seek part-time employment options.

Moving displaced workers into the mining industry is less likely to be successful on a large scale across entire regions or industrial sectors. Successful transition programs should be small, local, and temporary, with a tightly focused connection between the individual, the employer, and the program.

5. Mining Sector Challenges: Key Informant Interviews

5.1 Background and methodology

The expansion of the Canadian economy over the past decade has placed tremendous pressure on employers. The combination of job growth and an aging workforce has driven up demand for skilled workers in virtually every sector of the economy. The mining sector is not immune to these pressures, and it is threatened by a potential shortfall of skilled workers over the next decade. The most recent numbers show the employment gap at somewhere between 47,000 and 75,000 workers in the next decade, depending on the actual rate of growth in the sector (*Prospecting the Future* 2005).

As a follow-up to the *Prospecting the Future* report, MiHR expressed a desire to examine previous industry attempts to engage individuals in declining industries and document the successes and challenges of these efforts. The goal is to identify another pool of labour that could potentially fill both immediate and long-term mining sector job vacancies.

As part of this process, 60 key informants from the mining sector were interviewed regarding the state of the industry. The following specific objectives guided the interviews:

- to better understand the mining industry's employment needs in the next five years;
- to document specific occupations in high demand in the mining industry;
- to investigate current and future skills upgrading and training opportunities in the mining industry; and
- to understand the barriers to recruiting and retaining traditionally under-represented groups and individuals from declining industries.

The target population for this study was a cross-section of people with connections to the mining industry. There were four specific groups: employers, provincial and national associations, labour representatives, and training deliverers.

The key informant interview guides used for the study were designed by the contractor with the input and final approval of MiHR. The interviews began with the introduction of the researcher, a brief description of the interview process, and a short outline of the project's overall scope.

The following topics were covered during the course of the interview:

- short-term projections for the mining industry;
- current skills upgrading and training opportunities in the mining industry;
- the impact of changing technology and automation on the mining workforce;
- suggestions for new training or development programs for mining employees;
- perceptions of barriers to recruitment and retention of traditionally under-represented groups in the mining industry;
- past experience with labour market transition attempts;
- industry and training partnership agreements;
- assessment of labour market transition attempt successes and drawbacks;
- short and intermediate occupational pressures; and
- innovative ways for the mining industry to recruit or retain workers.

5.2 Summary of Key Informant Interview Findings

The remainder of this chapter deals with research findings from the four sets of key informant telephone interviews conducted in March and April 2007. It begins with a summary of similar research findings from three sets of key informants (i.e., association, industry, and labour representatives). The second section explores observations which were specific to each key informant group, especially training representatives, who were asked a somewhat different set of questions. The final section focuses on respondents' experiences with labour market transition efforts.

5.2.1 Similar Research Observations from all key informant groups

Short and Intermediate Outlook for the Industry

Most key informants indicated that the mining industry is enjoying a period of tremendous growth. The growth is unprecedented, with strong resource prices fuelled by demand from abroad – especially China and India. This growth is creating an increase in new property announcements and projects, pending jurisdictional, environmental, or regulatory approval. Respondents mentioned a number of new mining projects in various parts of the country which are currently in the environmental assessment phase and which will lead to further expansion when they become fully functional. The growth was seen as a welcome change after the slowdown of previous decades.

The growth in the mining industry is, however, presenting a series of labour challenges for human resource departments. Respondents noted that there is a shortage of trained miners, and many were concerned about where new employees would come from. The industry growth is also creating heightened employee expectations, and some firms are experiencing difficulties managing these expectations. Attracting tradespeople and middle management is essential, which means there is increased pressure to remain competitive in terms of wages and benefits.

The majority of respondents indicated that current employees will earn increased wages and benefits, but it is also likely that they will be expected to work additional hours (overtime) and eventually may be asked to perform additional tasks. One provincial association representative summed up the situation:

“Workers are busy, stressed, work more than 40 hours a week, do not have a lot of rest – and also this means that costs of affordable living go up, and there are shortages of amenities. On the plus side, though, there are great opportunities and great pay.”

Key informants indicated that the mining industry will need to continue to work hard to promote itself, with a particular focus on youth. Companies, and the industry as a whole, need to be connecting to students throughout high school.

There was a feeling that the mining industry has turned a corner and is no longer a “pickaxe” profession. The new image needs to be conveyed to society. This challenge is pronounced, since the mining industry is competing for talent with many sectors – e.g., construction and oil and gas.

Respondents generally felt that the mining industry needs to market itself as a well-paying and safe occupation. Some indicated that the quality of life factor should be highlighted when selling the industry, since the majority of mining occurs in smaller centres – meaning less traffic, a lower cost of living, greater purchasing power and easier access to outdoor recreational activities.

Better compensation was also mentioned as a positive element. The majority of respondents marvelled at how compensation and benefit packages have evolved since 2000. Many things

which were previously viewed as luxuries – on-site childcare, flexible workplace requirements, and increased employee recreation opportunities – are now commonplace and expected by potential employees.

Finally, there was a general belief that, since the environment is such a major focus of global policy and garnering massive public attention, it would be ideal to stress the environmentally responsible nature of the Canadian mining industry. It was also noted that Canadian safety standards are among the best in the world and that this point needs to be shared.

Skill Gaps and Training Opportunities

Most respondents believe that current mining industry employees will need additional training opportunities in the future to keep pace with advances in technology and equipment automation.

Key informants were asked to identify which skills would require the most emphasis in the next five years. The answers were quite varied, but the following were the most common:

- technology skills
- technical skills
- numeracy skills
- literacy skills

There was a general sense among respondents that technological advances in the mining industry may reduce employment levels, or cause employees to perform multiple tasks, but will not eliminate the need for workers. In fact, many felt that changing technology may create a different set of employment needs.

Respondents generally agreed that increasing skill sets and core competencies is a joint responsibility. Industry could play a role by offering increased training opportunities, but many other players need to be involved. The majority of respondent companies offer training to employees. Training may be in-house or off-site. In-house training is often focused on the development of a particular skill (e.g., mapping) or health and safety courses. Off-site training is usually longer term (i.e., months, not weeks) and delivered at community colleges, technical institutes, or universities.

Most respondents indicated that there is a gap between industry requirements and current post-secondary training programs. This sentiment is not new, and it is the basis of an ongoing struggle between trainers and industry.

Some respondents indicated there is a pressing need to have programming and training conducted in remote regions and on-site, as training in the major provincial metropolitan area is too distant. (Note: jurisdictions such as Saskatchewan, through the Saskatchewan Institute of Applied Science and Technology, and the Yukon have already implemented mobile training units.)

Future Employment Outlook for the Mining Industry

Key informants spent a significant amount of time examining potential strategies to reduce the mining industry labour shortage. As well, a series of questions centred on traditionally under-represented groups (i.e., Aboriginals, women, immigrants, and older workers) were pre-identified and respondents were asked to describe past experiences recruiting and retaining workers from these groups.

There was a belief that mining sector's growth is spilling over to employees in the form of better wages and benefits, as well as increased overtime opportunities. There was a caveat regarding the latter point: the increased shift opportunities result in more money but also mean that the balance of work and family is harder to maintain.

Key informants were generally concerned about the skilled trade shortage in the industry. Recruiting and retaining journeypersons and heavy equipment operators was identified as a particular challenge. Existing journeypersons and equipment operators have almost limitless opportunities, since oil and gas companies are also hiring, and respondents believed that they are being offered large compensation packages.

Traditionally Under-Represented Groups

Most respondents had some level of familiarity with recruiting and retaining workers from traditionally under-represented groups. There was a feeling that the industry has to continue reaching out to under-represented groups, since many of these individuals are not coming to the industry unprompted. Recruitment of these individuals was considered by some to be an imperative, not a luxury, because the traditional mining workforce can no longer be relied on to supply all the needed labour.

Aboriginal Workers

Many respondents identified a series of recruitment and retention challenges related to Aboriginal workers, which can be broken down into three categories:

- education
- community
- culture

Respondents indicated that the education gap is more pronounced for Aboriginal workers than it is for non-Aboriginal employees. In particular, the lack of high school completion is preventing entry into the mining industry for many Aboriginal individuals. As an increasing number of companies require high school completion for the majority of skilled labour positions, this issue will be critical. The silver lining, however, was the universal belief that if companies were able to provide increased training opportunities (e.g., General Educational Development), results would follow.

Aboriginal individuals (and women) often view mining as a white, male-dominated work environment. This image is a problem for recruiting. Also, Aboriginal communities need to have their history and culture respected. Companies need their input on safety and environment.

Most key informants operating in northern regions reported increasing levels of success with enhancing training opportunities – particularly in the trades – for Aboriginal individuals. A couple of respondents pointed to the presence of Impact Benefit Agreements (IBA) and the mainly positive outcomes these are having for all involved. Respondents believed that consultations with bands on future development and employment needs are paying off.

Female Workers

Respondents indicated that the number of women in the industry is increasing and that they often pay closer attention to health and safety measures when they enter the workforce. The main challenges key informants identified were:

- **Repositioning the industry.** Individuals felt that this needed to begin with the encouragement of more female students in trades and engineering. The industry needs to assist secondary schools in positioning mining-related occupations as real career choices for young females.
- **Family commitments.** Increased childcare services were also identified as a way to increase females in the mining labour force for both on-site (i.e., camps) and surface operations.

Immigrant Workers

Respondents indicated that immigrants presented a series of recruitment challenges for domestic operations. The three most commonly cited challenges were:

- **Bureaucratic red tape.** Individuals reported being frustrated in past attempts to secure employment and identity papers.
- **Ability to work in English.** The lack of operational English skills was seen as a challenge, since no respondent wanted to compromise safety due to language problems.
- **Foreign credential recognition.** Respondents indicated that there are often problems when trying to equate foreign credentials with domestic credentials.

Mature Workers

Retention of older workers was deemed to be a pressing issue for the industry. Many respondents indicated that they were uncertain whether better compensation, benefits, or incentives could keep the necessary amount of aging workers in the workforce. One respondent indicated that older workers need to be called on to share valuable information with their younger colleagues:

“Older workers need their workloads clarified, since they can not be expected to take on as much as some of the younger workers. Older workers could, however, play an important role as mentors to younger workers and pass on a tremendous amount of industry and operational knowledge.”

Occupations in Demand

All 30 industry representatives provided feedback on the difficulty in recruiting new employees. The majority of industry respondents (83%) indicated that they were experiencing difficulty recruiting employees for various positions.

All industry and association respondents were asked a series of questions meant to identify the exact occupations most in demand for each company. A wide array of occupations was mentioned. Most of the differences could be interpreted as regional (western Canada vs. Ontario) or operational (open pit vs. underground).

The occupations identified fall into the following six broad groups:¹¹

- **Engineers** (61% of 41 respondents). The most commonly identified were: civil, electrical, structural, mechanical, and mining engineers.
- **Construction trades** (51%). The most commonly identified were: millwrights, electricians, and welders.
- **Scientists** (51%). The most commonly identified were: geologists and metallurgists.
- **Technicians** (36%). The most commonly identified were: heavy machine operators, instrument mechanics, and mine and metal technicians.
- **Managers and supervisors** (21%). The most commonly identified was manager.
- **General miners** (15%). This category includes surface and underground miners.

Respondents identified a series of employment challenges as the industry continues to expand. The three main challenges are documented below and are accompanied with a series of select respondent issued solutions:

- **Attracting employees.** This includes partnerships with all levels of education – high schools, community colleges, and universities – to promote the industry as a safe and lucrative career option. This activity should also include partnerships with Aboriginal communities.
- **Recruiting employees.** This includes sufficient compensation programs, as well as comprehensive relocation packages covering all aspects of relocation, not simply the traditional moving costs. It also includes extensive career development and succession planning for staff. Individuals need to see that advancement is possible in the company or they will not come on board.
- **Retention of existing employees.** This is necessary to stay ahead of other industries. It includes making sure that food and accommodations are first rate. It means having good salaries and benefits, such as increased transportation opportunities for workers and families, lifestyle improvement funds (e.g., gym memberships), and computer assistance programs (e.g., interest-free loans to purchase computers, enhanced training opportunities).

¹¹ The numbers are not intended to total 100%, since respondents could select multiple occupations

The majority of respondents indicated that they are employing outside resources (e.g., domestic and international newspaper advertisements and headhunters) in the global quest for talent. Respondents discussed the use of multiple search firms and the practice of searching in other mining communities.

The three most commonly mentioned recruitment approaches were:

- **Search firms.** These include domestic or international search firm whose services are engaged to fill multiple positions inside a given company.
- **Newspaper advertisements.** This includes local, domestic, and international advertising.
- **Post-secondary education partnerships.** Industry representatives mentioned a series of recruitment partnerships with colleges and universities around the country.

Employers are also becoming quite creative in the pursuit of talent. Many respondents reported the use of employment bundling – i.e., finding work for a partner or spouse. This measure was deemed most effective when partnered with health and school boards. Also, more companies are using employee referral programs, whereby employees get cash for referring an eventual recruit.

Key informants also indicated that they have become more active with respect to training. One respondent indicated that companies are utilizing government resources to enhance training opportunities for Northern residents.

The majority of respondents sounded two notes of caution for the mining industry. The first is the increased reliance on overtime for current workers and contractors to fill vacancies. Employees working overtime (longer hours) and the short-term use of consultants or contractors were not considered to be effective long-term strategies.

5.2.2 Unique Research Observations

While the previous section focused on responses that were common throughout the different groups of respondents, this section examines findings which were specific to each group. Association and industry representatives have been grouped together, since associations often – as one would expect – reinforce trends among industry representatives.

Labour Representatives

Changing educational demands and technology advancements are putting some older workers in a difficult situation. There is a belief that most employers are demanding at least high school completion for the majority of positions, and many current heavy machine operators have not completed Grade 10. Even though many companies offer GED training, respondents were concerned that older workers may feel awkward about asking for such training.

There was also a concern in this group that new employees may not get the proper mentoring needed to succeed. A couple of respondents indicated that it takes four to five years to be a good miner, but it is hard to wait for employee development when there is such a shortfall of workers.

Association and Industry Representatives

Mining industry training needs to be integrated with both high schools and post-secondary institutions. Respondents identified three main desired changes in training practices which would help strengthen the industry:

- Increased training opportunities (44% of 41 respondents). More spaces need to be created at colleges and universities for mining-related programs, particularly in western Canada, Ontario, and the North.
- Better co-ordination with high schools (9%). High schools could assist in increasing awareness about the benefits and opportunities in the mining industry.
- More co-op opportunities at post-secondary institutions (9%). This type of program provides college and university students with invaluable experience to augment their classroom learning.

Training Institution Representatives

Trainers were asked a series of different questions compared to the other three key informant groups. The two distinct lines of inquiry centred on mining-related training programs and labour market transition programs.

Trainers' institutions offer a wide array of mining-related subjects. The majority offered some combination of trades training and many different technical programs – mostly resource-, environmental science-, or engineering-based. These programs are continually being updated to meet the needs of students and industry. The majority of respondents indicated that they had updated some portion of their training in the past 12 to 24 months, and others believed that further changes were imminent.

Most respondents indicated that they had some form of partnership with industry and, as a result, offered programs that were grounded, practical, and in sync with industry needs. The partnership often sees industry involved on various institutional committees, providing input into the curriculum, guidance to the institution, and frequently donating equipment.

A number of key informants indicated a new, flexible way to deliver training. Some institutions – e.g., Saskatchewan Institute of Applied Science and Technology – are now offering an increasing number of training opportunities on-site. Interested individuals can pursue different types of training, mainly theoretical, for short periods of time. This option is becoming popular in the North, particularly for individuals pursuing apprenticeship programs.

Most respondents indicated that mining-related programs at institutions are experiencing increased, diversified demand. They said that there are more young students, most of whom are coming directly from secondary school, and female students pursuing mining related courses. It was noted that recent secondary school graduates are being lured to the trades by the prospect of making good money.

The majority of respondents identified two challenges hindering the automatic expansion of course offerings. The first issue raised was the lack of available instructors, and the second was post-secondary institutions' inability to respond in a timely manner to rapid changes in the industry. One trainer summed up the situation:

“I’m thinking we have the capacity, but there is too much red tape. It takes a long time to take in additional students – last year we had 60 and shifted upwards to 75. This growth took a long time to get approval, as taking in another 15 people needs a bit of classroom support, as well as approval [i.e., acceptance and working to meet administrative needs by administrative staff].”

5.2.3 Experience with Labour Market Transition Programs

Respondents were asked a series of questions regarding the feasibility of recruiting employees from declining industries and were probed on previous experiences or existing programs. Respondents identified a series of occupations in decline which could provide a potential pool of labour for the mining industry. The three most often mentioned were:

- **Forestry** (94% of respondents). There are some similar occupations in forestry and mining. In particular, respondents indicated that heavy machine operators could easily change industries with a little training and some health and safety refresher courses.
- **Manufacturing** (24%). It was believed that assembly workers could possibly transition to the mining industry (notably to drilling, loading, and blasting positions), since they are not afraid of tough, dirty work and are also not hesitant to work in difficult environments. The most commonly cited manufacturing example was auto manufacturing.
- **Farming** (20%). Farmers are independent, possess a strong work ethic, and are often very skilled with heavy equipment. Moreover, like miners, farmers are not afraid of tough, dirty work and are not hesitant to work in difficult environments. (Note: This occupation was identified only by informants in western Canada.)

Respondents' previous experiences with labour market transition efforts were mixed. Of the 13 industry representatives who had attempted labour market transitions, 11 (85%) reported some form of success.

Recruitment efforts most often focused on trades and professions. Some respondents reported tremendous success and others had been disappointed. In all cases, the strategy was more or less the same – dispatch human resource representatives and other technical workers to recruit in communities where industries are in decline.

Successful attempts to recruit from declining industries shared many of the same characteristics:

- **Local support.** Support was secured from the community (e.g., working with elected officials) and organizations (e.g., labour).
- **No permanent relocation required.** Most successful cases happened within a limited area – around 200 kilometres. Individuals could remain in their home communities and commute

to new employment. The ability to return to the home community, either at the end of a single shift or a series of shifts, is an important factor.

- **Competitive compensation and benefits.** Respondents indicated that it was important to offer good salary and benefits to potential workers, since many had additional options and would not remain on the job market for long.
- **Western Canadian economic strength.** The Alberta, British Columbia, and Saskatchewan economic expansions are providing individuals with multiple opportunities. If one opportunity is eliminated, another appears relatively nearby. Many of these opportunities do not require moving to remote areas, and many companies operated fly-in camps.

The two respondents who had not had success with recruiting from declining industries identified several common problem areas:

- **Small and mid-size operations.** There were limits to how much compensation and benefits could be offered to potential employees. Companies lost out to larger firms with deeper pockets.
- **Geographic location.** There is still a general reluctance to move north for employment. This is particularly pronounced in Ontario.
- **Absence of fly-in camps.** The ability to fly in and out of the work site for a set time can help workers maintain the same mailing address. Companies without this function reported a recruiting disadvantage.
- **Lack of cultural opportunities.** Smaller communities do not offer the diversity of cultural offerings to potential employees and their families. As a result, workers who do not physically have to be at the mine generally opt for a more urban setting to conduct work.

The majority of respondents who reported failures in broad recruitment efforts indicated that they will not completely abandon the exercise in future, but rather scale activities back. Instead of sending representatives, they will focus on advertising in print and radio.

It is important to note that a significant portion of the occupations identified by all respondents were formerly operated under collective agreements. Accordingly, labour key informants indicated that the labour movement has a role to play in assisting with the transitioning of employees. This can be done through union-operated Action Centres or with the assistance of Just Transition Programs.

Occupational Transition and Training Programs Designed to Facilitate Transition

Training key informants indicated that individuals in declining industries could transfer into the mining industry relatively quickly and with minimal training or skill enhancement. Skilled trades people would likely require a short orientation (i.e., weeks, not months) handled by the company rather than a college. All potential workers would need intensive health, safety, and environmental sustainability training. There was also general recognition of the fact that working underground may not be for everyone and that potential workers would need proper exposure to figure this out.

5.3 Industry Key Informant Interviews - Conclusion

On the whole, representatives of the mining industry are optimistic about the industry's future. The current growth and associated labour demand is expected to continue for the foreseeable future. Having said that, it was widely recognized that the industry will need to make some adjustments in order to adapt to the changing labour landscape.

It was generally felt that additional skills training will be needed to help existing workers adjust to technological changes in the industry. While technological and technical skills are likely to be most in demand, soft skills such as leadership (for those on the managerial track), literacy, and numeracy will also be important. Industry and trainers will need to partner closely to ensure these skills needs are met. The value of older workers mentoring younger workers and passing on valuable knowledge was also emphasized.

The public image of the industry does not correspond to the present-day reality of the job and working conditions. Emphasizing the appeal of the mining industry – good pay, good long-term prospects, safety, much-improved benefits packages, etc. – and forming partnerships with high schools, colleges, and private trainers is important in attracting new workers, including women, youth, immigrants, and Aboriginal workers. Each of these groups offers somewhat different challenges in terms of recruiting, so a one-size-fits-all strategy may not be the most effective approach.

Workers from declining industries, especially farming, forestry, and manufacturing, represent a viable source of new labour for the mining industry, and many industry representatives have had some success in recruiting from these areas. Trainers feel that some of these workers can be re-trained for the mining industry in a fairly short period of time.

6. Declining Industry Focus Groups

6.1 Background and methodology

Five focus groups were carried out for the project. The groups took place in Thunder Bay, Ontario (two groups on April 25), Prince Albert, Saskatchewan (two groups on April 30), and Mississauga, Ontario (a single group on May 3).

Focus group participants were recruited with the assistance of the following organizations:

- the Northern Superior Training Board in Thunder Bay;
- the Communications, Energy and Paperworkers Union Local 1220 in Prince Albert; and
- the United Steelworkers Workers Union Joint Action Centre (Peel Halton) for Mississauga.

At the time the research was conducted, all participants were in a period of employment transition. They had been laid off and had either not found new employment or had found only temporary employment.

The focus group guides used for the study were designed by the contractor with the input and final approval of MiHR. Each focus group began with a brief description of the process and a short outline of the project's overall scope.

The following topics were covered during each focus group:

- formal education and training of participants;
- current skills and how those skills are employed;
- future training preferences;
- past involvement in labour market transition attempts;
- suggestions for relocation incentives;
- impressions of the mining industry;
- employment prospects in the mining industry; and
- individual training preferences with regard to transition to the mining industry.

The following sections provide a summary of the main messages heard from the 52 focus group participants. The evidence is divided into three sections:

- education, training, and skills backgrounds;
- employment options; and
- mining industry recognition and employment outlook.

6.2 Summary of Focus Group Findings

6.2.1 Participant Backgrounds

The majority of the participants in each session had been laid off during the previous year. They were drawn from two industries: forestry and manufacturing. Some of the participants had found other short-term employment and two individuals (both of whom were tradespeople) had secured employment in the mining industry. In all five focus groups, males significantly outnumbered females, although there was at least one female present in every session.

In Thunder Bay and Prince Albert, the majority of the participants were residents of the community or neighbouring communities. These individuals were often second- or even third-generation residents of the area. In Mississauga, however, the majority of participants were relatively new Canadians. The vast majority of these individuals had come to Canada in the last 20 years in search of new employment opportunities.

6.2.2 Education, Training, and Skill Backgrounds

Education

The educational backgrounds of participants were varied. Some individuals had not completed high school, while others had done so. Those with post-secondary education credentials were a

minority – each group had only one or two individuals who had participated in some form of post-secondary education (i.e., college, trades training, or university).

Regardless of their level of educational attainment, participants expressed some frustration with past educational opportunities and the credentials they had received. Many remarked that they had lost educational opportunities due to the appeal of earning a wage and a lack of time for studying. Other individuals forwent post-secondary education because they felt that employment and life experience would be interchangeable with education.

In the Thunder Bay groups, the post-secondary education background of participants was largely a mixture of college courses in non-resource-based disciplines (e.g., hotel management). There were, however, six individuals who had either completed or were enrolled in the common core program at the Northern Centre for Advanced Technology (NORCAT) with the intention of entering the mining industry. In Prince Albert, the most common post-secondary education background was trades training. There were a variety of journeypersons with carpentry, welding, pipe fitting, and electrical backgrounds. The majority of individuals with trades training were currently employed in other fields – including two in the mining industry. Finally, in Mississauga, the post-secondary education background largely consisted of engineering technology (e.g., electrical or mechanical engineering technology diplomas).

The educational background of participants was correlated with age. Older participants were much more likely to indicate that they had not completed high school than were their younger counterparts. Conversely, younger participants were more likely to have pursued some level of post-secondary education.

The majority of the participants over the age of 45 felt that they were in a catch-22 situation. They had entered the industry or labour market 25 or 30 years ago when salaries were attractive, educational requirements were low, and long-term employment prospects were positive. Participants never thought that they would leave their companies, let alone be looking for work outside their original industry.

Training

Individuals had participated in a wide range of in-house, or employer led training. These training experiences can be sorted into three groups:

- ***Safety.*** This includes CPR, WHMIS, and First Aid.
- ***Operational.*** This includes CMM (Computerized Measuring Machines), fork lift operations, heavy machine operations and transportation of explosive and dangerous goods, watershed development, environmental testing, ISO training, nuclear density gauge, and laboratory procedures.
- ***General.*** The types of training under this heading include: Workplace diversity, leadership and teamwork training.

Safety training was by far the most common type of training completed by participants. Every individual had participated in multiple forms of safety training. In comparison, operational

training opportunities were often dependent on the type of job being performed and on the operational structure of the employer. General training was even more sporadic and often at the request of the employee.

Most of the training individuals had received was directly linked to their company and industry. The most common method of training delivery was in-house training. Very few individuals indicated that they had participated in off-site training opportunities.

Participants highlighted a series of challenges related to the training opportunities they had received. Individuals (and employers) often did not keep up-to-date training records. Training was frequently site specific – that is, shipping and receiving systems are often company specific and not universal; as a result the benefit of the training is limited to a particular site and often grandfathered (for older workers) within the company.

Training was often designed to help workers advance within the company rather than to provide a universally recognized benefit. Certificates and other forms of paper-based recognition were granted sporadically. Most individuals were surprised when they learned that their training was of little value outside the company or industry, and they were consequently frustrated with their training's lack of general applicability and recognition. One participant emphasized this feeling of frustration:

“I have taken every opportunity – for first aid, heavy equipment, forklifts, emergency first response team... But [I] never received tickets or certificates... I cannot prove that I have 10,000 hours [of experience] on heavy equipment.”

Older workers were clearly the most frustrated by these developments. Not only had these individuals often forgone education for employment opportunities, but, as indicated above, they also were grandfathered during the previous decade for any new training opportunities.

Skills

Participants identified a wide array of skills which they had developed since entering the labour market. Many of these skills are commonly found in the Government of Canada's Essential Skills database (e.g., working with others, problem solving, computing). The most frequently identified skills were, in alphabetical order:

- analytical skills
- computer skills
- critical task analysis
- leadership skills
- problem solving
- teamwork skills
- communication skills
- conflict resolution
- environmental recognition
- organizational skills
- safety awareness

Many participants struggled to identify soft skills, and individuals often confused occupations or professions with skills. One of the most important skills participants identified was the ability to work with others.

With regard to the applicability of their skills to other industries, many participants believed that there were similarities between the type of work done in their former industries and the work done in the mining industry. One individual, who had mining experience, summed up his thoughts as follows:

“I had a chance to work at a small mine and ... I have also toured some mines... Our skills as paper mill workers [are similar to those of miners]. Driving a truck in the yard [or] driving a truck underground – there is not a whole lot of difference. Operating washers in a mill or in a float cell in a mine – there is not a lot of difference. [It’s] a little different [in terms of] technology, but basically the same processes.”

It is important to note that the Communication, Energy and Paperworkers Union (CEP) and the United Steelworkers of America Action Centres have invested significant resources into cataloguing individual members’ skills and training. Union staff members conduct a series of exit interviews with every member and identify their education, training, and skills. In fact, the CEP office in Northwestern Ontario has recently developed a web-based tool called Skillfinder (<http://www.skillfinder.ca/>) which allows individuals who have lost their job to catalogue their skills, training, and education on a website and companies seeking new employees to search the website.

6.2.3 Training Preferences

Most participants indicated an interest in pursuing future training. They felt it would be a valuable resource and mentioned that they would engage in training if: (a) secure employment was waiting at the end; and (b) there was some form of assistance. On the latter point, participants noted that they did not just want grants, loans, and scholarships; in addition to financial aid, they would need to speak with human resource representatives and educational or government officials to find out where specific training leads, how long it lasts, and where it is offered.

Training currently being considered by participants is for the purpose of employment bridging. Mature individuals (i.e., 40 to 55 years old) in particular are looking for something that will take them through to the end of their working lives. It is worth noting that these participants indicated that they were a little reluctant to enter into long training programs. While not ready for retirement, they may only have five to seven more years of employment. They were thus concerned that training would not pay off or would not be available from a prospective employer. Finally, these individuals also indicated an aversion to testing, since many had not completed high school and found the idea of testing intimidating.

In terms of future training, the five most commonly identified areas of interest were:

- Computer / mechanical training
- Electrical – any field
- Field service technician training
- Heavy equipment operator training
- Industrial mechanic training

6.2.4 Employment Options

Most participants had, until being laid off, not given much thought to changing jobs or industries. Individuals indicated that they were comfortable in their occupations and industries and had invested significant capital in their present lifestyle (i.e., buying a house, raising a family, becoming involved in their community) and were not seeking change.

Accordingly, participants indicated that there were limits to how much personal change they were prepared to embrace when changing occupations or industries. Almost all participants would prefer to obtain secure employment in their home community. Others were willing to consider secure employment that would allow them to spend some time (i.e., at least a week) in their home community each month. Most were reluctant to relocate to a new community to find employment.

Various factors explained the reluctance to relocate: (a) the lack of definite employment; (b) the absence of a social network; and (c) financial reasons. The financial reasons were numerous. They often related to the difficulty of leaving a low-cost location where property was often owned outright to seek opportunities in a high-cost area with limited housing prospects. Many individuals expressed concern about “working for the bank” again – i.e., working to pay off mortgages, car loans, etc. They wanted to avoid a scenario where their earnings increased but their standard of living decreased.

Most older participants were reluctant to move to new communities because they wanted to be able to convert (or continue to convert) earned income into assets, and they felt it would not be possible if they undertook a complete relocation at this later stage of their life. One participant elaborated on the prospect of wholesale work and lifestyle change:

“Imagine working your whole life in one place. You spend your whole life working for one company [and] being a dedicated employee. Your kids go to school and go to college or university... Now, you have got yourself almost to the point where you can retire, your kids can come and visit because they are grown up. And you lose your job. The only place that you can find a job is in Alberta. So, you have to sell everything that you spent your entire life buying, building and fixing to go to Alberta, and get a job there, and pay all the money you make for rent. It is frustrating as hell.”

The majority of participants also indicated that they had additional personal responsibilities tied to their current place of residence. Many had dependants to take care of – either their

children or their parents (or those of their spouse or partner). Individuals were concerned about who would look after their family and their respective property.

6.2.5 Opinions on Mining Employment

Participants are considering employment in the mining industry because the work appeals to them and the ability to commute by plane is an advantage. Most indicated that they are willing to work almost anywhere for short periods of time (e.g., two weeks on, one week off), but there was considerable resistance to the idea of permanently relocating. Some stressed the importance of returning home every evening to continue meeting their domestic obligations.

Thunder Bay participants indicated a preference for Ontario worksites – as one would expect, the west (e.g., Alberta) was viewed as a last resort. They felt that there is good money to be made there but the cost of living is perceived to be too high, as evidenced by the following quote:

“We always say you make \$32 an hour [in Alberta], but it costs \$22 an hour to live there. Why wouldn’t you ... stay [in Ontario] and make \$10 an hour with a paid-off house? You are better off.”

Prince Albert participants indicated that they wanted to stay either in the area or in the province. Individuals were well aware of the various opportunities to commute from their home community and work for a set period of time. This option was seen as a compromise, but better than unemployment. There was reluctance to being physically uprooted.

The thought of switching jobs or even relocating was not difficult to accept for many of the Mississauga participants, since the majority had immigrated to Canada from somewhere else. Moving within Canada was therefore not seen as a tremendous barrier. All individuals expressed a single desire: securing work.

The prospect of employment in the mining industry appealed to most participants. Thunder Bay and Prince Albert participants all indicated that forestry opportunities were limited and the long-term prospects were not promising. Having already been let down by one natural resource industry, they also raised concerns about how is the long term viability of mining industry employment opportunities. They are leery of taking a job that may lead them back to the same position in a short period of time. A participant with past mining experience summed up the thoughts of multiple participants on the cyclical nature of resource industries:

“I got out of mining when there was a downturn. Potash was laying people off 50% of the time. Base metals were down. Different places were shutting down up north, and that is why people were leaving the industry. What are the prospects for mining [now]? [The] mining [industry] needs to ... let people know it is [a] long-term, sustainable opportunity, so that people don’t see a repeat of what they are going through now.”

6.2.6 Potential Employment Incentives

The majority of participants identified a series of employment incentives that would be helpful in recruiting displaced workers. The incentives can be broken down into two categories: financial and non-financial.

Financial incentives included:

- ***full compensation for all relocation expenses.***
- ***proper compensation for overtime.***

Non-financial incentives included the following:

- ***attention paid to camp living conditions.*** Individuals indicated that this is a temporary home for workers and it is important for them to feel comfortable there.
- ***training opportunities.*** Individuals felt that there needs to be a clearer articulation of the entry requirements and training needed to work in the industry. Employees are continually challenged and allowed to grow, while employers can see productivity gains. Participants thought that too many employers are reluctant to invest in training out of fear that workers will then leave the company for greener pastures.
- ***proper recognition of skills and past education and training.*** Individuals indicated that past experience tends to get overlooked.
- ***spousal assistance.*** If a company expects individuals to relocate, participants felt that it is imperative that assistance be provided to help their spouses or partners find employment too.
- ***clear career path.*** There is a need to know that there is room for advancement in the company and industry.

6.2.7 Mining Industry Recognition and Employment Outlook

Participants were asked to identify the first image or thought that came to mind when thinking of the mining industry. The reported images or thoughts can be separated into the following two categories:

- ***Worker-related:*** miners were typically described as multi-skilled individuals with a helmet, a miner lamp, and a shovel who do dangerous shift work who are well compensated for dangerous shift work.
- ***Work-related:*** many individuals perceived mining as an underground operation with heavy equipment. The work was thought to be dirty, dusty, and hard.

The majority of participants also indicated that many of their thoughts or images related to mining were shaped by the news, documentaries (e.g., a special on the rise of Elliot Lake was mentioned), and popular culture (e.g., the movie *Coal Miner's Daughter*).

A wide array of reasons for interest in the mining industry was given. The perception of mining as a steady, well-paying job that could provide a challenge and the ability to learn new skills was one of the dominant reasons. Older participants indicated that their interest in mining stemmed from the desire to find something that could act as a bridge to retirement.

Most participants expressed no hesitation about moving into an industry dominated by shift work. Almost all of them pointed out that they come from industries where shift work is normal – both daily (day or night) and weekly (two on, one off) shifts.

Thunder Bay and Prince Albert participants indicated that, following the closure of various forestry operations, there were many firms in town looking to recruit potential employees. These companies set up career fairs, but often the results were mixed. Some individuals were reported to have gotten jobs, but many had not. Participants indicated that companies were commonly offering low wages and benefits in the belief that any job was better than being unemployed. The majority of participants indicated that they preferred to wait and see if the operation was going to re-open rather than rush to accept a low offer. Some participants indicated that certain companies were not willing to hire anyone with ties to organized labour; individuals were told there was concern that someone may organize on the company's site. Also, many companies approached displaced workers with a request to permanently relocate for new employment. Finally, many of the recruitment efforts lacked organization and were not coordinated with local officials (e.g., union representatives, economic development agencies, local political officials).

All participants indicated that they were interested in exploring potential mining industry employment options. A large number of Thunder Bay and Prince Albert participants had already submitted multiple job applications (or resumes) to various mining companies throughout Canada. In stark contrast, not a single person at the Mississauga session had applied to a mining company prior to the focus group.

Most participants lacked information about training and employment opportunities in the mining industry. Individuals noted that it is important to ensure training can be applied throughout an industry. Companies thus need to ensure that mining-specific training is fully recognized.

The occupations that most interested participants were:

- crusher and conveyor
- engineer
- health and safety official
- heavy machine or equipment operator
- maintenance operator
- process operator
- surveyor
- underground or surface miner

There was some confusion regarding what mining-related training is and what it is good for. The most commonly mentioned mining-related training program was the common core program at NORCAT, but it was also the main “grey area” for participants. Individuals indicated that it appeared to be geared toward the Sudbury region, and there were reports of companies operating outside that area which did not recognize the training. These individuals felt that the common core course basically serves as proof of one’s interest in the mining industry.

Several Thunder Bay participants reported pursuing mining-related training to no avail. Some said this was a problem, since individuals get a single Employment Insurance training opportunity and are reluctant to waste it on uncertain or false prospects. One individual shared a story about a couple of former co-workers who tried to get a head start on their employment search by taking training right after their lay off:

“A couple [of] guys went down to Sudbury, spent the \$7,000 out of their own pockets, and [now they] are back in Thunder Bay again and they are doing nothing. They have put out a flood of resumes, and they never got one hit on anything. These are two guys who worked at the mill for a long time and have lots of experience. They got tired of waiting for Employment Insurance to kick in and [give them] the funding for them to [enter a training course]. They said ‘the hell with it’ and paid for the training out [of] their severance. This basically amounted to a waste of time for them.”

There were several stories pertaining to frustration with the lack of a clear, consistent message from the mining industry and trainers. One individual pursued training on the advice of human resource officials but was still having no luck finding a job:

“Prior to going to the common core course, I had to do a [lot] of research, because I had been applying [for mining work] and nothing was happening. So I did the research and found that you had to have common core [training] and show interest [in the mining industry]. I did [the course]. I have got [resumes] out there. I am talking to HR people all over the place ... And it is still experience, experience, and experience [that they are looking for] ... If [the mining industry] is that hard up for workers, how [come they are still waiting] for experienced workers?”

Participants had the impression that mining companies are not willing to hire individuals with no mining experience and then train them – even if these individuals have a wide array of skills and abilities.

7. Labour Market Transition Recommendations

7.1 Overview

Recruiting workers from a declining sector is not an easy task. The factors affecting the re-employment of displaced workers, or the transfer of workers from one sector to another, are quite diverse and should not be viewed in isolation. The transferability of skills plays an important role, but it is not the sole driver. For most workers, the question of skills transferability is but one consideration among many, such as family life, home ownership, quality of life, attachment to a sector or firm, and so on.

This report was designed in part to help understand the factors involved in labour transitions and, based on the findings, to develop a series of recommendations tailored to the mining industry. These recommendations are presented below. They include measures for recruiting and retaining workers targeted at the mining industry and provincial and national associations. There are also measures aimed at groups who tend to be under-represented in the industry (e.g., Aboriginal Canadians), at workers from declining industries, and at industry or association partners.

The recommendations are grouped under two distinct human resource objectives which emerged during the research:

1. Developing tools and services to help move workers from declining industries into the mining industry
2. Growing the talent pool which the mining industry can draw on

As the labour crunch worsens, companies and industries need to grow the employment pool by thinking of new recruitment sources. During the research, three declining industries in particular emerged as potential sources of new workers for the mining industry: farming, forestry, and manufacturing.

- Many individuals in the farming industry are either exploring new career options or simply seeking additional employment. Key informants mentioned past success in recruiting former farmers into the mining industry. Farm workers were deemed to have a strong work ethic, familiarity with heavy equipment, and the ability work either independently or in groups.
- The Canadian forestry sector is experiencing a sustained period of decline, and there is little prospect of a revival over the long term. The rising value of the Canadian dollar, the Canada-U.S. Softwood Lumber Agreement, higher energy prices, and the pine beetle infestation in western Canada have resulted in many plant and saw mill closures and thousands of lost jobs.
- The manufacturing sector in Canada is, like forestry, experiencing a decline. The rising value of the Canadian dollar, soaring energy prices, and the emergence of new international plant options has altered the manufacturing landscape in Canada. The decline has been particularly pronounced in the automotive sector and has resulted in thousands of temporary and permanent job losses.

Many current or former employees in these industries have essential skills which are similar to those needed in the mining industry. They also tend to be accustomed to shift work and have experience with

heavy machinery or process operations, and they may have done training which is applicable to the mining industry (e.g., safety, leadership). And in the case of forestry and farming, individuals are often located in areas (e.g., rural, northern) where mining operations are likely to be found. Many of these workers would therefore be a good fit for the mining sector.

7.2 Developing Tools and Services

Recommendation 1: Create a marketing campaign aimed at declining industries with the same type of workers (Association)

The mining industry needs to let individuals thinking about a career change know that mining is an option and inform potential recruits of training and employment opportunities. A communications strategy should be developed and, to maximize efficiency, focus on key regions:

- Farming: Western Canada
- Forestry: Northern British Columbia, Northern Quebec, Northwestern Ontario, and Vancouver Island
- Manufacturing: Central Canada (especially the Greater Toronto Area)

The Mining Industry Human Resource Council should target various farm-, forestry-, and transportation manufacturing-related publications and other communication outlets to advertise mining opportunities and sell the benefits of entering the industry.

Recommendation 2: Create a series of recruitment pilot projects targeting workers from declining industries (Association/Industry/Labour)

Recruiting potential employees from declining industries often requires more than just a simple newspaper advertisement. There are a couple of key groups who need to be engaged early in the process. First, successful companies establish relationships with local individuals – e.g., mayors, reeves, union officials, chamber of commerce representatives, local training and adjustment boards, and key economic development personnel. These relationships show that the company is not just in the area to grab talent and move on, and they can also provide valuable insight or background on local workers.

Labour unions representing individuals in declining industries (e.g., forestry, automotive manufacturing) can also play a key role in facilitating labour market transitions. Labour unions often have a series of employee databases containing valuable information for potential employers, such as education and training histories, skill profiles, and even employees' willingness to relocate for employment. One example is the Communications, Energy, and Paperworkers Skillfinder website (www.skillfinder.ca), which was designed to link union members with potential employers and vice versa.

The mining industry also needs to be aware of specific recruitment challenges they may face when dealing with certain types of worker from declining industries:

- Despite their experience and skills, it can be difficult to recruit *mature workers*. Because they are invested in their communities, they often choose not to relocate when offered traditional recruitment compensation and benefits.
- *Female workers* may also prove difficult to recruit. Many delay re-entry into the labour market due to family obligations or a desire to work part-time.

In order to maximize the success of labour market transition ventures, any initiatives should be manageable (i.e., small), targeted, local, and done in collaboration with the necessary individuals and organizations (e.g., community groups and training institutions). They should also be tailored to each declining industry:

- **Farming:** MiHR should work to create a pilot project with one or two western Canadian operations to recruit former farm workers to the mining industry.
- **Forestry:** MiHR should work to create up to two labour market transition pilot projects targeting former forestry workers. Ideally, one would be in Northern Ontario and the other in Northern Quebec. Given the geographic proximity of some mining operations to recently closed sawmills, the impact of temporary or permanent relocation would be lessened for some workers.
- **Manufacturing:** Mining should work to create a labour market transition pilot project targeting former automotive workers in the Greater Toronto Area. It is important to keep in mind that many of these job losses have occurred in areas where there is little to no mining activity and, as a result, individuals may need additional recruitment incentives to consider mining as a long-term career option.

Regardless of the sector being targeted, it is likely that some training funds will be required for potential employees. Some individuals will also require flexible shift options to consider mining as a new career. Finally, it may be necessary to secure one or more post-secondary institutions or private trainers as partners.

Recommendation 3: Ensure the Mining Attraction, Recruitment and Retention Strategy (MARS) project gets input and involvement from labour market adjustment committees and local training boards (Association)

The MARS project should include labour unions as a target audience. Labour unions are often the primary point of contact for various individuals who are experiencing downsizing. Many of these individuals could be potential mining employees. It is important to clearly articulate what occupations are in demand, where the occupations are situated, what training is required for the positions, what training options are available, what training support mechanisms are available, and what skills are necessary.

Another target audience for the MARS material is local training boards and economic development agencies. These groups are often at the centre of activity when industries are downsizing, so as much information as possible should be provided to them.

Recommendation 4: Create and distribute a catalogue of promising practices, lessons learned, and potential barriers for workers moving from declining industries into mining and other sectors (Association)

Many mining operations reported relative success with recruiting employees from industries in decline. The MiHR should explore the possibility of creating a database of these experiences. This database could include a series of testimonials from individuals who successfully or unsuccessfully transitioned workers and highlight necessary transition tools and processes.

Also, the addition of a session or module at an annual conference or event would provide a venue for human resource representatives to share past experiences with their peers. The session would benefit from a series of testimonials from employees who have successfully made the transition to mining.

Recommendation 5: Work with industry representatives to develop a set of nationally recognized training standards (Association/Industry/Labour/Trainers)

As mentioned in *Prospecting the Future*, the lack of standardized employer-provided training hinders the ability to transition throughout the general labour force. The creation of occupational standards could form the basis for standardized recognition of employer- and institution-based mining training programs through a system of accreditation. The standards could also provide the benchmark for recognizing transferable skills and training received in other sectors or even other countries (i.e., foreign credential recognition). MiHR or a similar national non-government agency could play an important role in co-ordinating the development of these standards and guiding their use.

Recommendation 6: Work with schools and labour union representatives to develop and disseminate mining career information for various mining-related occupations (Association/Industry/Labour/Trainers)

Individuals in declining industries often have a single government-funded training opportunity, which is usually funded through Employment Insurance. These workers need to clearly understand what kind of employment mining-related training can lead to and where to pursue the training.

7.3 Growing the Talent Pool

Recommendation 7: Re-brand the mining industry (Association/Industry/Labour)

The mining industry needs to continue to highlight the personal and societal benefits of the sector and also reinforce the safety of the domestic industry. The Canadian public – especially youth – need to be aware of the profession’s modern reality; many do not recognize that the days of the pick and axe are gone. Individuals need to be informed that modern mining means the ability to earn high wages, work in a safe environment, operate various pieces of machinery, and control computerized equipment.

Recommendation 8: Promote and foster lifelong learning in the mining industry (Industry)

Significant (and increasing) portions of today's labour force tend to have some post-secondary education and are inclined toward obtaining further education. Individuals often know that skills and knowledge will lead to personal and professional advancement, and thus often want opportunities to learn new abilities and skills as well as to acquire knowledge. These opportunities will only come about with a new learning culture in companies.

Traditionally, companies have offered training in one of three areas:

- new employee training, in which the basics are emphasized;
- formal training – often in-house – related to an occupation; and
- limited off-site training at a college or university tied to continual employment or directly related to an occupation.

These education and training activities should be viewed as a start and not an end point. Employees will increasingly demand flexible education and training options whereby employee versatility is increased and knowledge horizons expanded.

Companies should view education and training as a benefit for both parties and seek to involve as many employees as possible each year. One way to ensure that this can happen is to allow individual employees to construct their own education and training options. This could provide employees with the tools to continue to utilize their skills and knowledge.

Recommendation 9: Conduct national and international labour market research for the mining industry (Association)

The Canadian mining industry is in a period of transition – wages are increasing, employment opportunities expanding, exploration growing, and international demand for resources and talent on the rise. Canadian companies are not alone in dealing with these challenges, since many global producers (e.g., Australia, Brazil) are facing similar issues.

Globalization has reduced borders and barriers for skilled workers. Jurisdictions can no longer rely on the domestic labour pool to fill all employment vacancies and are now locked in a global war for talent. This struggle means that all jurisdictions need to be aware of the global human resource policies and strategies being created to deal with impending skills shortages.

MiHR should commission a research piece examining international human resource practices aimed at addressing mining skill shortages. The countries studied in the investigation should include Australia, Brazil, and the United Kingdom, among others.

Recommendation 10: Ensure a career in mining.ca is the central hub for mining career and training information (Association)

Individuals interested in entering the mining industry need to be able to consult a single source which makes the connection between occupations which are in demand from the industry, the skills needed to perform employment tasks, desired level of training, type of work an individual can expect, and anticipated salary range. This service would be even more effective if a rotating profile of mining occupations in demand, including companies requiring these positions, was displayed.

Mining industry employment vacancies in the next decade will occur in many parts of the country. As a result, it would be useful to provide, where possible, provincial or regional information on employment prospects. Interested individuals also need to be aware of specific provincial training, where such training is available, and when additional training may be required.

Recommendation 11: Establish education incentives for Aboriginal youth (Association/Industry)

This strategy should include more than just simple post-secondary education scholarships. It could include separate initiatives targeting different points in the educational cycle. Many key informants indicated that educational barriers prevent companies from engaging Aboriginals in the mining industry. It is not enough to attempt to entice potential workers with the promise of money when entering post-secondary education. The real breakthrough will come when more Aboriginal youth are qualifying for post-secondary opportunities.

Interested companies should establish a full educational strategy. This could include partnerships with local schools or school boards to provide equipment (e.g., computing, recreational, sporting) to youth. The strategy could also include Aboriginal learning accounts – that is, individuals could pledge to fully complete their studies in return for the promise of a monetary package invested in an educational savings account. Given the geographic location of Canada's mining activity, this is realistically one of the better labour reservoirs available.

Recommendation 12: Establish mentorship programs to help reach Aboriginal youth in high schools (Association/Industry)

Aboriginal youth need to be exposed to role models from within the mining industry. Current Aboriginal mining employees should be encouraged to become ambassadors for the mining industry and participate in educational sessions targeted at Aboriginal communities and schools.

Recommendation 13: Develop and disseminate promising practices in recruiting and holding on to older workers (Industry/Association)

The Canadian demographic bubble is posing challenges with regard to recruitment and retention. Many industries – including mining – are facing the prospect of a significant number of retirements in the next decade. This is occurring at a time when the global quest for talent is heating up and thus making

it more difficult to recruit new employees using traditional measures (e.g., direct entry out of post-secondary education institutions). As a result, many companies are modifying mature worker practices (e.g., changing pension schemes, lobbying for provincial mandatory retirement legislation changes) in order to tap into the vast experience, extensive technical knowledge, and strong work ethic of mature workers.

Mature workers often view new employment as a bridge towards retirement. Individuals believe they have up to a decade of employment contributions to provide to a company or industry. They need to be shown that the mining industry is prepared to engage mature workers during the current human resource crunch. It is important to revisit worker hiring and interview practices to ensure human resource representatives are not screening out a potential pool of labour in the form of mature workers.

It is also important that the mining industry work hard to solidify its current labour pool. The next generation of the labour force needs to benefit from an employment information exchange whereby current mature workers share practices and information with newcomers. Mature workers need to see that they are welcomed and are not being ushered out the door and devalued.

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