



UNEARTHING POSSIBILITIES

Human Resources Challenges and Opportunities in the Canadian Mineral Exploration Sector

Executive Summary Report



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For more information, contact:

Mining Industry Human Resources Council
260 Hearst Way, Suite 401
Kanata, Ontario K2L 3H1

Tel: 613 270 9696
Fax: 613 270 9399
Email: research@mihhr.ca

Or visit the website at:

www.mihhr.ca

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Who We Are

The Mining Industry Human Resources (MiHR) Council is Canada's national council for the minerals and metals industry. MiHR contributes to the strength, competitiveness and sustainability of the Canadian minerals and metals sector by bringing all industry stakeholders together to address human resources (HR) challenges and opportunities. MiHR is the recognized industry leader in the identification and analysis of HR issues facing the industry and a catalyst for development and implementation of solutions.

Acknowledgements

MiHR partnered with The Prospectors and Developers Association of Canada (PDAC) to develop this research initiative. Consultants conducting research for this project, on behalf of MiHR and PDAC, included HDR Decision Economics Inc. (Calgary), The Conference Board of Canada (Ottawa), and kisquared (Winnipeg).

MiHR and PDAC are grateful to all of the individuals and organizations in the Canadian mineral exploration sector who contributed their resources, knowledge and insights to this study and report. MiHR wishes to thank all research participants for their valuable time and input to fill out the survey, engage in interviews and contribute to focus groups associated with this report. Over 300 industry volunteers contributed to our research over the past two years.

We are particularly indebted to the project steering committee for their hard work, guidance and insights.

- Lisa McDonald, Chief Operations Officer, PDAC (partner)
- Gavin Dirom, President and CEO, Association for Mineral Exploration BC (committee chair)
- Lyn Anglin, President and CEO, Geosciences BC
- Harold Gibson, Professor, Laurentian University
- Peter Dimmell, President, Silver Spruce Resources
- Laura Clinton, PDAC Mining Matters
- Mike Burke, Golden Predator Corp. (Formerly with the Yukon Geological Survey)
- Gary Vivian, President, Aurora Geosciences Ltd. (Past President, Geoscientists Canada)
- Bill Mercer, President, Avalon Rare Metals (Past President, Canadian Federation of Earth Scientists)
- Robin Curry, Smithers Exploration Group

Past participation also included individuals from the following organizations:

- Northwest Community College
- Kinross Gold Corporation

About the Report

The purpose of the *Unearthing Possibilities* report is to provide reliable, relevant and timely labour market information to support strategic workforce planning and to stimulate a proactive approach to the human resources (HR) challenges facing the mineral exploration sector. This project was conducted through a partnership between The Prospectors and Developers Association of Canada (PDAC) and MiHR. Project work was divided into three phases: a situational analysis; intensive primary and secondary industry research; and stakeholder consultations to develop a strategy and action plan.

This report is an executive summary of the detailed project report: *Unearthing Possibilities: Human Resources Challenges and Opportunities in the Canadian Minerals Exploration Sector*. The executive summary report contains key findings and highlights—details and more discussion of the issues are available in the full report.

This summary begins with a brief overview of the project, followed by a definition of mineral exploration and an economic overview of the sector. Next, it presents a demographic profile of the Canadian exploration labour force and a discussion of the key labour market issues in the sector. The executive summary concludes with recommendations for addressing the issues.

Project Background and Objectives

One of the Mining Industry Human Resources (MiHR) Council's strategic objectives is to research, analyze, forecast and disseminate labour market, human resource and other human capital information relevant to the minerals and metals sector. Such information includes labour market intelligence; sector studies; occupational supply and demand forecasts; and relevant research focused on HR issues. To meet this objective, MiHR is engaged in several initiatives to improve the quality and availability of labour market information to industry stakeholders. The *Unearthing Possibilities* project and report add to this body of knowledge. Specifically, the report analyzes labour market issues and the short- and long-term human resources challenges facing the mineral exploration sector.

Purpose and Objectives

As the voice for all human resources issues in the minerals and mining sector, MiHR is tasked with obtaining, interpreting and disseminating relevant and timely labour market information to its stakeholders. For this project, MiHR partnered with The Prospectors and Developers Association of Canada (PDAC). PDAC represents the interests of the Canadian mineral exploration and development industry, and also has a strong interest in the sector's labour market issues. In fact, the first objective in PDAC's strategic plan is to “assess the nature and scope of the human resource needs of the exploration sector over the next 10–15 years”.¹

Research for the *Unearthing Possibilities* report focused on workers involved in exploring for and evaluating mineral deposits that eventually lead to the establishment of new mining operations. Such workers include prospectors, developers, drillers and geoscientists, and may include workers involved in other non-technical support fields such as environmental management, finance and investment analysis.

1 PDAC's Strategic Plan, found at: www.pdac.ca/pdac/about/pdf/0707-strategic-plan.pdf

The primary objectives of this project were to:

- Assess labour supply and demand factors for workers involved in exploring for and evaluating mineral deposits;
- Identify the short- and long-term HR challenges and opportunities facing the mineral exploration segment of the industry; and
- Serve as the basis for developing an industry strategy and action plan to address key HR issues.

Activities

Project work was divided into three phases: a situational analysis; intensive primary and secondary industry research; and stakeholder consultations to develop a strategy and action plan.

In the first phase of research, the current state of the workforce and available labour market information were assessed. Primary activities in this phase included:

- Collect, analyze and summarize labour market information for the sector;
- Identify the demographic profile of the sector's workforce and any information gaps;
- Analyze labour market trends and identify overarching HR issues; and
- Consult with over 30 industry experts through interviews and facilitated discussions to validate the situational analysis and labour market profile.

In the second phase of research, over 300 industry employers, employees, students, educators, government representatives and industry associations were consulted. Activities included:

- Use questionnaires, interviews, focus groups and facilitated discussions with industry stakeholders to determine the short- and long-term HR challenges; and
- Determine and discuss short- and long-term HR challenges and opportunities facing the sector.

In the third phase of work, approximately 30 industry stakeholders were consulted in an online forum to review project findings and develop an industry strategy for addressing the issues raised. Activities in this phase included:

- Consult with industry stakeholders to determine the overall implications for the sector;
- Provide insights and suggest practical solutions; and
- Initiate development of a sector strategy and action plan to address the issues.

Sector Definition and Scope

Mineral exploration involves the search for commercially viable concentrations of minerals, with large, high-grade reserves that can be extracted with minimal ground disturbance and disruption to the environment and local communities. Activities related to mineral exploration typically involve resource assessment; exploration; and deposit appraisal. The definition of exploration used throughout the report includes activities that occur during the pre-production phase of the mine cycle, as well as exploration and deposit appraisal activities occurring as part of expansion on developed, producing mine sites. The definition of the sector therefore included greenfield, brownfield and on-mine-site exploration.

Industry Participants

In Canada, the mineral exploration sector is characterized by prospectors; companies of varying size and financial means; public entities either directly involved with exploration and deposit appraisal or surveying and mapping; securities commissions; professional associations; and a number of support-service providers. This project involved consultation with all industry participants including: prospectors; junior and senior mining companies; consultants (e.g., geoscientists); government; and contractors and service providers (e.g., diamond drillers, line cutters and camp crews).

Accessing Labour Market Statistics

Labour market data reported from Statistics Canada is organized using two different classification systems. The first is the North American Industrial Classification System (NAICS), which groups together organizations producing similar goods or services. The second is the National Occupational Classification for Statistics (NOC-S), which groups together workers based on similarities in their job roles and the work they perform.

Through in-depth analysis of the labour market data and classifications, MiHR identified the NAICS and NOC-S codes that are of primary relevance to the mineral exploration sector. These codes provide the best possible approximation of the sector.

North American Industry Classification System (NAICS) for Mineral Exploration

- 213117 Contract drilling (except oil and gas)
- 213119 Other support activities for mining
- 541360 Geophysical surveying and mapping services
- 541380 Testing laboratories
- 54162 Environmental consulting services

National Occupational Classification (NOC-S) for Mineral Exploration

B012	Financial and investment analysts
C013	Geologists, geochemists and geophysicists
C015	Other professional occupations in physical sciences
C044	Geological engineers
C054	Land surveyors
C112	Geological and mineral technologists and technicians
C154	Land survey technologists and technicians
C155	Mapping and related technologists and technicians
C134	Construction estimators
C153	Drafting technologists and technicians
H622	Drillers and blasters
I214	Labourers

Economic and Labour Market Trends

Mineral exploration expenditures—and thus exploration activity in general—are largely influenced by changes in commodity prices. Between 2003 and 2008, exploration expenditures in Canada increased by an average of 36 per cent a year, in line with average annual mineral price increases of 22 per cent.² Total expenditures in Canada reached a record \$3.3 billion in 2008, subsequently plummeting by over 47 per cent to \$1.7 billion in 2009—due to the economic recession and falling commodity prices. During the same period, the number of exploration projects in Canada also declined—from 822 to 669. Within this group, the number of projects with expenditures over \$1 million decreased by approximately 50 per cent.³

As the economy improved, the industry experienced rapid recovery; by the end of 2010, total exploration expenditures—measured in terms of spending intentions—climbed above the \$2 billion mark. Escalating commodity prices also sparked renewed interest in previously marginal or sub-economic deposits.

Spending intentions in almost all provinces/territories in Canada (with the exception of Manitoba) are expected to continue to increase through 2011. Activities in Ontario's Ring of Fire region have heated up over the past year and this trend is expected to continue. Saskatchewan has become an increasingly important location as a result of high potash prices and new diamond exploration activities. In addition, exploration expenditures in the territories have historically been driven by the search for diamonds and this trend is also expected to continue.

2 Average annual mineral price changes calculated using Bank of Canada metal price index.

3 Natural Resources Canada, "Overview of Trends of Canadian Mineral Exploration", 2009.

Globalization and International Investment

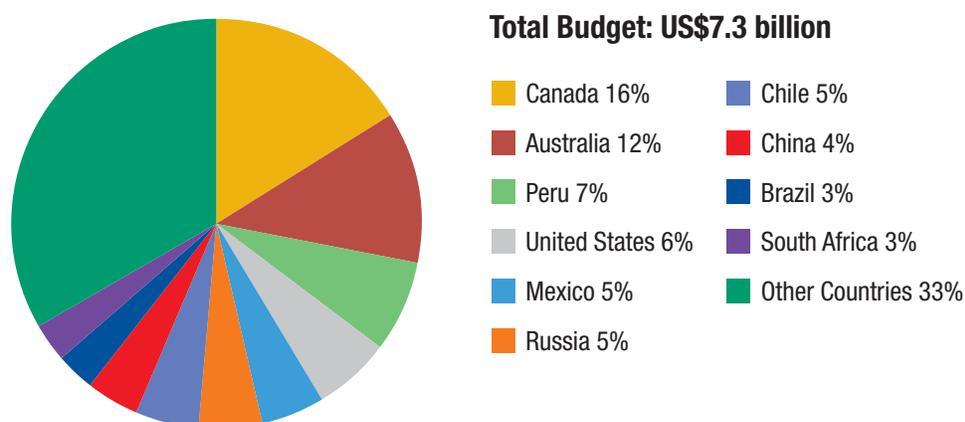
For the majority of the past three decades, Canada has been the number-one destination for mineral exploration investment. Although overtaken by Australia from 1992 to 2003, Canada has retained the top position since 2004.⁴ As illustrated in Figure 1, approximately 16 per cent of total global exploration expenditure in 2009 was spent within Canada (US\$1.2 billion of total worldwide expenditures of US\$7.3 billion).⁵ Additionally, Canadian mining companies account for about 40 per cent of global exploration spending, the largest share of any nation.⁶

Canada is well known for its investor-friendly and relatively risk-free environment for exploration investments. Following the trend of economic globalization, the Canadian mining and exploration industry has gradually developed a strong international focus. Federal and provincial governments are dedicated to promoting the exploration business, both domestically and internationally. As a result, a large number of foreign exploration companies have entered the Canadian market, which has brought in international investment and further stimulated international trade.

The international nature of the sector has direct impacts on the demographics of its workforce and HR needs. It is worth noting here that the HR challenges facing the exploration sector are global in nature. While emphasis is placed in this report on the challenges and opportunities facing exploration in Canada, it is important that particular talent groups are considered in the global context (e.g., geoscientists). The sector must address issues related to international mobility of highly skilled, professional talent, multi-lingual and multi-cultural contexts, and ensure that the correct supports and services are in place in Canada to support Canada's worldwide exploration talent. More information on these issues in a broader context can also be found in MiHR's *Making the Grade: Human Resources Challenges and Opportunities for Knowledge Workers in Canadian Mineral Exploration and Mining* (www.mih.ca).

Figure 1

Regional Distribution of Global Exploration Budget in 2009



Source: Natural Resources Canada, 2010.

⁴ The Mining Association of Canada, "A Report on the State of the Canadian Mining Industry", 2009.

⁵ Metals Economics Group, "World Exploration Trends, A Special Report for the PDAC International Convention", 2009.

⁶ *Ibid.*

Canada's Mineral Exploration Workforce: Estimates and Analysis

The primary reason why it is necessary to estimate employment in the exploration sector is because there is no clearly defined North American Industrial Classification System (NAICS) code for the mineral exploration sector and few, if any, public LMI sources that report on the sector in isolation. MiHR commissioned The Conference Board of Canada (CBoC) to conduct extensive labour market modelling to estimate the size of the exploration workforce.

Exploration Employment

Over the past three decades the mineral exploration industry in Canada has grown significantly, as shown in Table 1, and now employs just over 25,000 people. This growth was largely determined by the level and growth of commodity prices. Changes in employment are strongly correlated with economic growth in the sector. As with commodity prices, the employment levels in the industry are characterized by longer-term growth interspersed with boom and bust cycles.

Table 1

Total Mineral Exploration Employment⁷

	2001	2002	2003	2004	2005	2006	2007	2008	2009
TOTAL	9,451	10,750	12,806	15,785	18,224	21,166	24,159	25,871	25,109

Source: The Conference Board of Canada, MiHR, Summer 2011.

Organization Size

Statistics Canada's Canadian Business Patterns Database (CBP) provides the number of establishments in an industry, with a breakdown by size of the organization (headcount number of employees). As shown in Table 2, over 60 per cent of the exploration sector is made up of micro-sized organizations (less than five employees). In fact, 95 per cent of the sector is made up of micro-, small- and medium-sized enterprises (SMEs; micro- and small-organizations have 50 or fewer employees).

⁷ Data from 2001 and 2006 are actual figures taken from the Census. Data for each intervening year are estimates based on extensive labour market modelling conducted by The Conference Board of Canada.

Table 2*Canadian Business Patterns Data on Size of Mineral Exploration Organizations*

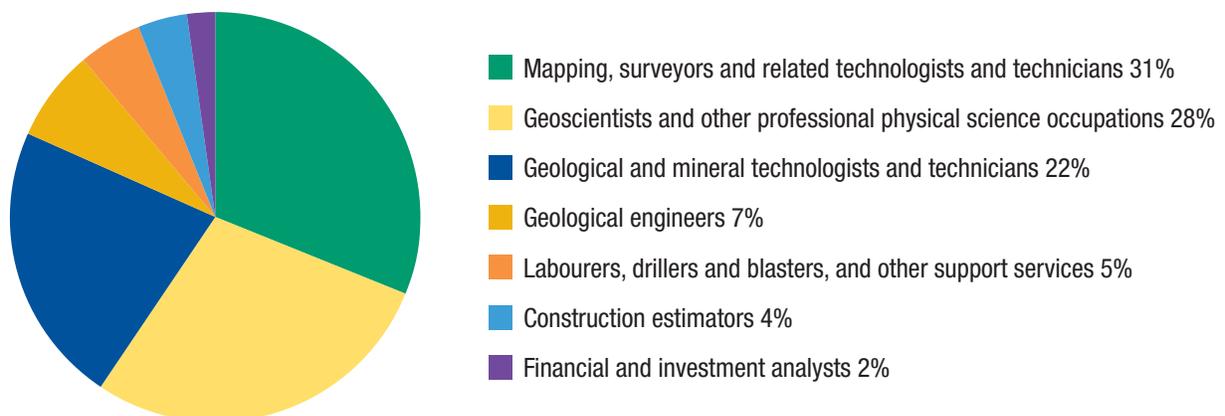
NUMBER OF EMPLOYEES	NUMBER OF ESTABLISHMENTS	SHARE OF TOTAL (%)
1–4	2,171	61
5–9	550	15
10–19	381	11
20–49	277	8
50–99	115	3
100–199	52	1
200–499	25	1
500+	18	1
TOTAL	3,589	100

Source: Statistics Canada, The Conference Board of Canada, MiHR, Summer 2011.

This high proportion of SMEs in the sector presents unique HR challenges. Most SMEs do not have formal HR functions, nor do they have HR specialists on staff with the resources to devote to building in-house capacity for HR management.

Characteristics of the Mineral Exploration Workforce

As shown in Figure 2 — geoscientists, geological and mineral technologists and technicians, drafting technologists and technicians; mapping technologists and technicians; and geological engineers account for more than three-quarters of mineral exploration employment in Canada. In addition, the importance of many of these occupations is growing. The share of sector employment for some of these occupations has grown substantially over the past couple of decades and is expected to continue to rise. Furthermore, labour shortages are expected for geoscientists and technologists and technicians over the next 10 years, so talent with the necessary skills to occupy these roles may become scarce.

Figure 2*Occupational Mix in Mineral Exploration in Canada*

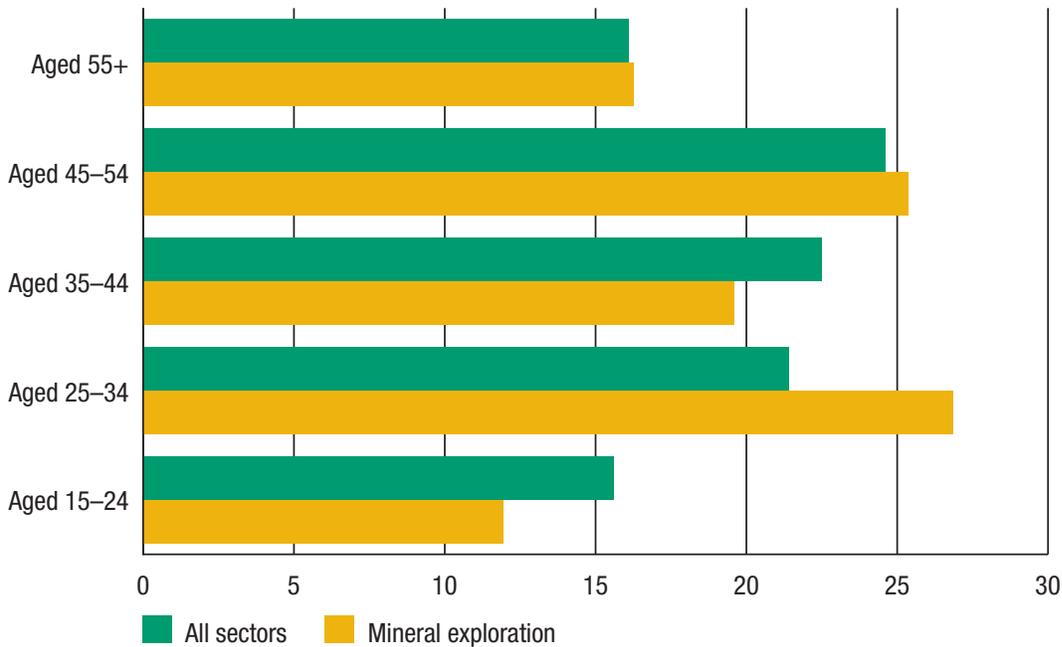
Source: The Conference Board of Canada, MiHR, Summer 2011.

Age

There is a large and growing population of younger workers—under the age of 35—in the exploration sector, as shown in Figure 3. However, the sector is not immune to the broad trend of an aging workforce—with 16 per cent of the workforce over age 55. Furthermore—and of particular importance—the sector has a shortage of workers in the middle parts of their career (aged 35 to 44), suggesting challenges with mid-career attrition.

Figure 3

Age Profile of Exploration Workforce (share of labour force, per cent)



Source: The Conference Board of Canada, MiHR, Summer 2011.

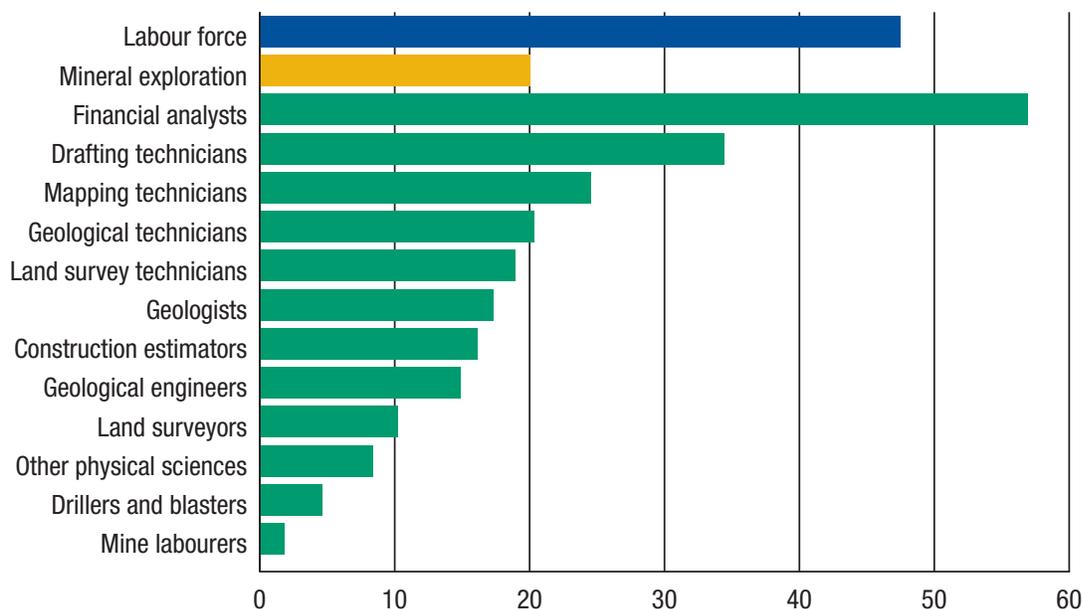
The combination of labour shortages, an aging workforce in the professional sciences occupations and a trend of mid-career attrition could translate into a crisis for certain talent groups, particularly management and senior-level positions.

Diversity

At present, only 20 per cent of the mineral exploration workforce is made up of women. This is still well below the average for the entire labour force (47 per cent). Aboriginal groups account for a slightly below-average share of the sector's workforce at 2.7 per cent, compared to 2.9 per cent across all industries. The industry has a greater than average share of new Canadians, at 23 per cent, compared to 21 per cent for the Canadian workforce as a whole.

Figure 4

Proportion of Women in Exploration and Selected Occupations (share of employment, per cent)



Source: The Conference Board of Canada, MiHR, Summer 2011.

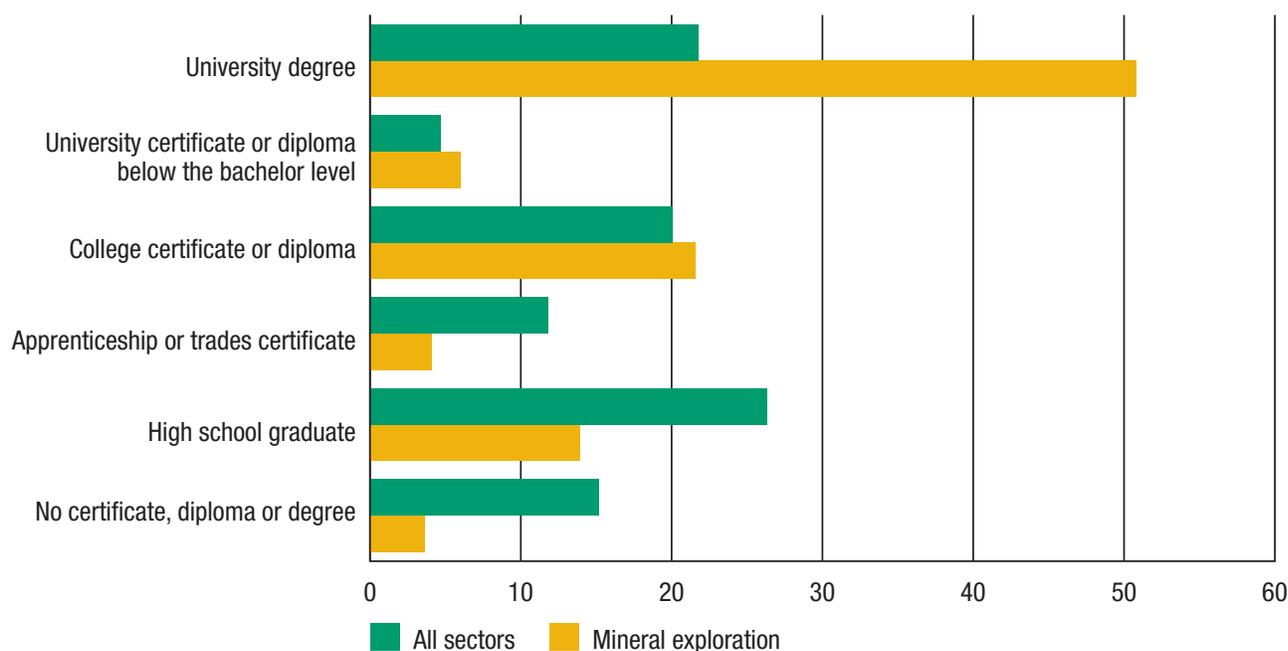
Education

The proportion of the sector's workforce with a college or university education (shown in Figure 5) has always been above average and continues to increase. For example, between 2001 and 2009, the share of workers with a college or university education rose from 70 per cent to 78 per cent.

These results represent an initial estimate of mineral exploration employment that incorporates a variety of assumptions regarding the makeup of the sector. Primary research with industry stakeholders—conducted as part of this study—was used to corroborate and validate the assumed impacts of the demographic trends noted in the labour market analysis.

Figure 5

Educational Profile of Exploration Workforce (share of labour force, per cent)



Source: The Conference Board of Canada, MiHR, Summer 2011.

HR Challenges and Opportunities

A series of focus groups, interviews and questionnaires, as well as both formal and informal roundtables and discussions were conducted to validate and further identify the HR challenges and opportunities in the sector. Over 300 individuals participated in the various research activities supporting project findings. A project steering committee comprised of representatives from education, employers, government and industry associations met regularly throughout the research process to offer insight, guidance and expertise.

The HR challenges and opportunities identified in the industry consultation and research activities were aggregated and organized into three main sections: career awareness and attraction; recruitment; and retention. *Unearthing Possibilities* notes patterns and themes and provides recommendations for addressing the issues raised—for each of the three broad sections.

Career Awareness and Attraction Issues

- Lack of career awareness and general public awareness of the industry—Focus group participants indicated that the general public and students are not sufficiently aware of the exploration sector or related career opportunities.
- Improved coordination and cooperation needed between industry and education—All stakeholders felt that education about earth sciences and career awareness for exploration did not begin soon enough. Most students indicated that they did not know about geosciences until the post-secondary level. Stakeholders also felt that there was not enough

support for teachers and career counsellors to help them understand the sector and communicate key messages about careers to students.

- Few opportunities for hands-on experience— Stakeholders felt that experiential-learning opportunities could be improved. Stakeholders said that other sectors were stronger in providing these opportunities and employers' cooperation is essential to ensuring that such opportunities are relevant and effective.
- Under-representation of key talent groups (women, Aboriginal peoples)— Stakeholders felt that more could be done to strategically attract under-represented talent groups to the sector. In addition, stakeholders indicated that despite the exploration sector's employment of many new Canadians, it could do more to become more globally competitive in attracting international talent to work in Canada.

Career Awareness and Attraction Recommendations

- Raising general public awareness of the sector will help raise career awareness with the future workforce. Public outreach campaigns can be costly; however, more can be achieved with fewer resources if efforts are tailored to local communities near exploration sites, school children, teachers and career counsellors.
- Promoting career awareness at elementary- and middle-school levels is essential; by high school, many students have already made career plans (by selecting physics, biology and chemistry as university prerequisites, for example). Research participants agree that middle-school students are an ideal age group for exposure to mineral exploration, as they are open-minded and beginning to consider career options.
- A three-pronged approach to building career awareness would be most effective, according to many research participants. This would consist of: (1) earth science/geology curriculum development and delivery; (2) career awareness; and (3) experiential-learning opportunities.
- Curriculum development and career awareness both require the involvement of teachers, guidance counsellors and school boards. Once educators are aware of and willing to promote mineral exploration as a respected career choice, students will also become aware.
- Integrating mineral exploration information into teachers' existing course plans must be made easy to be effective. A well-refined curriculum makes adoption more likely; such a curriculum exists in British Columbia (the BC Mineral Resources Education Program). The task then becomes to familiarize educators with the available curricula and to persuade them of its merits.
- Experiential learning is best achieved with assistance from the industry. Where location permits, work-experience and co-op programs located at operating mines and exploration sites are an excellent way to make students aware of mineral exploration and to give them first-hand engagement with potential future colleagues.
- Although middle-school and even elementary-school students are the ideal cohort to participate in full-scale site visits (because children at these levels attend as a class), experiential learning and awareness must also be implemented for students in high schools and universities to ensure a steady labour supply in the future.

- Site visits may not be possible for educators in major urban centres, but engaging students in a “hands-on” way is still possible—by inviting guest speakers (e.g., geologists) who can bring mineral samples for students to handle, by taking students to visit the head offices of mining and exploration companies, and by having classes attend industry events like the PDAC convention and AME BC’s Mineral Exploration Roundup. One essential part of participating in trade shows is arranging interactive events that vividly convey the mineral exploration experience.
- Other types of experiential-learning models for mineral exploration are already used in some parts of Canada, and could likely be used elsewhere across the country, with modification and input from employers.

Recruitment Issues

- Thinning labour pool—Employers noted that it is becoming increasingly difficult to find geoscientists. Specific hard-to-fill positions include geologists, geophysicists, geochemists and engineers. Employers responding to the questionnaire also cited geosciences technologists and technicians and diamond drillers and labourers as challenging positions to fill.
- Job-ready candidates in short supply—Students, employees and employers indicated that post-secondary education did not adequately prepare graduates for the reality of the work. The primary area of concern for all stakeholders was a distinct lack of relevant field experience. As shown in Table 3, almost a quarter of employees responding to the survey identified lack of field experience as a barrier to finding a job; second only to being unaware of the availability of jobs. In addition, stakeholders mentioned a lack of education in community-liaison skills, mineral economics and managing a drill program.

Table 3

Employee Questionnaire Respondents’ Barriers to Obtaining Employment

BARRIERS	%
Jobs were not available	25
I had no or insufficient field experience	21
I didn’t know where to look for jobs	8
Location too remote	6
Only term/seasonal positions available	6
Unattractive ratio of weeks on to weeks off	6
I was overeducated for the positions	5
The pay was too low	5
Location had poor communication technology/poor link to home	3
Jobs were too dangerous	3
I experienced none of these barriers	1
Entering this industry was a straightforward process	68

Note: Percentage total exceeds 100% because multiple responses were accepted.
Source: KISquared, MiHR, Summer 2011.

- Confusing and informal means of sourcing talent or finding jobs—exploration job seekers and employers typically use an informal hiring process. All stakeholders emphasized the importance of networking and personal contacts. In addition, financing for an exploration project often happens very quickly, and employers need to find employees with very little lead time. Many employers struggle to find workers on such short notice—particularly workers located in the community of the field site. Similarly, when a new exploration project gets the green light, it is often difficult for employees to know which company has available work.

Table 4
Employer Recruitment Strategies

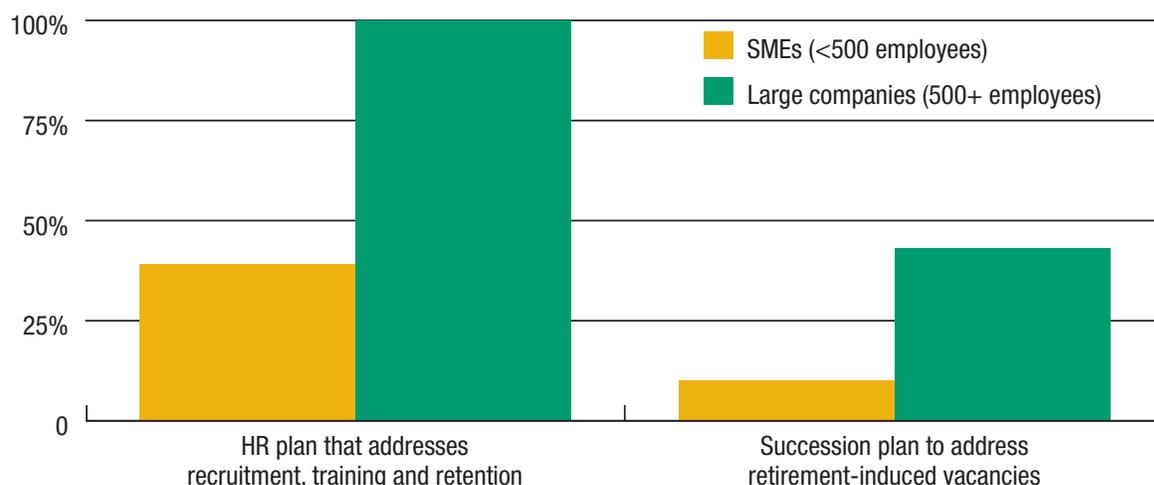
STRATEGY	% OF EMPLOYERS WHO USE THIS STRATEGY
Personal contacts/word of mouth	89
Résumé submitted to your company	71
Internal company searches/hiring from within	64
Internet job postings	57
Co-op or student work placement programs	45
Newspaper advertising	45
Industry networking events	41
On-campus recruitment such as job fairs and career symposiums	38
Professional agencies	38
Working directly with band offices	25
Internet searches	23
Drop-in visits to work locations from locals	20
Internships	16
Recruiting foreign-trained professionals	14
Recruiting temporary workers	14
Job banks	13

Note: Percentage total exceeds 100% because multiple responses were accepted.
Source: kisquared, MiHR, Summer 2011.

- Micro- and small-sized enterprises, which make up the majority of the sector, have limited HR resources—micro- and small-sized organizations in the sector were less likely than larger organizations to have a formal HR or workforce plan for recruitment, training or succession.
- Recruiting international talent is challenging. Many employers felt they do not have the know-how to find and recruit a foreign-trained worker. This included lack of knowledge about policies and procedures for bringing foreign workers to Canada, as well as concerns about foreign-credential recognition and evaluation of education equivalencies. Many employers felt that a better understanding of these issues would better position them to compete for talent on the global stage.

Figure 6

HR Planning as a Function of Organizational Size



Source: kisquared, MiHR, Summer 2011.

Recruitment Recommendations

- Education and industry stakeholders indicated that better communication between industry and training institutions would help ensure that candidates are ready to work. In some cases, this would involve establishing essential skills profiles and national occupational standards for key exploration occupations (in particular: geosciences technologists and technicians, field assistants, camp managers and line cutters).
- Experiential learning and education outreach programs are two effective recruitment solutions for many employers. Valuable experiential learning in exploration can be fostered by employer participation in co-op programs, work placements and mentorships; these all help to remedy one of the industry's biggest recruitment barriers — recent graduates' lack of field experience.
- Many employers also participate in education outreach programs to connect with students — attending career symposiums, guest-lecturing, and volunteering time to act as resources for student projects. A company supporting these types of programs gains a recruiting edge over other companies: these companies are engaged with students throughout their post-secondary careers and often get first pick of the top graduates.
- Community outreach is another recruiting strategy that benefits some employers, especially when recruiting for entry-level labourer positions. Some employers are partnering with community organizations (e.g., local training offices, band offices and employment centres) to bolster recruitment efforts and to make the process more efficient and less burdensome.
- Where possible, promoting staff from within not only simplifies recruiting (as internal hiring processes are usually less time-consuming and costly than external ones), but also promotes employee retention. Mineral explorers want to work for a company that supports the career growth of its employees; within the tight-knit mineral exploration community, such companies become known as employers of choice, and are more appealing to potential employees.

- Some employers (especially juniors) do not have the resources available for costly recruiting campaigns. Most juniors opt for inexpensive and time-saving recruiting solutions—contacting colleagues to try to fill a position or posting jobs online. A better understanding is needed on the unique challenges associated with HR planning in the sector’s SMEs.
- Stakeholders felt that tapping the international labour pool will be necessary and they supported the work of professional geosciences associations to better understand portability of professional credentials. In addition, many organizations offer professional (and in many cases free or cost-recovery only) services to help employers of all sizes better understand recruitment and hiring of international talent. Stakeholders using such services found them highly valuable.

Retention Issues

- The exploration sector’s high proportion of knowledge workers translates to an extremely versatile and multi-skilled workforce that can move to other employers or other sectors with ease. Mineral explorers are highly educated, multi-skilled and mobile. As shown in Table 5, when employees were asked where they see themselves in five years, most indicated that they would stay in the sector, but less than half indicated that they would be with the same employer.

Table 5
Exploration Employees Five-Year Plans

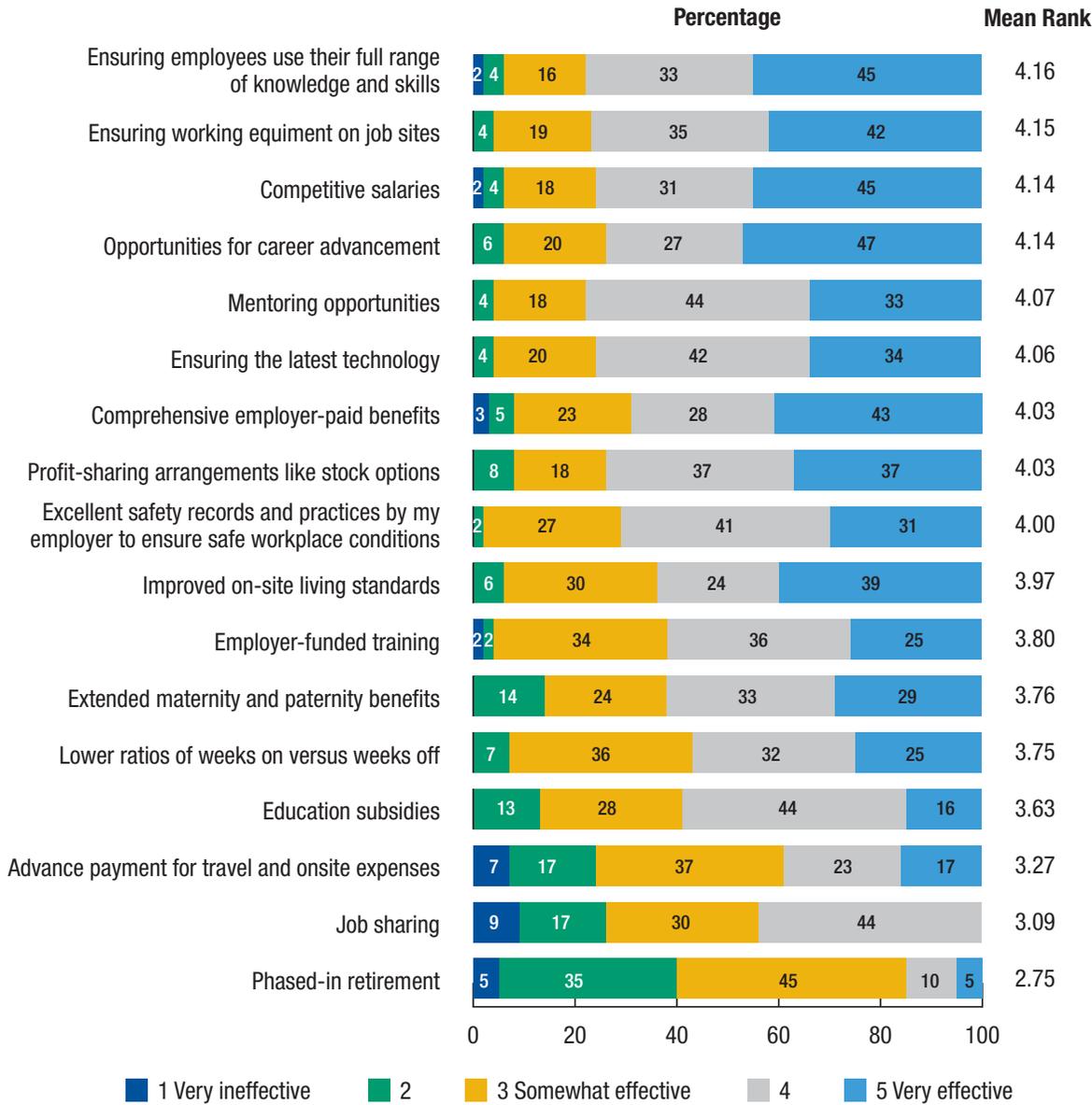
IN FIVE YEARS, I SEE MYSELF...	%	
Working at a higher level job within my organization	36	90% plan to remain in the industry.
Working at a higher level job within another organization	25	
Working in the same job within my organization	16	
Working in the same job within another organization	7	
Owning my own mineral exploration business	7	
Doing something else other than these options	9	
Working outside mineral exploration	1	

Note: Exclude those who expect to retire within the next five years.
Source: kisquared, MiHR, Summer 2011.

- Seasonal nature of work and wildly cyclical industry, along with short life-spans of most projects and operations— Although these characteristics can pose retention challenges for employers, many mineral explorers are attracted to these features. Global opportunities in warmer climates, with year-long exploration programs, are a draw for many Canadian explorers.
- Remote locations and fieldwork are deterrents for some diversity groups (e.g., women and new Canadians). Many employees indicated that they do not wish to continue doing fieldwork for their whole careers. This was particularly true for professionals in the mid-stages of their careers.
- Mid-career attrition—professionals in mid-career tend to leave the sector. This trend is complicated by age demographics—with a mix of aging workers and young professionals needing mentorship and experience. There will be challenges in the near future in finding geoscientists with enough experience, expertise and leadership ability to fill the gap left by retiring workers.

- As shown in Figure 7, many employers noted that competitive salary and benefits packages are effective retention strategies. However, most employers selected opportunities to advance skills and mentorship as effective for retention. Other incentives that they believed employees appreciate include paid housing, subsidized food and use of company vehicles.

Figure 7
Effectiveness of Retention Strategies



Note: N sizes range from 73 to 108.
Source: kisquared, MiHR, Summer 2011.

Retention Recommendations

- Nearly all mineral explorers seek five things in their employment: (1) competitive compensation; (2) intellectual challenge and a job where they can apply all their knowledge and use their skills; (3) training; (4) advancement opportunities; and (5) independence. Companies that integrate these motivators into job postings and offers will recruit more successfully than those that do not.
- The advantages of working for a junior company typically differ from those of working for a major — for example, juniors may offer greater responsibility along with an exalted job title and independence. In turn, majors may offer professional development and greater stability. Employees expect employers to spell out those differences in postings and offers.
- Money matters — great compensation or a decent salary plus stock options are prerequisites for mineral exploration employees to join and stay with a company. This is an industry fuelled by big finds and potential big money. Money-related topics not addressed at the outset can drive workers from their jobs; a simple but crucial retention strategy is ensuring that employees doing fieldwork have credit cards and money to cover the expenses they incur while work is ongoing.
- A final retention strategy — deemed effective by both employers and employees — relates to work-environment-based solutions: Employers that follow safe work-practices and use the latest equipment and technology enjoy greater success in retaining workers.

A Comparison of Mineral Exploration and Mining

There are a number of similarities between exploration and mining — in terms of the profile of the sectors and the HR challenges they face; however, there are also aspects of exploration that present unique HR challenges. Strategies and initiatives developed by MiHR to address HR issues in mining are relevant to exploration. However, there will be new strategies and initiatives needed to address the exploration sector's unique HR issues.

What Makes Mineral Exploration and Mining the Same?

Many programs and industry initiatives already exist at MiHR to address the awareness, recruitment and retention challenges of the mining sector. Research participants cited many of these initiatives during this study's primary research and consultation phases. That said, there are many opportunities to improve and develop these services for the exploration sector.

- As with mining, there are occupations in exploration that require support through the industry's credential-recognition programs. Exploration activities tend to be shorter-lived than mining activities, so a system to ensure smooth transitions of workers around the sector is needed. Essential skills profiles and national occupational standards can be created for occupations such as line cutters, camp managers, field assistants, and technologists and technicians. MiHR can then work with the sector to ensure an appropriate system is in place to recognize the skills and credentials of workers in exploration and to ensure smooth transitions for these exploration workers.

- The sector has a large proportion of professional occupations, particularly geoscientists. Mentorship and development of future talent is essential, to ensure that the future workforce has the experience and knowledge transfer from mature workers to ensure the sector's success.
- While there is a slightly larger proportion of women working in exploration than mining, exploration — like mining — falls well short of the participation rates seen in the Canadian labour force. Programs and initiatives in the mining side of the sector would also be effective in encouraging more women to choose careers in exploration.
- Many large, multinational mining companies have mineral-exploration branches. There is an opportunity in the sector for larger companies to leverage their HR functions to provide support and partnerships to assist smaller firms to manage the workforce, and to provide guidance and expertise on strategic, long-term workforce management.
- As with mining, the exploration sector has a large cohort of mature workers. Programs and initiatives to engage and retain the aging workforce are also important for the future success of the exploration sector.
- Young people, particularly students, are largely unaware of the career options in exploration. Geosciences, in particular, are popular choices for young people in post-secondary education, but the flows into the sector are thin. MiHR's *Explore for More* career-outreach initiatives can be adapted to focus on career awareness for exploration.

How Do Mineral Exploration and Mining Differ?

Mineral exploration differs from extraction and processing in several key ways, including: main activities performed; occupational mix, size and nature of organizations involved in the sector; type of work; location of work; and demographic profile of the workforce. Consequently, the exploration sector faces unique HR challenges.

- The sector employs a large proportion of highly educated professionals. However, general career awareness of mineral exploration is minimal. Career educators at secondary and post-secondary levels and students at all levels are unaware of the career opportunities in the sector and readily confuse it with mining — thinking it predominantly employs labourers.
- Many occupations in the industry involve remote fieldwork in wilderness locations and camp settings. Industry jobs often require workers to live far from towns or cities — away from family and friends — under primitive conditions, for long stretches. The sector therefore lends itself to attracting individuals with adventurous personalities who enjoy the outdoors.
- The exploration sector is seasonal and cyclical. The economic conditions and business side of the sector are shaped by periods of intense exploration activity and periods of contraction. In addition, the activities are generally research and development oriented (as opposed to operations oriented) and budgets tend to be discretionary in nature. The sector attracts individuals who are entrepreneurial and comfortable with risk-taking. Furthermore, the payoffs are limited. Few companies find viable resource deposits. The seasonal nature of the sector shapes the rhythms of daily work; market volatility regularly affects activities and, ultimately, careers in the sector. Therefore, the sector also tends to attract individuals with an optimistic outlook.

- Unlike mining, which is dominated by large multinational organizations that generate significant revenue internally and have large workforces, the exploration sector is predominantly made up of micro- and small-sized organizations that raise funds through investments from the financial sector. Small enterprises have limited capacity or resources for formal HR functions. As a result, workforce planning tends to be relatively short-sighted and reactive.
- The exploration sector contains a larger proportion of knowledge workers. Nearly three-quarters of the exploration workforce have advanced post-secondary education. Higher education requirements dictate longer schooling for students and the need to ensure opportunities for obtaining appropriate experience. The sector must work closely with educational institutions to ensure that the future workforce has the skills and competencies they will need on the job.
- The age profile of the exploration sector differs from mining, in that in addition to a large cohort of mature workers, the sector also has a relatively large cohort of younger workers, and fewer workers at the mid-stages of their careers. Furthermore, the intensive knowledge-based aspects of the sector require employees to spend many years on the job to be fully effective. This creates a challenge in ensuring that the knowledge of mature workers is captured and properly passed along to younger workers. An immediate challenge for the sector is ensuring that there will be enough experienced knowledge workers to take on senior roles as the maturing workforce begins to retire and that effective knowledge transfer systems are in place.
- The demographic profile of the exploration sector differs from mining in terms of Aboriginal participation—at 2.7 per cent, compared to 6.8 per cent in mining. Exploration activities are often conducted in close proximity to Aboriginal communities, but the duration of work is often short-lived compared to extraction activities. The sector also employs a large portion of highly educated professionals, making it uniquely positioned to grow the Aboriginal talent pool and support opportunities for higher education of Aboriginal peoples.
- Both sectors are global in nature; however, in exploration, the workforce actively seeks opportunities on a global scale and most professionals conduct work overseas, as well as in Canada. This, in conjunction with the seasonal nature of exploration activities in Canada, and a highly educated workforce with broad and transferable skills, translates to a highly mobile, global workforce. Global mobility of talent and recognition of foreign professional and educational credentials pose unique HR challenges and opportunities for the sector.



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