



Northern Ontario Mining Supply and Services Study
International Market Demand:
An Overview of Key Mining and Supply Markets Worldwide
Excerpt from Final Project Report



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1.0 International Market Demand Analysis: An Overview of Key Mining and Supply Markets Worldwide

Since the mining supply and services industry depends on the underlying trends in mineral production and the mining industry, we begin with a broad overview of production and mining activities. An international perspective will be provided wherein Canada's current position and trends can be readily ascertained. An international perspective of Canada's mining supply and services industry will also be developed.

1.1 International Market Demand – Current Mining Production and Trend Analysis

It is a well known fact that Canada is one of the world's leading mining countries. This is clearly evident in **Figure 1**, which shows that Canada ranks in the top five of the world in terms of mineral production for several commodities.¹ We are by far the largest producer of potash (approximately 33% of total world production in 2007). We are also the number one producer of uranium, an increasing important and politically sensitive commodity. Canada ranks number two in both nickel and cobalt production, number three in titanium concentrate, as well as platinum group metals, and aluminum.

While Figure 1 provides only a small sampling of current mineral production, it is clear that Canada continues to be one of the world's leading producers, despite the fact that mineral production in Canada has been going strong since before Confederation.

Figure 1 also provides a mineral production trend analysis for the period 2003-2007. It suggests that Canada has been able to increase its output of several key minerals (i.e. potash, nickel, cobalt, among others) between 2003 and 2007. This is impressive, given the ever increasing levels of production coming from countries such as China, Brazil, Peru, and Chile. Growth in GDP and mineral output are highly correlated; for example, China's output for all metals increased strongly over this period. As we all know, China's growth is not only driving increasing domestic mineral production, but also increasing output from Australia, Peru, Chile, Russia, just to name a few. It is also a major driver behind global demand for mining supplies and services.

The following are other findings from the production data and trend analysis:

- In addition to China, mineral output from Brazil, Peru, Chile increased for all metals surveyed during the 2003-2007 period.
- 2007 marked the first year in over a hundred years that South Africa was not the world's largest gold producer. That position is currently held by China. Decreasing local supply, increasing domestic costs, and labour force issues are major reasons for South Africa's declining production.
- In the case of some commodities, world production can be dominated by just one country. This is the case with potash in Canada (33% of world production), platinum group metals in South Africa (62%), asbestos in Russia (45%), magnesium in China (76%), and cobalt in Congo (41%).
- It would appear that United States and Australian output with some commodities is losing ground to other competitors (for example, gold in the U.S. and nickel in Australia).

¹ Figure 1 compiled by Doyletech Corporation from several sources including (1) Statistics Canada Canadian Minerals Yearbook, 2008, and (2) World Mineral Production 2003-2007, British Geological Survey.



Figure 1: International Mineral Production and Trend Analysis

Country	Principle Commodity, 2007	National Production, 2007 (tonnes)	World Production, 2007 (tonnes)	% of World Total, 2007	World Rank, 2007 Based on Production	Notes and Comments & Largest Producer	Trend Analysis (2003 to 2007; see Figure 22 for Details)
Canada	Uranium (mine prd.)	9,500	41,306	23	1	23% of world total; down from 25% in 2006.	DOWN
	Potash (mine prd.)	11,000,000	33,000,000	33	1	largest producer by far, Canada (33% of world total)	UP
	Nickel (mine prd.)	255,000	1,599,000	16	2	largest producer, Russia (19% of world total)	UP
	Cobalt (mine prd.)	8,261	62,292	13	2	largest producer, Congo (41% of world total)	UP
	Titanium Concentrate	816,000	5,600,000	15	3	largest producer, Australia (24% of world total)	UP
	Platinum Group Metals	23,042 kg	527,639 kg	4	3	largest producer, South Africa (62% of world total)	UP
	Aluminum	3,083,000	38,101,000	8	3	largest producer, China (33%)	UP
	Gypsum (mine prd.)	9,500,000	127,000,000	8	4	largest producer, US (17%)	DOWN
United States	Gypsum (mine prd.)	22,000,000	127,000,000	17	1	largest producer, US (17%)	UP
	Molybdenum (mine prd.)	59,400	186,091	32	1	largest producer, US (32%)	UP
	Salt (mine prd.)	43,800,000	250,000,000	17	2	largest producer, China (18%)	DOWN
	Magnesium	113,000	872,000	13	2	largest producer, China (76%)	UP
	Copper (mine prd.)	1,164,000	15,487,000	8	3	largest producer, Chile (36%)	UP
	Gold (mine prd.)	244	2,334	11	4	largest producer, China (12%)	DOWN
	Zinc (mine prd.)	803,000	11,041,000	7	4	largest producer, China (27%)	UP
	Mexico	Silver	3,125	21,050	15	2	largest producer, Peru (17%)
Cadmium		1,617	18,788	9	5	largest producer, China (20%)	UP
Lead (mine prd.)		137,000	3,617,000	4	5	largest producer, China (38%)	DOWN
Brazil	Chrysotile (asbestos)	230,000	2,290,000	10	4	largest producer, Russia (45% of world total)	UP
	Cobalt (mine prd.)	4,300	62,292	7	5	largest producer, Congo (41% of world total)	UP
Chile	Copper (mine prd.)	5,557,000	15,487,000	36	1	largest producer, Chile (36%)	UP
	Molybdenum (mine prd.)	41,100	186,091	22	3	largest producer, US (32%)	UP
	Silver	1,929	21,050	9	4	largest producer, Peru (17%)	UP
Peru	Silver	3,494	21,050	17	1	largest producer, Peru (17%)	UP
	Copper (mine prd.)	1,190,000	15,487,000	8	2	largest producer, Chile (36%)	UP
	Zinc	1,444,000	11,041,000	13	3	largest producer, China (27%)	UP
	Molybdenum (mine prd.)	17,500	186,091	9	4	largest producer, US (32%)	UP
	Lead (mine prd.)	329,000	3,617,000	9	4	largest producer, China (38%)	UP
	Gold (mine prd.)	170	2,334	7	5	largest producer, China (12%)	DOWN
South Africa	Platinum Group Metals	328,000 kg	527,639 kg	62	1	largest producer, South Africa (62% of world total)	UP
	Gold (mine prd.)	252	2,334	11	2	largest producer, China (12%)	DOWN
	Titanium Concentrate	1,060,000	5,600,000	19	2	largest producer, Australia (24% of world total)	UP
Zambia	Cobalt (mine prd.)	4,425	62,292	7	4	largest producer, Congo (41% of world total)	DOWN
Congo	Cobalt (mine prd.)	25,300	62,292	41	1	largest producer, Congo (41% of world total)	UP
China	Aluminum	12,559,000	38,101,000	33	1	largest producer, China (33%)	UP
	Zinc	2,950,000	11,041,000	27	1	largest producer, China (27%)	UP
	Salt (mine prd.)	46,000,000	250,000,000	18	1	largest producer, China (18%)	UP
	Magnesium	659,000	872,000	76	1	largest producer, China (76%)	UP
	Lead (mine prd.)	1,360,000	3,617,000	38	1	largest producer, China (38%)	UP
	Gold (mine prd.)	270	2,334	12	1	largest producer, China (12%)	UP
Indonesia	Nickel (mine prd.)	188,000	1,599,000	12	3	largest producer, Russia (18% of world total)	UP
Australia	Titanium Concentrate	1,340,000	5,600,000	24	1	largest producer, Australia (24% of world total)	UP
	Uranium (mine prd.)	8,603	41,306	21	2	largest producer, Canada (23%)	UP
	Gold (mine prd.)	245	2,334	11	3	largest producer, China (12%)	DOWN
	Nickel (mine prd.)	185,000	1,599,000	12	4	largest producer, Russia (18% of world total)	DOWN
Russia	Nickel (mine prd.)	300,000	1,599,000	19	1	largest producer, Russia (18% of world total)	UP
	Chrysotile (asbestos)	1,030,000	2,290,000	45	1	largest producer, Russia (45% of world total)	UP
	Potash (mine prd.)	6,300,000	33,000,000	19	2	largest producer, Canada (33% of world total)	UP
India	Coal	490,000,000	6,358,000,000	8	3	largest producer, China (40%)	UP
	Salt (mine prd.)	15,500,000	250,000,000	6	4	largest producer, China (18%)	DOWN



Figure 2 provides further details on the trend analysis which was presented in the last column of Figure 1.² It also illuminates which countries appear to be the emerging competitors for each commodity. It suggests that leading mining nations, especially Canada, face increased competition from other nations.

The following are the major findings:

- While Canada is the largest producer of mined uranium, it faces increased competition from Kazakhstan and Australia.
- While Canada is the largest producer of potash, it faces increased competition from Russia.
- While Canada is the second largest producer of nickel, it faces increased competition from Indonesia.
- While Chile is the largest producer of mined copper, Congo and Zambia are steadily increasing their share of world output.
- In addition to South Africa's drop in gold production (noted above), traditionally dominate gold producers Canada, the United States, and Australia are also losing ground to China as well.
- While there are more than forty countries which mine zinc, China and Peru appear poised to gain market share, at the expense of traditional players such as Canada and the United States.
- While many countries have experienced production declines in silver in recent years, Russia, Greece, Mexico, Congo, and Argentina have experienced increases.
- Canada's production of cobalt increased strongly in recent years to remain one of the world's largest producers.
- While Canada reduced its output of both cadmium and asbestos in recent years, Russia continues to expand its production.

² Figure 2 compiled by Doyletech Corporation from several sources including extensive web research; and the World Mineral Production 2003-2007, British Geological Survey.



Figure 2: Trend Analysis by Commodity

Commodity	Production Trend Analysis (i.e. Emerging Competitors)	CDN Trend, 03-07
Uranium (mine production)	Between 2006 and 2007, significant increases in production from Kazakhstan and Australia more than off set a reduction in Canadian output. Canada continues to be the largest producer of mined uranium; however, Canadian production has fallen from 11,000 tonnes in 2005 to just 9,500 tonnes in 2007. Down slightly from 2003 to 2007 as well. Since 2003, production from Kazakhstan has increased 101%.	DOWN
Potash (mine production)	Between 2003 and 2007, the following producers expanded production: Canada (strongly), Russia (strongly), Belarus, Germany, Spain, US, Brazil, Israel, and China. Between 2003 and 2007, the following producers decreased production: U.K., Chile.	UP
Nickel (mine production)	Indonesia production has been steadily increasing, 24% since 2003. Australian production has declined by 4% since 2003. Thus, Indonesia now ahead of Australia to be the third largest mined nickel producer (after Canada). Canada increased production from 163,244 tonnes in 2003 to 254,784 tonnes in 2007.	UP
Platinum Group Metals	Much of South Africa's production (by far the world leader) comes from one area, the Bushveld Complex.	UP
Copper (mine production, not refined cooper prod.)	Over the last 20 years, South America has increased from about one quarter to nearly one half of total world production (largely due to Chile). North and Central America share of production has not increased much, despite a 26% increase from Mexico. Asia and Africa's share has been increasing (due to Zambia and Congo). Canada up slightly between 2003 and 2007.	UP
Gold (mine production)	China became the world's largest gold producer in 2007, a position held by South Africa for more than 100 years. Dramatic increase in China's gold production in recent years (29% in the 5 years to 2007). Traditionally dominate gold producers Australia, US, Canada have been losing ground; Indonesia has experienced a major rise in production since 1985. South Africa's declining reserves and rising production costs are the cause of its decline in output.	DOWN
Lead (mine production)	Lead production dominated by China, mines more than twice as much as the next largest, Australia. Lead is now strictly regulated around the world. Canada's production has decreased between 2003-2007.	DOWN
Zinc (mine production)	More than 40 nations mine zinc. China increased production by 4% between 2006 and 2007. Peru increasing production in recent years. Canada's production decreased from 788,063 tonnes in 2003 to 622,945 tonnes in 2007.	DOWN
Silver (mine production)	Canada's production of silver has decreased from 1.3M kilograms (metal content) to 862,401 kilograms in 2007. Many countries have experienced production declines between 2003 and 2007. Countries to experience notable increases between 2003-2007: Greece, Russia, Congo, Mexico, Argentina.	DOWN
Titanium	Canada's production increased from 1.9M tonnes in 2003 to 2.5M tonnes in 2007. Notable increase in production between 2003 and 2007 from: South Africa, Canada, China.	UP
Molybdenum (mine production)	Between 2003 and 2007, increased production from: Armenia, Mexico, US, Chile, Peru, China. Between 2003 and 2007, Canada's production decreased from 9,092 tonnes to 6,841 tonnes.	DOWN
Cobalt	Canada's production increased strongly from 4,327 tonnes in 2003 to 8,261 tonnes in 2007. Increases between 2003-2007 from: Congo, China, Australia.	UP
Cadmium	Canada decreased production from 1,759 tonnes in 2003 to 1,388 tonnes in 2007. Increases from: Russia, China.	DOWN
Asbestos	Canada decreased production from 200,500 tonnes in 2003 to 185,000 tonnes in 2007. Increases between 2003-2007 from: Russia, Brazil.	DOWN



1.2 International Market Demand – Mining Industry Comparisons

In addition to an understanding of current mineral production volume and trends, an understanding of current world mining markets is required if Northern Ontario suppliers are to properly assess market opportunities.

While the previous section indicated that Canada is one of the world's leading producers of minerals, a broader question is how does Canada's overall mining industry compare to that of other nations?

The following tables are intended to provide a brief introduction to the domestic mining industry in several key mining nations worldwide.³ In addition to listing some of the key major and junior mining firms in each country (and some of the major mine sites), each table seeks to describe, where possible, Canadian mining industry participation in each nation.

We have included a wide range of nations in this world mining market overview so as to provide Northern Ontario mining supply and services firms with a broad perspective of opportunities that may be available to them.

Nevertheless, since our interviews with these firms identified specific markets in which they already have shown some interest, we have been careful to include further details and insight into these particular markets. These markets are Australia, Chile, China, South Africa, and the United States.

A review of the tables suggests some common issues and themes. The business decision for any supplier considering penetrating a new market comes down to a simple equation: risk versus reward. Conducting enough market research and competitive intelligence to assess the level of risk involved for the amount of reward likely to be obtained is difficult for any size supplier. A common theme in the tables is this risk vs. reward equation, wherein the types of risks and the potentials for reward are assessed on a country-by-country basis. For example, some countries represent truly significant opportunities because they are considered significantly 'under-explored' and 'under-mined'; examples of such countries are Russia and Colombia. However, there are many types of risk involved for miners and suppliers alike to operate in such countries. The overall risk-reward equation is often impacted by the following types of risk: political, terrorist, environmental, bureaucracy, legal, indigenous peoples, among others.

We note that in the case of markets of known interest to Northern Ontario suppliers, a good part of the risk is already well understood and managed. Canadian mining firms and suppliers have long been established in the United States, Australia, South Africa, as well as Chile and Peru. The major exception is China where the risks are less well known and the links by Canadian miners and suppliers less established.

China provides an excellent example of a (potentially) high risk – high reward scenario. Over the last five years, several Canadian junior mining firms have entered the market. While there have been success stories, there are still a number of Canadian firms facing regulatory and policy obstacles. Regulatory and bureaucracy risk is present in every mining market in the world, but as can be seen in the tables, Canadian mining firms seem to feel it is a bigger problem in some markets than in others. Indonesia is an example of a mining market with high regulatory / bureaucracy risk. Over the last

³ Tables developed from several sources including various national mining association publications, Doyletech internal databases, extensive website reviews and online databases, the DFAIT 'Sector Overviews', among other sources.



several years, mining firms have faced legal uncertainties, new laws, and numerous proposed changes to existing laws. As a result, mineral exploration in Indonesia has been at a virtual standstill since 2001.

The same issues characterize mining and exploration activities in India. Governments at all levels now recognize that these issues have not helped to attract investment. In fact, India now actively seeks foreign investment in order to meet increasing demand. It is also recognized that foreign investment is needed to introduce better technologies and processes so as to realize the quality and productivity improvements that are much needed. Major opportunities are believed to exist in the coal and uranium sectors. For example, India's need for uranium is expected to increase 10-fold by 2020 while tens of billions of dollars are needed to expand coal production and logistics to meet demand (coal-fuelled power plants generate more than 50% of India's power).

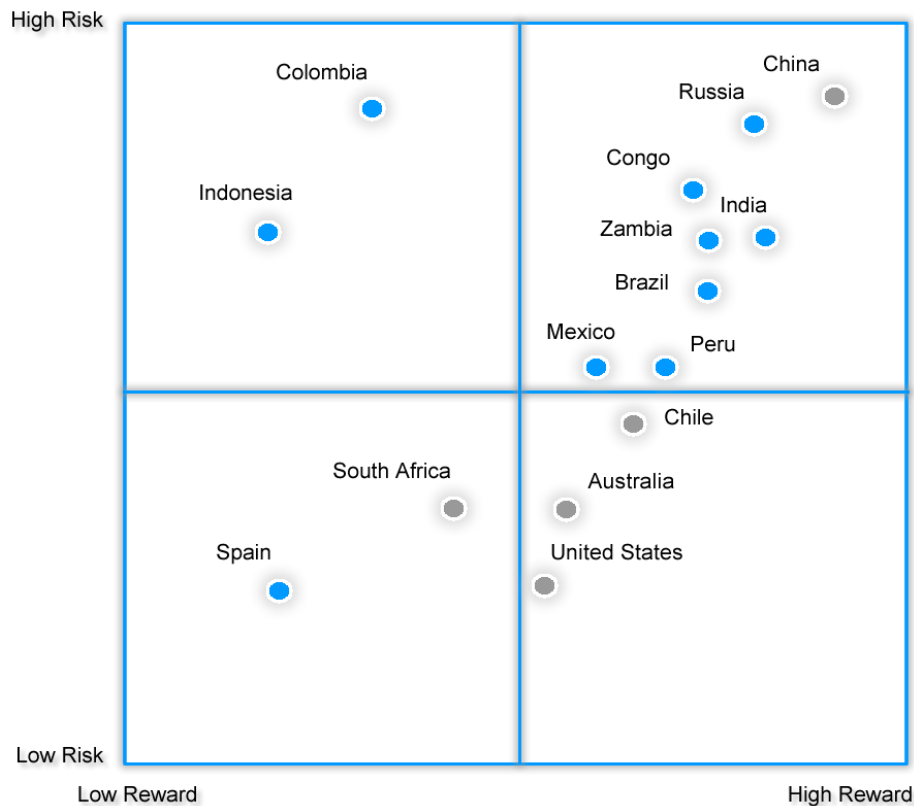
State-owned or controlled enterprises play a major role in India's mining sector. This too is changing; however, it is noted because it impacts on the risk assessment that suppliers need to make.

Based on our research in completing the tables, **Figure 3** provides a hypothetical risk-reward comparison of world mining markets. We caution that this is a highly subjective evaluation on our part; but nevertheless some form of comparable risk assessment must be undertaken by miners looking to develop new projects as well as by suppliers seeking to address their needs. Of course, it is the risk at the individual project level which really defines the market opportunity. That is, it is quite possible that a project or opportunity in a stable, less bureaucratic country can present more risk than one in a more fluid situation. Nevertheless, the tables suggest that there are inherent levels of risk, and different types of risk at play from country to country. Note that the circles in grey correspond to those markets discovered from the interviews with Northern Ontario suppliers as already being of interest to them.

It should also be noted that risk is a fluid variable in mining market assessment. For example, recent actions suggest that China seeks to improve its legal and regulatory processes; this is encouraging to potential new entrants into this fast-growing economy. The same can now also be said for India.



Figure 3: A Hypothetical Risk-Reward Scenario for World Mining Markets



In terms of current market penetration, the tables identify Canadian mining/exploration firms as being significant players in several markets:

- **Australia** – Canadian firms are the largest external investors in gold mining;
- **Congo and Zambia** – Canadian firms account for about 30% of all exploration expenditures in Africa (a portion rivalled only by South Africa);
- **Mexico** – Canadian firms represent 78% of total foreign direct investment in Mexico’s mining sector; six of the seven new mines opened in Mexico in the last two years were by Canadian firms;
- **Peru** – Canadian firms dominate this country’s junior mining sector; they are the largest foreign mining investor in Peru;
- **Russia** – Canadian gold mining firms and explorers are at the forefront of this sector in Russia;
- **South Africa** – Canadian firms are the largest foreign investor in the South African mining industry;
- **United States** – Canadian firms are mainly active in Arizona and Alaska. Perhaps the best place for mining in the U.S. right now is Nevada because local governments are very supportive and companies only pay regular corporate taxes (there is no royalty scheme for federal lands, yet).⁴

⁴ BMO Capital Markets, *Basic Points: Hard Rocks and Hard Shocks*, February 19, 2010.



- **India** – Canadian firms are beginning to investigate opportunities such as in uranium and coal. They are among the major foreign investors in India’s mining sector, along with firms from the U.S. and Australia.

The tables also indicate that Canadian mining and exploration firms are world leaders at developing new markets and have a strong track record of entering markets well before they become conventional mining mainstays. It should also be noted that for each of the world mining market overviews, we were able to identify at least a few Canadian firms that are currently active, even for relatively small markets such as Spain and Columbia. In several cases, many Canadian firms were identified. No attempt is made in this research to distinguish between a mining firm and an exploration firm, given the inherent difficulties involved in doing so. There is a wide spectrum of such firms, all of which are key participants in any domestic mining industry.



Figure 4: Australia Mining Industry and Canadian Positioning

Country:	Domestic Mining Industry		Degree of Canadian Mining Industry Involvement	
	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Australia	BHP Billiton (diamonds) Rio Tinto Newmont Australia Xstrata Vale INCO Chalco Newcrest Jameson Resources Xenolith Resources Resourcehouse (coal) OZ Minerals WMC Ltd. (uranium) Cameco Corporation Queensland Mines/Pioneer International Heathgate Resources Cogema Australia Barrick Gold Gold Fields Inc. Lihir Gold Ltd. Ivanhoe Mines Limited Santos Limited Centennial Coal	ERA at Jabiru (Northern Territory) (owned by Rio Tinto) Broken Hill Ore Deposit (zinc) Golden Grove Mine (zinc) Mount Isa Mines (zinc) McArthur River Mine (zinc) Olympic Dam, South Australia (uranium) Four Mile Mine (uranium) Kintyre (uranium) Henty Mine (gold) Hillgrove, New South Wales (gold) Prominent Hill Mine (gold&copper) Argyle Mine (diamonds) Nabarlek (uranium) Merlin Mine (diamonds) The Super Pit (Kalgoorlie, Western Australia, largest gold open pit mine in AUS)	Increasing interaction between CDN and AUS mining firms (increasing competition between the two as well as increasing cooperation in the form of JVs, cooperative development, many dual stock market listings as well). CDN firms are the largest investors in gold mining in Australia (about half of Canada's total investment in Australia). AUS's BHP Billiton invested \$1B in the Ekati diamond mine in Canada (one of the largest employers in NWT).	Alcan (now owned by Rio Tinto) Vale INCO Denison Mines Cameco Corporation Nautilus Minerals Inc. (has been considering a project) Northgate Minerals (acquired AUS firm Perseverance Gold) Barrick Gold



Figure 5: Brazil Mining Industry and Canadian Positioning

Domestic Mining Industry			Degree of Canadian Mining Industry Involvement	
Country:	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence	
			Comments and Descriptions	Canadian Firms Active
Brazil	<p>Largest: Vale (second-largest diversified metals and mining company in the world). Acquired Inco for \$18B in 2007. Market cap is US\$150B.</p> <p>Other Notables: MHAG Usiminas Bahia Mineracao Samarco Yamana Gold Kinross Gold CopebraséAngloGold Votorantim Metais CSN Ferrous Resources Anglo American Rio Tinto Aura Mineral Resources MRN Companhia Brasileira de Alumínio Alcoa Novelis Vaaldiam Resources Ltd. Abora Participações Ltda Mineracao Rio Novo Prometalica Fosfertil Ultrafertil Bunge and Copebras CBMM (controls about 90% of world reserves of niobium) Industria Nucleares do Brasil (have a monopoly on uranium in Brazil, state-owned)</p>	<p>Jucurutu mine (state of Rio Grande do Norte) Caetite mine (state of Bahia) Paracatu mine (Minas Gerais state) Catalao mine (state of Goias) Caraiabas mine (state of Alagoas) Corumba mine (state of Mato Grosso) Barro Alto mine (state of Goias) Juruti mine (state of Para) Pimenta Bueno (in Rondonia) Brauna (state of Bahia) Duas Barras (Minas Gerais state) Leao II mine (state of Rio Grande) Sossego (copper, in Carajas) Cristalino (copper, in Carajas) Corpo 118 (copper, in Carajas) Alemao (copper, in Carajas) Chapada mine(copper, state of Goias) Sao Miguel Paulista mine (state of Sao Paulo) Pico mine (Minas Gerais state) Vargem Grande mine (Minas Gerais) Pitinga tin mine</p> <p>5 key mining states are: (1) Minas Gerais (45% of national production), (2) Para (22%), (3) Goias (7%), (4) Sao Paulo (7%), and (5) Bahia (3%)</p> <p>Brazil is considered under-explored compared to Canada and Australia.</p> <p>Government plans to expand its geological mapping and surveys. Exploration in Brazil is expected to grow significantly.</p>	<p>CDN firm Yamana has approx. 7 mineral properties in Brazil, the largest gold producer.</p> <p>CDN junior gold firms are active in Brazil.</p> <p>Approx. 125 CDN firms are believed to be active in Brazil; exploration firms (juniors, seniors, and majors) believed to be around 42% of the 125.</p> <p>Total CDN investment in the mining sector in Brazil is around \$3.7B.</p> <p>CDN Trade Office in Belo Horizonte has worked closely with Vale to introduce CDN suppliers to them.</p> <p>Vale has announced several major expansion projects in Brazil; for example they plan to invest US\$11B at Carajas Serra Sul complex to produce 90 million tons of iron ore by 2012.</p>	<p>Kinross Gold Yamana Gold Sola Resource Corp (JV in a diamond project) Verena Minerals Corporation (gold and diamond projects) Vaaldiam Resources Ltd. Brazauro Resources Brazilian Diamonds Talon Metals Corp. NeoMaterial Technologies</p>



Figure 6: Chile Mining Industry and Canadian Positioning

Domestic Mining Industry		Degree of Canadian Mining Industry Involvement		
Country:	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Chile	<p>Largest: Codelco (state-owned)</p> <p>Other Notables:</p> <ul style="list-style-type: none"> Amerigo Resources Anglo American Antofagasta Minerals Atacama Minerals Barrick Gold BHP Billiton Breakwater Resources Cenizas Cerro Colorado CMP Coeur d'Alene Collahuasi El Tesoro Escondida ENAMI Freeport McMoran Kinross Gold Mantos de Oro Meridian Gold Lomiko Chemetall Milpo Pelambres South American Gold & Cooper SQM Teck Xstrata Yamana Gold Zaldivar 	<p>Codelco has 4,000 supply contracts. Has said it wants to negotiate with its suppliers to reduce costs up to 12%.</p> <p>Pascua-Lama (gold) Cerro Casale (gold) Lomas Bayas (Xstrata)</p> <p>Escondida mine in the northern Atacama Desert is the world's largest open-pit copper mining operation.</p>	<p>Canadian firms behind two large mines now under development: (1) Barrick - Pascua-Lama, a \$2.4B investment; and (2) Kinross Gold & Barrick Gold - Cerro Casale, a \$1.65B investment.</p> <p>According to a study by the CDN. Embassy in Chile, there are 61 Canadian mining firms with operations in Chile (study was in 2008 approximately).</p> <p>Investment by these CDN firms in Chile was estimated at \$6.2B in 2008.</p>	<ul style="list-style-type: none"> Barrick Gold Kinross Gold Teck Yamana Gold Breakwater Resources Atacama Minerals



Figure 7: China Mining Industry and Canadian Positioning

Domestic Mining Industry		Degree of Canadian Mining Industry Involvement		
Country:	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence	
			Comments and Descriptions	
			Canadian Firms Active	
China	<p>Eldorado Gold Corporation Newmont Mining Euromax Resources Xiamen Tungsten Co, Ltd, China's largest producer and exporter of tungsten and molybdenum products Yanzhou Coal Mining Company Yunnan Copper, third-largest copper producer in China. Galaxy Resources (AUS firm; lithium) Henan Yuguang Gold and Lead China Coal Energy Co. Shanxi Lu'an Mining Group Co. Ltd. China Yunnan Tin Minerals Group China Vanadium Titano-Magnetite Min. Co. Silvercorp Metals - China's largest primary silver producer. Minmetals Sichuan Dexin Mining Resources Ltd. China Lithium Products Technology Sinosteel Jinchuan Zijin Jiangxi Copper China Gold MCC CHALCO CNMC</p>	<p>Tanjianshan Gold Mine (TJS); Qinghai Province of Western China</p> <p>Gaocheng (GC)</p> <p>Shimentou (SMT)</p> <p>Exploration in China is still considered a 'risky business' due to restrictive and sometimes unclear policy frameworks.</p> <p>Many mining accidents in China in recent years. CNN report indicates over 2,200 mining deaths last year alone.</p>	<p>Several CDN firms already active in China.</p> <p>China buying stakes in several CDN mining companies. China Investment Corp., China's \$200-billion (U.S.) sovereign wealth fund, has been accumulating stakes in resource firms including Kinross Gold and Potash Corp.</p> <p>CDN mining firms active in Tibet has created concerns and protests.</p> <p>Recent actions suggest that China seeks to improve its legal and regulatory system; this is encouraging for potential new entrants into China.</p> <p>Many CDN junior mining firms have entered China in the last 5-8 years.</p> <p>While there are several success stories, there are also quite a number of firms still facing regulatory and policy obstacles.</p>	<p>Eldorado Gold Corporation Euromax Resources Asia Now Resources Corp. Silvercorp Metals HDI/Continental Minerals NeoMaterial Technologies Silver Dragon Resources Inc.</p>



Figure 8: Colombia Mining Industry and Canadian Positioning

Country:	Domestic Mining Industry		Degree of Canadian Mining Industry Involvement	
	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Colombia	<p>Eldorado Gold Corporation Miranda Gold Corp. AngloGold Ashanti Columbia Anglo American plc (UK) Goldplata Windy Knob Resources Bellhaven Copper and Gold BHP Billiton (AUS) Xstrata (Switzerland) Colombia Goldfields Limited (CAN) Drummond (US) Rio Tinto (AUS/UK) Glencore (Switzerland) CVRD (Brazil) Cemex (Mexico)</p>	<p>Cerrejon coal (world's largest export open pit coal mining project). Also the largest mining operation in Colombia.</p> <p>Other coal mines are in Sogamoso, Tunja, Paipa, Zipaquirá, Tabio, Neusa Chinacota, Chitaga, etc.</p> <p>The Titiribi mining district.</p> <p>The hills north of Murindo River (copper and gold).</p> <p>Acandí (near border with Panama).</p> <p>Three emerald mining areas: (1) Muzo, (2) Coscuez, and (3) Chivor.</p> <p>La Colosa project (gold; in the planning stage).</p> <p>Cerromatoso nickel mine in Montelibano, Córdoba in Northern Colombia (BHP Billiton).</p>	<p>Colombia is a relatively new market for CDN firms but a lot of recent attention is now evident. CDN firm Colombia Goldfields has been actively exploring and buying parcels.</p> <p>Goldplata active in exploration.</p> <p>The Colombian emerald mines are the longest known working mines—since 1000 A.D.</p> <p>Colombia emeralds constitute 50-95% of world production (depending on the year, source, and grade).</p> <p>Disagreements, trade union disputes, strikes tend to be common at Colombia mines. The mining infrastructure has been the target of terrorist attacks as well.</p> <p>Coal mining is now a significant part of Colombia's economy.</p> <p>Several news reports that the activities of some mining firms is resulting in the mass displacement of indigenous populations.</p>	<p>Eldorado Gold Corporation Colombia Goldfields Limited Cosigo Resources Blackfire Exploration Barrick Gold Greystar Resources B2 Gold</p> <p>(many of the CDN firms are in exploration stages)</p>



Figure 9: Congo Mining Industry and Canadian Positioning

Country:	Domestic Mining Industry		Degree of Canadian Mining Industry Involvement	
	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Congo	First Quantum Minerals Ltd. Anvil Mining Ltd. Barrick Gold Banro Gecamines (state-owned) Freeport McMoran El Nino Ventures Rubaco SPRL Moto Goldmines Ltd. Brinkley Mining Plc Tiger Resources Limited	The Lueshe Mine Sicomines Sarl Tenke Fungurume Project Kipoi Project	<p>Several CDN firms already established.</p> <p>China firms becoming active.</p> <p>Canadian companies account for about 30% of all exploration expenditures in Africa (a portion rivaled only by South Africa). There has been persistent conflicts in the central eastern part of DRC.</p> <p>In 2001, Africa accounted for 11% of CDN mining assets; by 2007 the figure was 17%.</p> <p>Significant social and political unrest and uncertainties with several complaints against mining firms as being involved. CDN firms are one of the giants in African mining.</p>	First Quantum Minerals Ltd. Anvil Mining Ltd. Barrick Gold Banro Ivanhoe Mines (have discovered potentially gigantic reserves in Congo).



Figure 10: India Mining Industry and Canadian Positioning

Country:	Domestic Mining Industry		Degree of Canadian Mining Industry Involvement	
	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
India	<p>National Mineral Dev. Corp. (NMDC); state-owned (iron ore) Coal India (CIL); state-owned (coal) Vedanta Resources Hindustan Copper (HCL); largely state-owned (however, being divested currently) Ashapura Group (bauxite and bentonite) Buchwa Iron Mining Company Hutti Gold Mine Company Essar Steel Hindalco Jindal Steel and Power Limited JSW Tata Steel Shri Vijaya Gimpex Mining Ltd. (SVG) Mahendra Brothers (diamonds) Great Eastern Energy Corp. Ltd. (GEECL) Singerani Collieries Company Mysore Minerals Ltd. (iron ore) BHP Billiton De Beers Rio Tinto Birla Copper Indian Iron and Steel Company (IISCO); state-controlled (iron ore) Rashtriya Ispat Nigam Ltd. (RINL); state-owned Sesa Goa Limited (iron ore) Anglo-American Gold Monarch Gold Mining Deccan Gold Mines Steel Authority of India (SAIL) New Crest Mining Limited Orissa Mining Corporation; state-owned Bharat Aluminum Co. National Aluminium Co. (NALCO) Phelps Dodge POSCO</p>	<p>Approx. 572 coal mines. Approx. 2,500 metalliferous mines submitting returns. Estimated total mining industry workforce of around 1 million.</p> <p>Bailadila (iron ore, Madhya Pradesh) Majhgawan (diamond mine in Panna, Madhya Pradesh) Hirabudini (gold mine) Jindal Open Cast (coal mine in Distt. Raigrah) Tensa (iron ore mine in Distt. Sundergarh) Agnigundala (lead mine, Hyderabad) Rajpura Darbia (zinc mine, Udaipur) Rampura Agucha (lead, Udaipur) Sargipali (lead mine) Chiria (iron ore; one of the largest and richest iron ore deposits in the world)</p> <p>Historically, the mining sector has been largely state-dominated. However, recently the government has stated that it seeks more involvement by the private sector in the "non-strategic metal sector".</p> <p>Significant increases in productivity and exploration and infrastructure expenditures are needed if India is to reach its full mining potential.</p> <p>India is the world's largest importer of gold.</p>	<p>Non-uniformity of regulations across India; federal and state players involved.</p> <p>States can create their own qualifying conditions and have discretionary powers to end mining leases; there have been cases where mines have been taken over because of labour and/or environmental issues.</p> <p>Because coal is the key fuel for India's power sector (coal-fuelled power plants generate more than 50% of India's power), further development of the coal sector is badly needed (and highly desired by government). Increased binding on state-owned coal blocks now taking place.</p> <p>Major foreign investors in India's mining sector are Canada and the U.S., followed by Australia, the U.K., and South Africa.</p> <p>India's need for uranium expected to increase 10-fold by 2020. Canadian firms actively investigating (i.e. Cameco and others).</p> <p>A large part of India is still unexplored.</p> <p>Approx. 3,000 operating mines in India; 75% are in the private sector with 25% in the public sector.</p> <p>Indian governments now realize the losses the country has faced by the absence of foreign investment (arising from the drawn-out regulations, and other factors). They are now actively seeking DFI.</p>	<p>Pebble Creek Mining Ltd. Cameco Inmet Mining Homeland Uranium Transworld Garnet Co. Meridian Peak Resources Corp.</p> <p>Tens of billions of dollars are expected to be needed in the coal sector over the next 10-20 years; for expanded coal production, for clean coal technologies, and for logistics.</p> <p>Some experts believe that gold mining holds significant promise in India (currently, there are few active gold mines in India).</p>



Figure 11: Indonesia Mining Industry and Canadian Positioning

Country:	Domestic Mining Industry		Degree of Canadian Mining Industry Involvement	
	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Indonesia	Newmont Mining East Asia Minerals Freeport McMoran Nusa Tenggara Mining Corporation Bumi Resources (Indonesia’s largest coal producer) BHP Billiton Vale INCO Kideco Jaya Agung Aneka Tambang (state-owned) Koba Tin Timah Bukit Asam (state-owned) Adaro Indonesia Berau Coal Kalimantan Gold Corporation Limited Barrick Gold Southern Arc Minerals Inc.	Batu Hijau Cempaka Diamond Property Grasberg Copper and Gold Mine (world's largest known gold reserve)	<p>China increasingly focused on Indonesia as a source of resource deals.</p> <p>Concerns over deforestation and environmental issues.</p> <p>China and India firms, among others, have been very active in exploring coal sources in Indonesia. Tata Power of India bought a 30% stake in leading domestic coal producer Bumi Resources in 2007.</p> <p>Over the last several years, mining firms have faced legal uncertainties, new laws, and numerous proposed changes to various laws. As a result, mineral exploration in Indonesia has been at a virtual standstill since 2001. However, since 2005 this has started to change.</p>	Brett Resources Inc. East Asia Minerals Weda Bay Minerals Inc. Barrick Gold Southern Arc Minerals Inc.



Figure 12: Mexico Mining Industry and Canadian Positioning

Country:	Domestic Mining Industry		Degree of Canadian Mining Industry Involvement	
	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Mexico	<p>Largest: Southern Cooper (Grupo Mexico) Second: Fresnillo (Industrias Penoles)</p> <p>Other Notables: Grupo Acerero del Norte (AMHSA) Empresas Frisco Compañía Minera Autlán Hylsa Villacero Excellon Resources</p>	<p>The largest mining states are: Chihuahua, Durango, Sonora.</p> <p>Mina Real Property (gold)</p>	<p>Canadian FDI represents 78% of the FDI in the Mexican mining sector. Relatively speaking, Canada's share is growing. Canadian firms account for six of the seven new mines opened in Mexico in the last 2 years.</p> <p>258 foreign-owned mining companies in Mexico, 197 are Canadian (ie. 76% of foreign-owned segment of industry).</p> <p>Most CDN firms engaged in exploration only. 54 mines in production or under construction owned in whole or in part by Canadian firms.</p>	<p>Aurcana Diabras Endeavour Silver Excellon Resources Farallon Resources First Majestic Silver Gammon Gold Goldcorp Great Panther Resources New Gold Pan American Silver Scorpio Mining NWM Mining Blackfire Exploration Ltd. Fortuna Silver Mines Silver Dragon Resources Inc. Rochester Resources Bowmore Exploration UC Resources</p>



Figure 13: Peru Mining Industry and Canadian Positioning

Country:	Domestic Mining Industry		Degree of Canadian Mining Industry Involvement	
	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Peru	Newmont Mining BHP Billiton XStrata Glencore Grupo Mexico Votorantim CVRD Mitsubishi Mitsui Shougang Barrick Gold Teck Phelps Dodge Pan American Silver Dynacor Mines Minera Antamina Rio Tinto Freeport McMoran Doe Run Anglo American Chinalco Zi Jin Gold Fields Inc. Brookmount Explorations	Antamina (largest copper and zinc site). Pierina and Lagunas Norte (gold) Acari mine (gold) Quiruvilca, Huaron and Morococha (silver and copper mines) La Oroya Complex La Granja Cerro Corona Toquepala Las Bambas Yanacocha Peru's Ministry of Energy and Mines estimates that around US\$10.0 billion will be spent until 2014 in exploration, development, mine expansions and new projects. Major foreign mining investors include Canada, Australia, Brazil, China, Japan, the US, and the UK.	Canadian firms dominate the Peru junior mining sector. There are more than 80 CDN junior mining firms active in prospecting and exploration, by far the largest contingent in Peru. Canada is the largest foreign mining investor in Peru. Long history of collaboration between Canada and Chile firms and organizations. Canadian mining technology highly regarded. Corporate social responsibility (CSR) of CDN mining firms also highly regarded.	Barrick Gold Teck Pan American Silver Bear Creek Mining Corporation Sulliden Exploration (2011) Fortuna Silver Mines



Figure 14: Russia Mining Industry and Canadian Positioning

Country:	Domestic Mining Industry		Degree of Canadian Mining Industry Involvement	
	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Russia	<p>Norilsk Nickel (largest producer of nickel copper, cobalt, platinum, and palladium in Russia).</p> <p>Aloosa (Russia's largest diamond miner)</p> <p>Polyus Gold Mining (Russia's largest gold producer).</p> <p>VSMPO-Avisma (one-third of the worldwide titanium market).</p> <p>Russia Aluminum</p> <p>SUAL Holding</p> <p>UMMC</p> <p>Amur Minerals Corporation</p> <p>Highland Gold Limited</p> <p>Polymetal (gold)</p> <p>Peter Hambro Mining (gold)</p> <p>Buryatzoloto (gold)</p> <p>Mechel</p> <p>Evrax Holdings</p> <p>Kursk Magnetic Anomaly</p> <p>SMW Gold</p> <p>TVEL Corporation (uranium)</p> <p>Shenhua Group Corporation</p> <p>Kaliningrad Amber Works</p> <p>A/S Chukotka Ltd.</p>	<p>Norilsk Oktyabrskiy Complex in East Siberia</p> <p>Kupol Gold Mine, Chukotka</p> <p>Mnogovershinnoye Mine</p> <p>Krasnokamensk (largest uranium mining site).</p> <p>The primary mining areas in Russia: Eastern Siberia, Western Siberia, the Urals, the Russian Far East.</p> <p>Outdated technology and remote northern locations makes a lot of Russia's mineral reserves (30-70%) not viable.</p> <p>It is believed that new technology which produces higher yields could make more mines viable.</p> <p>Moderization plans are needed for both small and large Russian mining firms.</p>	<p>Several CDN gold producers have been active in Russia. For example, Kinross made a \$450M investment in 2005 (Chukotka in North East Siberia).</p>	<p>Kinross Gold</p> <p>Barrick Gold</p> <p>High River Gold</p> <p>Silver Bear Resources</p>



Figure 15: South Africa Mining Industry and Canadian Positioning

Domestic Mining Industry		Degree of Canadian Mining Industry Involvement		
Country:	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence	
			Comments and Descriptions	
			Canadian Firms Active	
South Africa	First Uranium Corporation Harmony (gold) Gold Fields Inc. De Beers Anglo American BHP Billiton Rio Tinto Anoroaq Resources Barrick Gold (Barrick Africa) Xstrata Coal South Africa Randgold and Exploration Limited Richards Bay Minerals Delta Mining Lonmin Platinum Limited Ridge Mining Pamodzi Gold African Rainbow Minerals (Gold) Limited Namakwa Diamond Company Vametco Mineral Corporation Impala Platinum Limited Umcebo Mining Total Coal South Africa Mvelaphanda Resources Kumba Resources (coal) Kangra Group Exxaro Resources Limited Kuyasa Mining Western Areas (gold)	Ezulwini Mine Bushveld Complex (platinum) The East Rand Mine (gold) TauTona mine (gold) Coal production highly concentrated in 5 companies; 11 mines account for 70% of total national output. Other mining firms: Thistle Mining (gold) Alexkor (diamonds) Firestone Diamonds Trans Hex Petrex SouthernEra Resources Assore Limited National Manganese Mines Foskor Limited Sasol Mining (coal) Mmakau Mining Great Basin Gold Endulwini Resources Batsalani Junior Mining DRDGOLD Limited Simmer and Jack (gold)	SA is a combination of developed and developing economy. Regulatory and administrative burdens of establishing a mining project in SA remain. CDN is the largest foreign investor in the SA mining sector. The domestic players investing in expansion and new mine development are: Harmony, AngloGold Ashanti and Goldfields in Gold; De Beers in Diamonds; Anglo Platinum, Impala Platinum, Lonmin, Aquarius Platinum in Platinum Metals; Ingwe, Kumba, Eyesizwe, Anglo Coal, Xstrata, Sasol, Total in Coal. CDN firms are acquiring mining rights previously owned by large SA firms in mineral rich areas. SA mining legislation stipulates that a minimum of 26% equity must be shared with an accredited BEE partner - "Black Economic Empowered" (BEE) companies.	First Uranium Corporation Barrick Gold (Barrick Africa) Most CDN firms active in SA are juniors in platinum, diamonds, and uranium. Approx. 20 CDN mining firms are active in SA currently.



Figure 16: United States Mining Industry and Canadian Positioning

Domestic Mining Industry			Degree of Canadian Mining Industry Involvement	
Country:	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
United States	Freeport McMoran (AZ & NM) Newmont Mining (NV) Barrick Gold Corp. (NV) Kinross Gold (Fort Knox, Alaska) Cleveland Cliffs, Inc. (iron-ore) (MN & MI) U.S. Steel Corp. (iron-ore) (MN) BHP Copper Inc. (AZ) / BHP Billiton Peabody Energy - world's largest private-sector coal company. Montana Res. (copper-molybdenum) (MT) Usibelli Coal Mine Inc. (UCM) (Alaska) Round Mountain Gold Corp. (NV) Kennecott Utah Copper Corp. (UT) Teck (Alaska) Teck Pogo (Alaska) Hecla Mining Company Cripple Creek & Victor Gold Mining (CO) ASARCO LLC (copper) (AZ) Quadra Mining (copper-molybdenum) (NV) General Moly Marigold Mining Company Intrepid Potash Carlota Copper Company Rosemont Copper Company Carlota Copper Company Resolution Copper Company Denison Mines Corporation Augusta Resource Corporation	Number one mining state is AZ (copper, molybdenum conc.) Number two state is NV (gold, copper, magnesite, silver) Usibelli Coal Mine (Alaska) Greens Creek (Alaska) - sixth largest silver mine in the world Red Dog (Alaska) Fort Knox (Alaska) Teck Pogo (Alaska) McKinley Mine (NM) Stillwater Mine (MT) - only US producer of palladium and platinum Questa Mine (NM) Mt. Hope Project (NV - molybdenum) Lucky Friday Complex (Idaho) Carlota Copper Mine (AZ) Other mining firms: Homestake Mining Mosaic Company St. Cloud Mining Strathmore Minerals Intercontinental Potash Chevron Mining Neutron	Several small and large CDN mining firms active in Nevada and Arizona. Canadian firms are not as active in New Mexico (5 active firms) as might be expected. Most prominent CDN firm in NM is Vancouver-based Strathmore (uranium). 25 CDN firms were believed to be active in Arizona in 2007. CDN firm Quadra is prominent in AZ; Quadra acquired Cambior USA and thereby acquired the Carlota Copper mine.	Barrick Gold (NV gold mining) Kinross Gold (Alaska) Teck Augusta Resource Corporation Denison Mines Corporation Strathmore Minerals (NM) Quadra Mining



Figure 17: Zambia Mining Industry and Canadian Positioning

Country:	Domestic Mining Industry		Degree of Canadian Mining Industry Involvement	
	Key Mining Industry Firms	Major Mining Sites	Canadian Mining Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Zambia	Gemfields plc First Quantum Minerals Ltd. Freeport McMoran ABM Resources NL AfNat African Eagle Resources Vedanta Resources plc Glencore (Switzerland) Metorex (South Africa) Chimam Manufacturing Limited Zonghui Mining Group (China; pledging to invest \$3.6B over the next five years).	Bwana Mkubwa copper mine Cheowa Lumwana copper mine	Considerable Canadian mining presence already established in Zambia. First Quantum - believed to be the largest Canadian firm active in Zambia. Copper mining is Zambia's economic mainstay. In recent times, local tax issues (and proposed changes) have been a concern for CDN firms. Stronger ties between Zambia and China recently.	Caledonia Mining Corporation First Quantum Minerals Ltd. Equinox Minerals



1.3 International Market Demand – Mining Supply and Services Industry Comparisons

In order to assist Northern Ontario mining suppliers and service firms with initial competitive intelligence, an overview of world mining production and trends has been provided, along with a brief overview of fourteen important mining markets worldwide. This section will provide an overview of the mining supply and services industry in each of these markets. While this type of information is less readily available, an initial scoping exercise was conducted wherein key domestic mining supply firms were identified as well as any information that could be found on current Canadian suppliers active in these markets. Surprisingly, there are several Canadian suppliers already active in foreign markets, both parts/equipment suppliers as well as service providers. As the previous set of tables indicated, the opportunities on the services side should not be ignored as many newer mining nations need services such as those provided by established Canadian suppliers. As will be seen, the following types of services show up over and over again as being in demand:

- **Pre-project evaluation and feasibility services** – to assess the viability and issues in developing a new mine or exploration project;
- **Mine project and civil engineering services** – to plan and build a new mine;
- **Environmental standards compliance and assessment services** – to meet increasingly stringent environmental standards being imposed by local governments and for ISO certification;
- **Geophysical and geological services** – to explore and assess areas for new development (several countries, such as Russia and Colombia, are considered very much unexplored and unmapped);
- **Corporate social responsibility (CSR) consulting services and practices** – to meet strong resistance from specific local groups;
- **Safety assessment audit services** – to meet increasing safety concerns from local governments, often arising from recent mine disasters.

Likewise, the same themes show through in the kinds of products that are also in demand:

- **Mine management systems and software;**
- **Safety technologies and products;**
- **Ventilation systems and underground communications systems, gas detecting;**
- **Used mining parts and equipment** (some markets are very price-conscious);
- **Rockburst monitoring systems** (arising from increasing concerns from unions);
- **Portable camp systems and equipment.**

The previous lists of products and services are based on general demand trends across a wide range of mining nations. Obviously, each nation has its own particular demand profile and characteristics. For example, based on the research in developing the tables, the following is a small sample of the specific opportunities that may exist:

- **South Africa** – shortage of mining construction services, particularly project management;



- **Russia** – cold climate drilling and workplace safety training (due to recent mining disasters), also opportunities for newly-used equipment because so much of this nation’s mining technology is either obsolete or very outdated and inefficient;
- **Peru** – environmental assessment and CSR practices because of strong resistance from specific groups;
- **Mexico** – cheaper and more efficient technologies and products, partly arising from increasing competition from Chinese suppliers;
- **Indonesia** – Canadian off-road mining vehicles are in demand;
- **Colombia** – the full range of civil engineering, geophysical and geological services due to increased exploration activities sought by governments and exploration firms alike;
- **China** – the full range of safety products and services due to several recent mine disasters;
- **Chile** – environmental services to meet ISO and government requirements (also, increased demand for used equipment as local firms become more cost-conscious);
- **Brazil** – products for underground mining because most of the local supplier community is focused on open-pit mining (since it is by far more common) (also, there is a specific need for pollution control products and systems).
- **India** – there is a need for more advanced exploration technologies to explore deeper and more complex deposits. Productivity issues are known to exist with many current systems. Domestic mining equipment manufacturers are often waiting for key parts and components, which are typically imported. Canadian suppliers may be able to position themselves as alternative sources of supply, if not as primary sources.

Several sources were used to develop the list of domestic and Canadian mining suppliers active in each market, including an examination of all the suppliers listed in the CAMESE 2009-2010 Compendium (and their respective websites). Both lists were developed from comprehensive literature and web searches; although they cannot be considered to be exhaustive, they are believed to be representative as a workable initial scoping exercise for the benefit of Northern Ontario suppliers considering one or more of these fourteen markets.

A review of the lists does suggest that there are many Canadian mining supply firms active in multiple markets outside Canada. One would think that with the heavy involvement of Canadian mining and exploration firms around the world, it should be possible for Canadian-based suppliers to grow internationally as well, despite the serious level of competition implied therein.

Additionally, the research suggests that along with the internationalization of mining and exploration activities has come the internationalization of mining supply.



Figure 18: Australia Mining Supply and Services Industry and Canadian Positioning

Domestic Mining Supply and Services Industry			Degree of Canadian Mining Supply and Services Industry Involvement	
Country:	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Australia	Inbye Mining Services PTY SNC Lavalin (Australia) Supply Force International (SFI) Clough P&H MinePro Services Alminco Control Systems Technology Byrnecut Ausenco Rock Australia Gekko Systems Haulmax Broens Korvest Ltd. Mine Site Technologies Nepean Group Quarry Mining Sandvik Mining & Const., Australia Steinert Australia Thiess Weir Minerals Remote Control Technologies RCR Xstrata Technology	More mining firms: KBR Minova RME Crusader Hose Coffey Mining Automated Positioning Systems United Group Resources Metso Minerals ABON Engineering Aker Solutions Altra Industrial Motion Ausenco Limited Bucyrus Underground CSIRO Minerals Fero Group Hills Industries Lumley Engineering Dywidag-Systems Industrea Limited Group Ivolve Johnson Screens	<p>CDN firm SNC Lavalin has established a market in AUS (i.e. with uranium producers).</p> <p>There is established two-way trade in the following products: crushers, dozers, drillers and borers, dump and heavy trucks, mining pumps.</p> <p>There is services trade as well, for example SNC Lavalin.</p> <p>Australia is a world leader in the export of mining technology and services, exporting more than USD \$1.8 billion in 2006-2007. This figure is expected to grow to over USD \$4.5 billion by 2010.</p> <p>Australia is also a world leader in mining related software products. Generally, considered an innovation leader in mining supply globally.</p>	NL Technologies (NLT) Hayden Diamond Bit Industries Heath & Sherwood MacLean Engineering Gemcom Software SNC Lavalin Motion Metrics Mine Design Technologies CG Industrial Specialties Ltd. Major Drilling Group International Mine Radio Systems Inc.



Figure 19: Brazil Mining Supply and Services Industry and Canadian Positioning

Domestic Mining Supply and Services Industry			Degree of Canadian Mining Supply and Services Industry Involvement	
Country:	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Brazil	<p>Caterpillar Brazil Ltda. Urucum Mining S.A Graneisa Equipamentos Ltda. Prominas Projects & Mining Services U & M Mining and Construction S.A. Group M&M Martin Engineering Ltda.</p>		<p>2007 market for mining equipment in Brazil estimated to be US\$3.8B. Major importers are Germany, Italy, US, Canada, Finland, Argentina, and China. For 2008-2012 period, average annual value is estimated to exceed US\$4B. Local mining equip. manufacturers meet most of Brazil's demand for open pit mining (i.e. 90% of the equipment is produced domestically).</p> <p>While open-pit mining is by far most common, the fewer number of underground mines represent opportunities for Canadian suppliers of niche technologies.</p> <p>It is law that foreign manufacturing firms must be established in Brazil or have a Brazilian partner.</p> <p>Approx. 125 CDN firms are believed to be active in Brazil, with 30% being mining equipment distributors and 26% being service firms.</p> <p>Because of the high number of projects either planned or just under way, it is believed that opportunities exist for: (1) project appraisal and pre-feasibility, (2) economic feasibility studies, (3) environmental assessment and pollution control, (4) ISO 14000 certification, (5) IT and commun. networks.</p> <p>All equipment sold in Brazil must have operation manuals and specs. written in Portuguese. Shipping documents must be in both Portuguese and English.</p>	<p>Canadian Wear Technologies Rotesco Inc. Cattron-Theimeg Canada Ltd. Hepburn Engineering Inc. Major Drilling Group International SNC-Lavalin Inc. Stanco Projects Limited Norcast Castings Heath & Sherwood DUX Machinery</p> <p>Also, potential opportunities in wireless comm. systems, drilling equipment, and specialized tools.</p>



Figure 20: Chile Mining Supply and Services Industry and Canadian Positioning

Domestic Mining Supply and Services Industry			Degree of Canadian Mining Supply and Services Industry Involvement	
Country:	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Chile	Terainox SA Trex Ingequip Bannister Y CIA. Ltda. Amelunxen Mineral Engineering Ltda Aresco Chile Ltda. Polimet Simma Ventec Aceros Santa Ana de Bolueta Chile Tuset Complast ktom comercial limitada Filtros Marticorena Surac Reicotex Filcar Delkor South América Ltda	<p>Importers are concentrated in Santiago. However, many have branches in cities near the mines; specifically in Antofagasta, Copiapo, and Iquique.</p> <p>2010 annual mining sector expenditures are projected as follows: \$315 million for flotation reactants and sulphuric acid; \$304 million for steel grinding balls and steel grinding mill parts; \$108 million for imported off-road tires; \$96 million for large trucks; \$21 million for shovels; and \$2 million for underground mining machinery.</p> <p>Canada-Chile Free Trade Agreement can provide preferential tariff treatment for some goods.</p> <p>Spare parts market is very price conscious.</p>	<p>Chile imports 76% of its mining equipment.</p> <p>CDN firms are Chile's third-largest foreign mining supplier after the US and Germany.</p> <p>US suppliers hold up to 60% of the market in areas such as rock-drilling or earth-boring equipment. However, rising US \$ could provide increased opportunities for other suppliers (especially since Chile firms are reducing costs).</p> <p>CDN firms have increased their presence in recent years.</p> <p>CDN firms are establishing joint ventures with local firms.</p> <p>Cost-conscious mining firms are looking for reductions of 10 to 20% from current suppliers.</p> <p>Chile mining firms are looking for environmental technologies, to meet ISO 14001-registered requirements as well as increasingly stringent environmental standards in Chile.</p> <p>Expomin (www.expomin.cl/index.php?idi=8) and Exponor (www.exponor.cl) are major expos.</p>	Activation Laboratories Ltd. Arkbro Industries Canadian Wear Technologies InstanTel Inc. Eagle Mapping Hallite Seals Canada Ltd. Hepburn Engineering Inc. Mine Design Technologies Morgan Industrial Supply Ltd. Rotesco Inc. Safecomm Electronic Controls EPCM Tech. Group (formed a local subsidiary called Tecnologias Cobra SA) EECOL Electric Corp. NL Technologies (NLT) AG Mining Equipment Inc. Shaw Almex Industries Limited Piteau Associates Eng. Ltd. SNC-Lavalin Inc. CG Industrial Specialties Ltd. Norcast Castings Heath & Sherwood Westpro Machinery Motion Metrics Gemcom Software DUX Machinery



Figure 21: China Mining Supply and Services Industry and Canadian Positioning

Domestic Mining Supply and Services Industry			Degree of Canadian Mining Supply and Services Industry Involvement	
Country:	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
China	Toronda Heavy Industry Co. Ltd. S&C Electric Company (US firm) Sandvik Mining (SWE firm) SANY Group Co. Ltd. Sichuan Huafeng Drilling & Eng. Shanghai Kinsson Equip. & Parts Caterpillar DBT Joy Global Mine Site Technologies In 2006, China had 751 mining equipment vendors (over 90% were domestic firms).	Demand for mining equipment grew from \$1.9B in 2002 to \$7.5B in 2006	<p>CDN supply firms would face competition from Australia firms which are already established in China.</p> <p>Top 5 mining machinery exporters to China: Germany, US, Australia, Japan, Sweden.</p> <p>Several recent mine disasters are compelling the government to act; it means there are immediate opportunities for CDN suppliers in the area of ventilation, underground communications, gas detecting, mine management and any other safety products and services.</p>	Cattron-Theimeg Canada Ltd. Piteau Associates Eng. Ltd. Gemcom Software Arkbro Industries

Figure 22: Colombia Mining Supply and Services Industry and Canadian Positioning

Domestic Mining Supply and Services Industry			Degree of Canadian Mining Supply and Services Industry Involvement	
Country:	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Colombia	Major Drilling Group International Maccaferri Impadoc SA Industrias Donsson	<p>Medellin (for suppliers to the precious metals mining cluster).</p> <p>For coal and related mining, most of the operators as well as many of the suppliers are based in Bogota.</p>	<p>Much of the country is unexplored with excellent geophysical conditions; thus compelling opportunities for CDN exploration firms.</p> <p>Mining equipment and services firms from China, US, Germany, Brazil, and Chile are the main competitors.</p> <p>Mining services in particular demand are civil engineering, geophysical and geological studies, and environmental studies.</p>	Major Drilling Group International



Figure 23: Congo Mining Supply and Services Industry and Canadian Positioning

Domestic Mining Supply and Services Industry			Degree of Canadian Mining Supply and Services Industry Involvement	
Country:	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Congo	Atlas Copco			MAG Industries



Figure 24: India Mining Supply and Services Industry and Canadian Positioning

Country:	Domestic Mining Supply and Services Industry		Degree of Canadian Mining Supply and Services Industry Involvement	
	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
India	Asean Explotech Inc. (explosives) BEML Limited (earth moving equip.) Champion Filters Manufacturing ETA Star Coal India Heavn Engineering Corp. Ltd. (state-owned; major provider) Gemcom (CDN) Maruti Induction Pvt. Ltd. MineMap Pty. Ltd. Bateman Global Services Wardrop Engineering Inc. Versa-Matic Pump Modular Mining Systems, Inc. Dux Machinery Corporation (CDN) Dyna Drill Eqpt. Pvt. Ltd. Downer EDI Mining John Fowler (India) Ltd. Appropriate Process (APT) Komatsu Ltd. Joy Global Larsen & Toubro Limited SRG Services & Consultancy Ltd. HIC International Co. Inc. Solar Explosives Limited Zoom Enterprises Volvo Terex Vectra Caterpillar Hitachi Telcon DBT	Local Indian mining equipment manufacturers typically do not invest adequately in R&D activities. More R&D work is starting to take place in India by world majors due to the low R&D manpower costs. Studies have shown that local firms manufacturing mining equipment often experience delays due to a delay in imported parts/components. Policy initiatives now seek to speed up the introduction of 'state-of-the-art' technology in the mining sector. More Suppliers: Ingersoll-Rand (India) Jessop & Co. Hyderabad Industries Gujarat Apollo Equipments Limited Atlas Copco Wirtgen Bucyrus International	Estimated that CDN firms sell around \$40-50M of mining equipment per year in India (2007). Several recent trade missions by CDN groups and government agencies. According to "A Guide to Investment in India's Mineral Sector" (produced by the Federation of Indian Mineral Industries), there is a need for more advanced exploration technologies to explore deeper deposits, complex deposits, and offshore deposits. Also, for iron ore mining, technologies to mine iron ore at deeper depth in ecologically fragile zones and with lower iron content. Given the increased interest in coal and uranium mining and exploration in India, there are opportunities for CDN suppliers in these areas. Total Indian market for mining & mineral processing equipment and technology is estimated at CDN \$350 M per year (as stated in DFAIT India Sector Profile). 65% of this market is serviced by domestic firms with direct imports accounting for the 35% balance. Many of the Indian manufacturers of mining equipment rely on foreign firms for technical and developmental assistance, and often import critical parts. This represents immediate service and product opportunities for Canadian suppliers.	Cubex (Winnipeg) RAX Enterprises (Winnipeg) Dux Machinery Corporation MREL Group (Kingston) Gemcom (Vancouver) Hepburn Engineering (Toronto)



Figure 25: Indonesia Mining Supply and Services Industry and Canadian Positioning

Domestic Mining Supply and Services Industry			Degree of Canadian Mining Supply and Services Industry Involvement	
Country:	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Indonesia	PT Pama Persada PT Sapta Indra Sejati PT Buma PT Dharma Henwa PT Pamapersada Nusantara Madhani Talatah Nusantara		<p>CDN off-road mining vehicles have found a good market in Indonesia.</p> <p>CDN engineering firms are also present.</p> <p>Foreign equipment vendors must, by law, have a local agent. Foreign firms have found the agent and associated registration requirements to be a significant bureaucratic impediment.</p>	<p>Gemcom Software</p> <p>Hepburn Engineering Inc.</p> <p>Arkbros Industries</p> <p>Motion Metrics</p>

Figure 26: Mexico Mining Supply and Services Industry and Canadian Positioning

Domestic Mining Supply and Services Industry			Degree of Canadian Mining Supply and Services Industry Involvement	
Country:	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Mexico	Sandvik Mining and Construction Mine Site Technologies P&H MinePro Services Mexico Komatsu Latin-America Corp	<p>Mainly in Mexico City and the capitals of the primary mining states: Chihuahua (Chihuahua), Hermosillo (Sonora), Durango (Durango) and Zacatecas.</p> <p>Mexican mining firms prefer to deal with suppliers present locally. Thus, it is key for Canadian suppliers to have a local presence thru a subsidiary, partner, distributor, agent, etc.</p> <p>Must be able to converse in Spanish.</p>	<p>CDN firms have a good reputation.</p> <p>CDN products viewed as excellent quality.</p> <p>Expo Minería, major tradeshow in Mexico.</p> <p>Increasing competition from Chinese suppliers.</p>	<p>Mine Radio Systems Inc.</p> <p>Arkbros Industries</p> <p>Canadian Wear Technologies</p> <p>Hepburn Engineering Inc.</p> <p>Mine Design Technologies</p> <p>Rotesco Inc.</p> <p>Activation Laboratories Ltd.</p> <p>Major Drilling Group International</p> <p>SNC-Lavalin Inc.</p> <p>Stanco Projects Limited</p> <p>Montali Inc.</p> <p>Gemcom Software</p> <p>DUX Machinery</p> <p>Norcast Castings</p> <p>Heath & Sherwood</p> <p>Westpro Machinery</p>



Figure 27: Peru Mining Supply and Services Industry and Canadian Positioning

Domestic Mining Supply and Services Industry			Degree of Canadian Mining Supply and Services Industry Involvement	
Country:	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Peru	Ferreyros (Caterpillar) Mitsui Maquinarias Peru Sandvik – AB Golder Associates AMEC Klohn Crippen Berger Ltd. Ausenco Peru ABB Inc. Hatch MWH Shanghai Zenith Company Peru Schlumberger Water Services, Peru Haver & Boecker Máquinas Ltda. Vector Engineering, Inc. Inspectorate America Corporation Mine Site Technologies	Importers and resellers have offices in and around Lima.	<p>Peru imports 80% of its mining equipment.</p> <p>More than 120 CDN suppliers are active in Peru.</p> <p>Mining services market is dominated by firms from the US, UK, Australia, and Canada.</p> <p>Mining engineering market is dominated by US and CDN firms. CDN firms dominate the diamond drilling contracting and environmental services market.</p> <p>Strong competition in all supply and services sectors.</p> <p>Strong resistance to mining by some groups and in some specific areas.</p> <p>Environmental services and assessments are in high demand; all new mining projects require enviro. impact assessments.</p> <p>Due to resistance (see above), there is strong demand for CSR services.</p> <p>There appears to be strong demand for: suppliers of services (geophysical, engineering, portable camps, diamond drilling).</p>	DUX Machinery Corporation Fordia Group Instancel Inc. Reflex Instrument Bedford Group Activation Laboratories Ltd. Arkbro Industries Canadian Wear Technologies Hallite Seals Canada Ltd. Hepburn Engineering Inc. Multiurethanes Rotesco Inc. EECOL Electric Corp. Shaw Almex Industries Limited Piteau Associates Eng. Ltd. SNC-Lavalin Inc. Norcast Castings Heath & Sherwood Westpro Machinery Motion Metrics Gemcom Software



Figure 28: Russia Mining Supply and Services Industry and Canadian Positioning

Domestic Mining Supply and Services Industry			Degree of Canadian Mining Supply and Services Industry Involvement	
Country:	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Russia	<p>OAO United Heavy Machinery - the domiante domestic equipment supplier in Russia (80% of domestic drilling and mining machinery orders). Capital Equipment & Tech. Corp. Drobmash-Ukraina Rocklabs Refractory Metals Wagners Gekko Systems Rockjet Radials OMZ Mining Equipment Belgorod Mining Machinery Plant Tomsk Vakhrushev Electromech. Rudoavtomatika, OAO Terekalmaz Company Kwintmadi (JVM Group) Tiefenbach Control Systems</p>	<p>Several large and small Australian suppliers have had success penetrating Russia.</p> <p>A large amount of Russian mining equipment is outdated or largely obsolete.</p>	<p>Many CDN suppliers have been established in Russia for a long time.</p> <p>Other countries active in Russia include: US, Finland, Japan, Sweden, Germany, Australia.</p> <p>Extractive equipment has been a dominate export by CDN firms to Russia.</p> <p>More CDN suppliers are now examining Russia.</p> <p>CDN suppliers have a strong reputation for providing reliable and leading edge technologies and equipment in Russia.</p> <p>Specific opportunities for CDN suppliers are believed to exist in the following areas: project management, mining and mineral processing, enviro assessments, new and used parts, workplace safety, and cold climate drilling.</p> <p>Language and cultural barriers exist as do legal and bureaucratic challenges.</p> <p>Given that there are many smaller Russian mining firms with limited funds, significant opportunities are believed to exist for used equipment and machinery.</p>	<p>Phoenix Geophysics Ltd. CG Industrial Specialties Ltd. Westpro Machinery Gemcom Software</p>



Figure 29: South Africa Mining Supply and Services Industry and Canadian Positioning

Country:	Domestic Mining Supply and Services Industry		Degree of Canadian Mining Supply and Services Industry Involvement	
	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
South Africa	Hatch Mvelaphanda Resources JB Mining Supplies Shaft Sinkers Limited Natglow Barloworld Equipment APT Appropriate Process Technolog. Bell Equipment Immersive Technologies Liebherr-Africa Test and Measurement Instruments	More suppliers: PipeFlo Multi Power Services Redpath Weltevreden Zen Technologies Ltd. Portaclone South Africa TouchTronics	Trade between CDN and SA in mining equipment has been growing steadily. There is a shortage of mining and construction services, including project management in SA. Particular opportunities for CDN suppliers believed to exist in technologies for efficiency improvement, safety, and systems control.	Hayden Diamond Bit Industries MacLean Engineering Hepburn Engineering Inc. Arkbros Industries Mine Design Technologies Hatch ABC Ventilation Norcast Castings CanDig Mini Excavators Inc.



Figure 30: United States Mining Supply and Services Industry and Canadian Positioning

Domestic Mining Supply and Services Industry			Degree of Canadian Mining Supply and Services Industry Involvement	
Country:	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
United States	Sandvik Mining & Construction Mine Site Technologies ESCO Corporation Caterpillar Modular Mining Systems Inc. URS Corporation AMEC Sukut Mining Construction Services W.S. Tyler Peterbilt of Utah (trucks) AdEdge Technologies BakerCorp. Bucyrus International Noble Technologies Corp. URS Corporation H-E Parts International John B. Long Co. Ingersoll Rand USA Columbia Steel Casting Stantec Mining PENTA Engineering Jacobs Engineering American Pulverizer Company Frontier-Kemper Constructors RockTek Marshall Miller & Associates	Despite fairly heavy concentration of mining operations in a few states, US-based mining equipment and service companies are widely dispersed across the country.		Cattron-Theimeg Canada Ltd. Mine Radio Systems Inc. MDA, Space Missions Group Canadian Wear Technologies Piteau Associates Eng. Ltd. Hepburn Engineering Inc. Major Drilling Group International SNC-Lavalin Inc. Motion Metrics BPT Components Stanco Projects Limited Norcast Castings Westpro Machinery Gemcom Software DUX Machinery Dumas



Figure 31: Zambia Mining Supply and Services Industry and Canadian Positioning

Country:	Domestic Mining Supply and Services Industry		Degree of Canadian Mining Supply and Services Industry Involvement	
	Key Mining Supply and Services Firms	Geographic Concentration / Comments	Canadian Mining Supply and Services Industry Penetration / Presence Comments and Descriptions	Canadian Firms Active
Zambia	MineCom Copperbelt Mining Trucking Ltd. Unitrans Hanna Instruments Khosla Filters Barlows Equipment Jax Industrial Markers	More suppliers: Perway Industries Bell Equipment Zambia Atlas Copco AustAfrica African Explosives Zambia Ltd. Davis and Shirtlife		CanDig Mini Excavators Inc. Arkbros Industries Gemcom Software



1.4 International Market Demand – Barriers and Issues Impacting Trade and Market Development

It is evident from this analysis that Northern Ontario suppliers will encounter several barriers and issues in developing foreign markets. Suppliers should not be discouraged by them, but they should be aware of them and try to assess how they may potentially impact on their proposed new project or joint venture.

For example, some countries require that any equipment or parts supplied into their country be accompanied with operating manuals in the domestic language; others require that a joint venture with a domestic firm must occur if they wish to sell mining equipment in their country.

The following is an overview of just some of the barriers that currently exist, **along with proposed steps that Northern Ontario suppliers should consider:**

- **Australia** – the major barrier is a competitive one. Australia has a very well developed mining supply and services industry. In fact, since Australia is a leading exporter of mining services, Northern Ontario suppliers are likely to face competition from Australian suppliers, not only domestically but internationally. Northern Ontario suppliers should be prepared to pursue aggressive product migration strategies that exploit new waves of technology.
- **Brazil** – foreign manufacturing firms must establish an operation in Brazil or have a local partner in order to do business in Brazil. Most of the machinery and equipment used by the Brazilian mining industry is manufactured locally. In terms of imported equipment, most of it is coming from entrenched suppliers in Germany, the U.S., Italy, Finland, and China. Also, all mining equipment exported to Brazil must be supplied with operating manuals (and shipping documents) in Portuguese. This can be a problem in small transactions.
- **Chile** – several mining firms are currently requesting significant price reductions from their suppliers. Northern Ontario suppliers should pursue long term supply contracts.
- **China** – several regulatory and policy obstacles have been noted. A reliable local partner is highly recommended, as well as participation in trade missions. Over the years, there have been numerous trade missions to China by all three levels of government.
- **Colombia** – disputes are common (trade union protests, strikes, etc.) and the mining infrastructure has been targeted by terrorists. Northern Ontario suppliers should work closely with DFAIT in assessing the situation, because it can change rapidly.
- **Congo** – there are persistent conflicts, particularly in the central part of the country. Mining companies are often accused of improper activity contributing to the local unrest. Canadian miners and suppliers should be prepared to spend significant amounts of money on public relations and corporate social responsibility campaigns.
- **India** – regulatory and bureaucratic challenges, increasing competition from other foreign suppliers. Also, the many large public-sector mining firms may (or may not) be difficult to penetrate by foreign suppliers.
- **Indonesia** – persistent legal and regulatory uncertainties. Foreign equipment suppliers must have a local agent; this can create onerous registration requirements.
- **Mexico** – increasing competition from Chinese suppliers. Northern Ontario suppliers should attempt to use the NAFTA agreement as a sales aid.



- **Peru** – strong and persistent resistance by specific domestic groups or in specific parts of the country.
- **Russia** – cultural and language issues should not be overlooked; there can also be legal and bureaucratic challenges because government intervention can be frequent and unpredictable. Northern Ontario suppliers should be prepared to invest in cultural training as part of their sales strategy. Experience gained in other industries (e.g. petroleum) can be helpful.
- **South Africa** – regulatory and bureaucratic challenges, as well as trade union and labour issues. Also, the government seeks to encourage partnerships with “Black Economic Empowered” (BEE) companies.
- **United States** – competition from U.S.-based suppliers, many of which are multinational in their marketing and operations. While the strong Canadian dollar is an impediment, it can allow Northern Ontario suppliers to invest in local U.S. marketing (e.g. trade shows). It has been our experience that the U.S. mining industry has a high regard for Canadian technology and is prepared to play the early adopter role (for example, InstanTel Inc.).
- **Zambia** – local tax issues have created a climate of uncertainty.

Interviews with a few of Canada’s trade commissioners illuminate additional issues impacting on mining supply and services trade and development.⁵ It has been observed that many Canadian mining supply and service firms are relatively small and operating at capacity simply to serve the Canadian and U.S. markets. This leaves them with little time (and few resources) to devote to other foreign markets. Language and cultural barriers, as we indicated above, are real issues in transacting business across borders. Even if a Northern Ontario supplier decided to focus on a specific region or continent, the countries within that region can be very different, in terms of languages, cultures, business practices, and in terms of laws and regulations. There are also different trade and commercial agreements that must be respected. For example, many Canadian suppliers consider targeting South America for market development because there are several countries in the same area with significant (and growing) production and exploration industries. However, these suppliers must address language issues (Brazil is the only country in South America speaking Portuguese, for example). They must also address the fact that trade agreements exist between Canada and Chile, but not between Canada and Brazil.

Competition from already entrenched domestic competitors was another issue raised. Locally-owned suppliers are part of that entrenched supplier base, but so are the multinational supply firms. As a well-established industry, mining has many truly large suppliers active in markets across the globe. This serves to highlight the need for many Canadian suppliers to address niche markets. There is also the trend of large mining and exploration firms developing mining supply and services subsidiaries (i.e. Xstrata Technology).

Examples of Multinational Mining Supply Companies

Sandvik
Caterpillar
Joy Global
AMEC
ABB
Xstrata Technology
Bucyrus International
Komatsu

⁵ Based on correspondence with Canadian government trade commissioners in Brazil, Chile, Mexico, and South Africa (March 2010).



Based on web research, the following are studies indicating future growth:

- According to a study by The Freedonia Group, world demand for mining equipment (including separately sold parts and attachments) is projected to grow 4.9 percent per year through 2013 to US\$58 billion.⁶ We note that this is greater than expected GDP growth. Demand for mining equipment in China is projected to increase at a 7.1 percent annual rate through 2013.
- The equipment rental and auction business is thriving because of tight credit conditions.
- Developing economies will continue to drive growth; it is estimated that the developing world use roughly three to five times more commodities for every one percentage point of GDP growth than the developed countries.⁷

So with so many barriers and issues, what are the prospects for Northern Ontario suppliers to develop foreign markets? There are just too many factors to consider in providing a complete answer; but, at least this overview of mining and supply markets highlights some of the most common factors at work. While the barriers are numerous and diverse, so are the opportunities.

It is recommended that the supplier develop a [Foreign Market Entry Plan](#) that would not only describe the business opportunity but also assess the type of entry that seems appropriate. The three ways to conduct foreign market entry is by trade, contractual agreement, or investment. Investment can be in the form of “greenfield” foreign direct investment (FDI) where the supplier establishes a brand-new production facility that it owns in the foreign country, or it can be through “acquisition” FDI or by joint venture.

Mining supply markets are highly saturated with many competitors, but nevertheless there are still niche markets in many countries worth pursuing. Merger and acquisition activity is but one of the many factors driving continued internationalization of the mining industry; in any event, mining supply and services firms will have to become more globally-focused.

⁶ <http://www.rem-mag.com/index.php/Other-News/Global-mining-equipment-demand-set-to-grow.html>.

⁷ <http://dianchu.blogspot.com/2009/11/coal-copper-and-ore-more-than-just.html>.