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Iron Ore - 2011 Annual Review and Outlook

HIGHLIGHTS

- Steel prices steadily deteriorated during 2011. The price of the key industrial commodity used to make steel, iron ore, also decreased as demand declined against the backdrop of a weakening Chinese economy and the fallout from the European debt crisis. Steel mills cut iron ore purchases as production was curbed, while major iron ore producers such as BHP Billiton Ltd. and Rio Tinto PLC moved forward with plans to ramp up output. The combination of lower demand and increased supply put pressure on iron ore prices. Despite a challenging year for iron ore producers, many large mining firms invested billions of dollars to expand existing deposits and bring new large projects on stream. With the increased investment in expansions, iron ore producers are hoping for a strong steel market in the future.

- Canadian shipments of iron ore decreased 7.2% from 36.2 million tonnues (Mt) in 2010 to 33.6 Mt in 2011. During the same period, Canada's total exports of iron ore increased only 4.1% from 32.5 Mt in 2010 to 33.8 Mt in 2011, while imports decreased by 12.3% from 8.1 Mt in 2010 to 7.1 Mt in 2011.

- The Iron Ore Company of Canada (IOC), a subsidiary of Rio Tinto PLC, announced that its 2011 production of concentrates and pellets was down by 8.5% from the previous year, and that its sales volume had dropped by 13.0%. Phase 1 of IOC's concentrator expansion project, which is expected to raise its production capacity to 22 million tonnes per year (Mt/y), was commissioned as planned. Phase 2 of the project, aimed at improving the magnetite recovery circuit, is progressing with first production expected in late 2012.

- Iron ore from Labrador Iron Mines Limited's James mine was transported, through a confidential sales contract with IOC, by rail from the Silver Yards plant site via the Tshiuetin Rail Transportation Inc. (TSH) railway and the Quebec North Shore and Labrador Railway Company Inc. (QNS&L) railway to the Port of Sept-Îles. Approximately 411 987 wet tonnes (t) (386 000 dry t) were sold in 2011 to IOC. In addition to these shipments, approximately 187 000 wet t of additional iron ore were being held in inventory at the Port of Sept-Îles for shipping in 2012.

- Huldra Silver Inc. announced it had entered into a definitive strategic acquisition agreement, dated March 30, 2011, with Craigmont Holdings Ltd., the shareholders of

Craigmont Mines Ltd. The Craigmont mine is located 14 kilometres (km) northwest of Merritt, British Columbia, and is wholly owned by Christopher James Gold Corp. Craigmont Mines is a major producer and supplier of specialty magnetite (Fe_3O_4) products.

- In May 2011, ArcelorMittal Mines Canada announced it had launched an investment program to increase its production from 14 Mt/y to 24 Mt/y by 2013. This investment program is currently being implemented. Pre-feasibility and feasibility studies will now be commissioned to increase production to 30 Mt/y.

- In early 2012, New Millennium Iron Corp. announced that its joint-venture partner, Tata Steel Minerals Canada (TSMC) Limited, had entered into a life-of-mine Confidential Rail Transportation Contract and Locomotive Rental Agreement with QNS&L, a wholly owned subsidiary of IOC, for the transportation of iron ore products from the Direct Shipping Ore (DSO) project, owned by TSMC, from Emeril Junction in Newfoundland and Labrador to Arnaud Junction in Sept-Îles, Quebec. Construction on the DSO project in the Mehihek area has started, and the company is expecting first production in 2012. A feasibility study for the Labmag project is also being completed.

- On May 12, 2012, Cliffs Natural Resources Inc. and Consolidated Thompson Iron Mines announced the official closing agreement of the $4.9 billion acquisition of the Bloom Lake mine and all of its assets. In addition, a number of crusher, dryer, and other equipment outages at the Bloom Lake and Wabush mines resulted in a lack of pellet availability, which caused Cliffs' eastern Canadian operations to incur higher production costs.

CANADIAN PRODUCTION

As illustrated in Figure 1, Canada's iron ore pelletizing sector consists of three iron ore pellet facilities: two in Quebec and one in Newfoundland and Labrador. They include IOC, ArcelorMittal Mines Canada (formerly Quebec Cartier Mining Company), and Cliffs Natural Resources Inc. (Wabush mine), which completed the acquisition of Consolidated Thompson on May 12, 2011. Labrador Iron Mines Limited is a new player in the Canadian iron ore industry, but does not produce pellets.

IOC is Canada's largest iron ore producer and a leading global supplier of iron ore pellets and concentrates. Its current mine and processing facilities, located near Labrador City, are known as the Carol project. After processing at the Labrador City operations, the pellets and concentrate are transported south 418 km on the IOC-owned and operated QNS&L railway to the company's shipping terminal and year-round deep-water port in Sept-Îles, Quebec.

ArcelorMittal Mines Canada is one of Canada's leading suppliers of iron ore to steel makers around the world. It operates two large open-pit mines in the province of Quebec near Fermont: one in Mount Wright, which is the largest of its kind in North America; and one 55 km further south in Fire Lake. The Mount Wright mining complex includes a concentrator and automated concentrate train-loading system. The site is linked by company rail to the Port-Cartier industrial complex, which comprises a pellet plant, storage areas, and port facilities.

Cliffs Natural Resources Inc. (Wabush mine) operates a mine and concentrator in Wabush (Newfoundland and Labrador), plus a pellet plant and port in Pointe-Noire/Sept-Îles (Quebec). The company produces four grades of pellets (two standard and two fluxed) and is a supplier of

high- and low-manganese concentrates to the sinter market. Cliffs is raising production at its Scully mine to a target rate of 5 Mt/y and is continuing with mill improvements to minimize the manganese content in its pellet products. Shipments of its iron ore are made via the QNS&L railway from Wabush to Pointe-Noire. Cliffs acquired the Lac Bloom property in Quebec from Consolidated Thompson Iron Mines Ltd. in 2011. The mine is located 400 km north of Sept-Îles and 8 km north of the Mount Wright iron mines. The ore is moved south to Sept-Îles via the QNS&L railway for shipment to Asia.

The Labrador Iron Mines Ltd. (LIM) Silver Yards processing plant was commissioned in June 2011. As well, production at the Schefferville iron ore mine, located in northern Quebec, began in 2011. Approximately 411 987 wet t (386 000 dry t) were sold in 2011 to IOC. In addition to these shipments, approximately 187 000 wet t of additional iron ore were being held in inventory at the Port of Sept-Îles for shipping in 2012. LIM is also increasing production at its Menihek operations to a planned 2 Mt for 2012. This would be accomplished in part through the Phase 3 expansion of its Silver Yards processing plant and by developing additional orebodies.

Apart from production in the Labrador Trough area, the remaining iron ore production in Canada comes from Craigmont Mines Ltd. as a by-product from the recovery of magnetite from two base-metal smelters. The Craigmont mine property is situated on Aberdeen Road in Lower Nicola, approximately 14 km to the northwest of Merritt, British Columbia. Craigmont Mines is a major producer and supplier of specialty magnetite (Fe_3O_4) products for use in the coal mining industry, the fertilizer industry, specialty paints, and as an abrasive in the sand blasting industry. Also available at Craigmont Mines are large resources of specular hematite (containing 67-73% Fe). A number of non-producing advanced mining projects are also shown in Figure 1.

Preliminary data indicate that Canadian shipments of iron ore decreased 7.2% from 36.2 Mt in 2010 to 33.60 Mt in 2011. Production from Quebec accounted for 50.6% (17.0 Mt) of the Canadian total while production from Newfoundland and Labrador accounted for 49.2% (16.5 Mt); the remaining 0.2% (0.05 Mt) came from British Columbia.

Preliminary data also indicate that Canadian iron ore shipments for 2011 were valued at over $5.329 billion, a $14.9 million (0.03%) increase from the 2010 value of $5.314 billion.

Canadian iron ore shipments (Figure 2) experienced a slow decline between 1997 and 2001 and then regained momentum until 2003. It was not until 2005 that shipments demonstrated a slight rebound and then remained fairly stable until 2011 when they saw a reduction in volume. However, positive growth is expected to resume over the coming years. Pellet (i.e., agglomerated) exports have shown a constant fluctuation since 2007, with 2011 registering a 19.0% decline from 2010. Concentrate (i.e., non-agglomerated) exports saw a slow decline from 1994 to 2001, followed by a slow constant fluctuating resurgence until 2007, and then a slight decline in 2008. After 2008, they trended upwards, registering a 48.6% increase in 2011 over 2010.

CANADIAN DEVELOPMENTS

Adriana Resources Inc., which currently has one iron ore project located in Quebec named Lac Otelnuk. also acquired a 100% interest in the Bedford Iron Prospect iron ore project located in Newfoundland and Labrador. The Lac Otelnuk iron project, which is a 192-square-kilometre (km^2) property, is located in Nunavik, Quebec, 170 km northeast of Schefferville. It includes mining and concentrating an average of 175 Mt of iron mineralization per year, pelletizing 50 Mt of concentrate, and constructing an 815-km railway and the necessary port capacity to accommodate Chinamax ore carriers. The Bedford Iron Prospect project consists of 94 mineral

claims covering 2350 hectares (ha), or 307 km^2. The property is located within 3 km of the LabMag iron ore deposit and 12 km from the KéMag iron deposit of New Millennium Capital Corp. (see New Millenium details further below). Adriana has also entered into a Binding Framework Agreement with WISCO International Resources Development & Investment Limited (WISCO) with respect to an investment in Adriana and the Lac Otelnuk project. Furthermore, Cap-Ex Ventures Ltd. has entered into an agreement with Adriana Resources Inc. to acquire 100% of two strategic DSO iron properties that adjoin the Cap-Ex Block 103 property near Schefferville, Quebec. The agreement calls for Cap-Ex Ventures Ltd. to purchase a 100% interest in Newfoundland and Labrador Mineral Licences 014855M and 014856M.

Alderon Resource Corp. is an exploration and development company with an iron ore project that should enter production in 2015. The Kamistiatusset (Kami) property is located in western Labrador next to the mining towns of Wabush, Labrador City, and Fermont. It is also close to a road, a railway, and hydro power. The Kami property currently contains three zones of iron ore: Rose Lake, Mart Lake, and Mills Lake. Based on drilling to date, the Rose and Mills zones may contain approximately 200-250 Mt of ore grading between 28% and 35% iron (Fe). These grades are analogous to those at Consolidated Thompson's Lac Bloom deposit. Alderon Resource Corp. is negotiating with potential Asian partners to help finance and market its US$1 billion project.

Apella Resources Inc. of Vancouver, British Columbia, is interested in developing two projects: the Iron-T vanadium-titanium-iron property located 18 km east of Matagami, Quebec; and the Lac Doré vanadium-iron-titanium project located in the townships of Rinfret and Lemoine, 70 km southeast of Chibougamau, Quebec. In early 2012, Apella announced the sale of its Lac Doré vanadium-iron-titanium project to its wholly owned subsidiary, Prestige Mining Corp.

Argex Mining Inc. is a Montréal-based junior titanium, iron, vanadium, and magnesium exploration company with projects located in Quebec. Although it plans to rapidly advance towards titanium production at its 100%-owned La Blache deposit located near Baie-Comeau, the company is also showing strong interest in developing its 100%-owned Mouchalagane iron ore property located 145 km north-northwest of the Manic-5 dam, just northwest of Réné-Levasseur Island and 275 km north of Baie-Comeau. In late 2011, Argex announced that its Board of Directors had unanimously approved the sale by Argex of the Mouchalagane iron ore property to Impact Iron Mines Inc., Argex's wholly owned subsidiary.

Baffinland Iron Mines Corporation is proposing to develop the Mary River project on Baffin Island, in Nunavut, 160 km south of Pond Inlet on northern Baffin Island. It is estimated that the mine has confirmed resources of 400 Mt, with an upside potential of 1 billion t of iron ore grading 65% Fe, which would be exploited over a period of more than 25 years. In early 2009, Baffinland and the Qikiqtani Inuit Association announced that a Memorandum of Understanding had been successfully negotiated containing detailed provisions related to a future Inuit Impact and Benefit Agreement. The company expects that regulators will approve its 18-Mt/y Baffinland iron ore project by 2013. The mine is expected to take five years to build.

The Bending Lake iron deposit is located 280 km northwest of Thunder Bay, 25 km south of Highway 17 along Highway 622. The deposit is accessible by a well-maintained logging road and the northwest extension of the deposit crosses Highway 622. The Bending Lake Iron Group (BLIG) is a supplier of merchant pig iron for the domestic marketplace. BLIG has acquired 49 mining patents, plus options on 11 patents in association with 1584859 Ontario Inc. and 32 mining claims in association with Windigo Ridge Resources Inc. covering a 50-km area. BLIG has recently become the first iron ore company in Ontario in over 40 years to be at the environmental assessment and permitting stages.

Canadian Century Iron Mines Corporation announced on January 11, 2011, with respect to its Labec Century Iron Ore Inc. subsidiary, that it had entered into a joint-venture agreement with WISCO that would govern the joint ventures between the two companies for the exploration and development of the Duncan Lake, Attikamagen (see Champion Minerals Inc. below), and Sunny Lake projects. The agreement contemplates separate joint ventures for each of the Duncan Lake, Attikamagen, and Sunny Lake projects with the definitive structures to be determined and definitive agreements to be executed within 60 days of signing the joint-venture agreement. WISCO is to invest $40 million in exchange for a 40% voting and participating interest in each project, for a total of $120 million for the three joint ventures.

Champion Minerals Inc. is a Canadian junior exploration company listed on the TSX Venture Exchange. Its Attikamagen Lake iron property comprises 946 mineral exploration claims totaling 310 km^2 in western Labrador and northeastern Quebec. The Attikamagen property is located 15 km northeast of Schefferville. It hosts a Superior-type iron formation with significant potential, characterized by massive hematite-magnetite iron oxide. Champion's joint-venture partner, Labec Century Iron Ore Inc. (Labec), has managed the exploration on the property since 2008 and has continued to outline taconite and DSO targets. Champion will remain the manager and operator of the Attikamagen property until a 51% interest therein is vested in Labec. After Labec completes its earn-in, Champion and Labec will form a joint venture that is reflective of their proportionate ownership interests in the Attikamagen property.

Chevron Canada Limited owns the Crest iron property, one of the largest iron ore deposits in North America. It is located approximately 225 km northeast of Mayo in a remote area of the Yukon and Northwest Territories. The deposit's total resource is estimated to be in excess of 18 billion t of ore grading 46% Fe. A preliminary mining feasibility study was completed in 1963. Further evaluation studies carried out between 1963 and 1965 indicated that, with a sufficient source of inexpensive energy, the ore could be beneficiated economically into a saleable iron product with an 85% recovery rate. Chevron Canada has indicated that it plans to mine the ore in the future.

Lion Energy Corp. of Vancouver, British Columbia, received an updated technical report on its El Sol iron ore property in the Red Lake district of northwestern Ontario that proves up a historical reserve from the late 1950s. The company has undertaken some initial work that included ground magnetic surveying and diamond drilling.

New Millennium Iron Corp. (NML) intends to develop the LabMag project in Newfoundland and Labrador, and the KéMag project in Quebec. Tata Steel Ltd. (Mumbai, India) entered into an agreement to acquire about 20% of NML (Calgary, Alberta). NML is also nearing completion of its DSO project. Tata Steel, the world's eighth largest steel corporation, owns 19.65% of NML and is also its largest shareholder and strategic partner.

Oceanic Iron Ore Corp. (formerly Pacific Harbour Capital Ltd.) has a 100% interest in approximately 3000 mining claims located near Ungava Bay, Quebec, which cover a 300-km strike of Lake Superior Type iron formation along the northern extension of the Labrador Trough in the Nunavik region of northern Quebec. Of the three groups of deposits (the Lac Roberts area, Lac Morgan area, and Hopes Advance area), two are the focus of interest. The iron formation in the Hopes Advance area can be traced over a length of approximately 30 km and contains at least eight iron deposits. The Lac Morgan area contains two potential magnetite iron deposits that occur along approximately 20 km of iron formation.

Prosperity Minerals Holdings Limited (PMHL.L) is an iron ore trading business serving China. In January 2011, the company entered into an off-take agreement with Prosperity Materials Macao Commercial Offshore Limited, a wholly owned subsidiary of PMHL.L, and BlackRock Metals Inc., a mining company that specializes in minerals such as iron ore, vanadium, and titanium. BlackRock Metals is proposing to develop an iron-titanium-vanadium mine located near Chibougamau, Quebec, in the Lac Doré area, with an estimated production capacity of 20 000-50 000 tonnes per day (t/d). The property is located in James Bay and Northern Quebec Agreement territory in the municipality of James Bay. The project could potentially consist of an open pit, a processing plant, an access road, a conveyor system or railway, and a transmission line. It is presently subject to a provincial environmental and social impact assessment. BlackRock Metals' goal is to produce an iron ore concentrate for shipment by rail to Québec City, and through the Port of Quebec to one or more steel mills in China. The size of the Lac Doré deposits, estimated at several kilometres in length, would ensure a long-term supply to a number of Chinese steel mills. The plant is expected to process about 20 000 t/d of raw ore for the first year, increasing to as much as 50 000 t/d over a period of two to three years. The mine would be operational 320 days per year. This would translate into 2 Mt of concentrate being transported initially, which could increase to a maximum of 5 Mt/y. In May 2012, the company submitted to the federal government a draft environmental impact assessment with the expectation that construction could potentially begin in the summer of 2012. In early 2012, federal regulators requested that the company provide more details for clarification in order to carry out their evaluation of the project.

Roche Bay plc owns one of the world's largest known, undeveloped magnetite (iron ore) resources located at Roche Bay on the Melville Peninsula in Nunavut. In two families of deposits, referred to as the Eastern and Western deposits, Roche Bay has estimated or measured over 4 billion t of resources and over 460 Mt of drilled resources. On March 30, 2007, Roche Bay announced a joint venture with Advanced Explorations Inc. of Toronto, which became the operator of the project, leaving Roche Bay as the holding company for the iron ore assets. Located close to a natural deep-water harbour, the Roche Bay deposit is one of the world's premium iron ore prospects.

The West Melville Iron Company Ltd., a private company led by Discovery Group, announced that it had entered into a joint-venture agreement with Roche Bay plc to acquire up to a 70% interest in the West Melville iron ore project (previously called Fraser Bay 1-3 by Roche Bay plc) located at West Melville, Nunavut. West Melville Iron Company Ltd. will manage the property. Roche Bay plc will receive 10% ownership of West Melville Iron Company Ltd. once Stage 1 is complete and will retain a 0.5% gross overriding royalty on the project.

WORLD PRODUCTION

According to the Organization for Economic Co-operation and Development, world crude steel production increased 6.8% from 1430 Mt in 2010 to 1527 Mt in 2011. As a direct result, the world iron ore market continued to grow in 2011 to a new all-time production high of 1922.5 Mt, which is 4.7% higher than in 2010 when production reached 1836.1 Mt (source: UNCTAD). Most countries, including Canada and the United States, showed positive production growth in 2011 (Table 2).

According to the World Steel Association, world apparent steel use increased by 5.6% in 2011, or by less than half of the 13.2% growth registered in 2010. The growth in China's apparent steel use was 6.2%.

In 2011, the main changes in the world iron ore market came from China, while most other countries experienced production and trade levels similar to the previous year (source: UNCTAD). While the market in 2009 was dominated by an economic slowdown, the main feature in 2010 was a resurgence in production, exports, and imports after the stimuli packages took effect.

Output increased in most regions and countries except Europe, where the market remained stagnant, and the countries of the Commonwealth of Independent States (C.I.S.). Oceania experienced the highest growth rate, approaching 12.6%. Among the major producing countries, production from Australia, Brazil, and China increased by 12.7%, 5.1%, and 2.1%, respectively. Production from India decreased somewhat to an estimated 196.0 Mt, down 7.5%. Production in the C.I.S. countries fell slightly by 0.5% (source: UNCTAD).

Developing countries accounted for 57.4% of world iron ore production in 2011, down from 58.6% in 2010. The C.I.S. countries accounted for 10.6% (down slightly from 2010) and the industrialized economies accounted for almost 32.0% (up from 30.3% in 2010). World production of pellets rose by 3.5% from 402 Mt in 2010 to 416 Mt in 2011, reaching a new record level. This reflects a sharp increase in the demand for pellets in most countries. In 2009, the share of pellets in total iron ore production was 19%. It rose to 21% in 2010 and remained at that level in 2011 (source: UNCTAD).

Global production capacity for iron ore totaled 2177 Mt in 2011 (source: Metals Consulting International Limited). It was dominated by three main producers: Vale Group, which contributed 417 000 Mt, or 18% of the total; Rio Tinto Group, which contributed as much as 271 000 Mt (13%); and BHP Billiton, which contributed as much as 189 000 Mt (9%). Together the "big three" controlled 40.1% of world production in 2011 (Table 3). However, looking at worldwide investments, several new pellet plants are planned or under construction. New iron ore mining capacity taken into account since May 2011 may have added some 125 Mt. As of May 2012, the total project pipeline contained 796 Mt of new production capacity to come on stream between 2012 and 2014. Of this total, around 270 Mt falls into the category of "certain," 220 Mt is considered "probable," and 310 Mt is considered "possible." Of these projects, 28% are to be located in Oceania (Australia), 20% in Europe, 15% in Latin America, 14% in Africa, 12% in Asia, and 10% in North America. If only the "certain" and "probable" projects are considered, 490 Mt of production capacity would be added by the end of 2014 (source: UNCTAD).

An alternative way to measure the concentration of the global iron ore industry is to monitor the share of global seaborne trade by the leading producing companies. Vale Group accounts for 24.9% of the global market for seaborne iron ore trade. The three largest companies (Vale Group, Rio Tinto Group, and BHP Billiton) together accounted for 57.3%. Vale's share (the largest exporter) has been continuously declining during the past years, although the pace of this decline decreased in 2010 and 2011. Rio Tinto's market share also declined in 2011, while BHP Billiton's market share increased from 14.9% to 15.9%. The total share of the "big three" fell from 60% in 2009 to 58% in 2010 and 57.3% in 2011 (source: UNCTAD).

WORLD DEVELOPMENTS

New pellet plants in the pipeline include capacity additions of some 46.1 Mt from Vale, Samarco, MBR, MMX, Anglo Ferrous, CSN, and Mhag Servicos e Mineracão SA in Brazil (source: UNCTAD). In Mauritania, a 7-Mt plant is in the pipeline. Some of the other projects include Jindal Steels' 10-Mt project in Bolivia, Minnesota Steel's 4.1-Mt plant in the Megasi Range, New

Millennium Iron's 15-Mt project in Canada, Citic Pacific's 6-Mt project in Australia, and Grange Resources' 7-Mt project in Malaysia. There are also plans to increase pellet capacity in India (8 Mt), Iran (13.4 Mt), and Saudi Arabia where London Mining is pushing ahead with its 5-Mt project. In Oman, the Sohar Industrial Port Company, together with Vale, is building two 4.5-Mt plants, one of which started production in April 2011. In January 2011, Gulf Industrial Investment Co. announced that its second plant in Bahrain had started production, increasing its total capacity to 11 Mt/y.

One example of what new major projects have to consider with respect to environmental sustainability demonstrates the overall considerations that are needed to open a new major iron ore mining project. Brazil's Vale will be developing one of the largest iron ore mines in the world (source: TEX Report). Vale expects to obtain its preliminary environmental licence (LP) for its iron ore project, Carajas S11D, from the Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renovaveis (IBAMA) in mid- 2012. S11D is the largest project in Vale's history and in the iron ore industry, making it the company's major lever for production capacity growth and for maintaining its leadership in the global market.

The S11D project, located in the southern range of Carajas in the state of Para, Brazil, has an estimated capital expenditure of US$8.039 billion for development of the mine and processing plant. The project has a nominal capacity of 90 Mt/y of iron ore with an average ferrous content of 66.48% and a low concentration of impurities. Operations are expected to start in the second half of 2016. S11D will require investments in logistics infrastructure (in the Carajas railroad and the Ponta da Madeira maritime terminal) estimated at US$11.4 billion, which will allow these facilities, once completed, to handle 230 Mt/y of iron ore.

MARKETS AND PRICES

China and Western Europe are regions that are not self-sufficient in iron ore. Therefore, they rely heavily on Australian and Brazilian product and, to a certain extent, on Canadian sources.

The European steel industry is a major consumer of product from Canadian iron ore mines. In 2011, European and Asian countries dominated Canada's pellet and concentrate iron ore exports. The United States, as the second most important market, consumed mainly pellets. Iron ore trade in the Canada-U.S. market is predominantly for pellets. U.S. and Venezuelan producers are Canada's main competitors in the pellets market while Brazil, Venezuela, and Australia are its competitors in the concentrate market.

In 2010, the quarterly pricing system gradually replaced the benchmark system, with almost all iron ore producers and steel mills having abandoned it in 2011, although there is widespread confusion about prices. Practices for price setting vary widely and there are a large number of published indices, each with a different product specification. As an example, prices differ from one port to another. For example, as shown in Table 4, prices free on board (f.o.b.) Australian ports varied during certain years (2001-11) and months, and have been used by others as a benchmark for negotiations and price setting.

Although prices moved downward in the later part of 2011, compared to a high earlier in the year, this should be considered as a healthy correction after a multi-year rally. Demand is still strong from Asia, particularly China, amid tight supply due to India's ban on iron ore exports due to illegal mining activities.

TRADE

In 2011, international iron ore trade reached new record levels as exports increased for the tenth year in a row to reach 1155.0 Mt, up 7.9% from 2010 (source: UNCTAD). Developing countries accounted for 49.5% of the total in 2011. Developed countries, including the C.I.S. republics with about 6.5% of total world exports, accounted for 50.5%.

Brazil is still the undisputed export leader with pellet exports of 56.8 Mt in 2011, up 5.9% from 2010. Canada and Sweden, the second and third largest exporters with 17.3 Mt and 16 Mt, respectively, are still far behind Brazil.

As mentioned previously, China still dominated world imports of iron ore in 2011 and relied on many suppliers from various countries. The four most important countries were Australia, Brazil, India, and South Africa, which together supplied 84.4% of China's total imports of 619.13 Mt in 2010. This was demonstrated in the 2010 commodity review on iron ore (Table 5). Although detailed export data to China were not available at the time of writing, some data updates for 2011 were available from countries that exported to China, indicating more than 1 Mt of iron ore exported (Table 5).

According to Platts, China imported close to 687 Mt of iron ore in 2011, up 11% from 2010. China's imports of iron ore from India in 2011 fell 24% to 73.3 Mt, due in part to measures taken by India's central and state governments to curb exports. Besides India, only imports from Kazakhstan (a 21% decrease to 4.8 Mt) and Venezuela (a 2% decrease to 5.1 Mt) have fallen. Imports from Australia (a 12% increase to 296.8 Mt) and Brazil (a 9% increase to 142.9 Mt) rose. Meanwhile, the volume of imports from five countries, including the United States (a 318% increase to 2.9 Mt), Canada (a 178% increase to 12.1 Mt), Russia (a 145% increase to 15.6 Mt), Malaysia (a 122% increase to 5.5 Mt), and Mongolia (a 107% increase to 5.5 Mt), has more than doubled since 2010. Despite China's efforts to diversify its supply, it still relies heavily on its three major suppliers for most of its ore, albeit in a lower proportion. Australia, Brazil, and India accounted for 75% of China's imports in 2011 (the third year the percentage has decreased), compared with 80% in 2010.

Preliminary data for 2011 show that Canada exported 33.8 Mt of iron ore (valued at $4160.4 million), of which 51.2% was pellets (valued at $2447.8 million) and 48.8% was concentrates (valued at $1712.7 million), for a 4.1% increase (1.3 Mt) in total exports over the 2010 level of 32.5 Mt. Although pellet exports decreased by almost 4.1 Mt (18.0%) from 21.4 Mt in 2010, concentrate exports increased 48.6% (by 5.4 Mt) from 11.1 Mt in 2010.

In 2011, Canada's major export market countries for pellets (Table 1) were the United States (20.7%), China (20.6%), Trinidad and Tobago (9.8%), France (9.0%), the Netherlands (8.6%), and Germany (8.2%). For concentrates (Table 1), the principal export market countries were China (58.0%), France (13.0%), the Netherlands (9.0%), Germany (5.5%), and Japan (4.2%).

In 2011, Canada's total export market regions for pellets (Figure 3) were Europe (32.3%), Asia (30.7%), North America (21.6%), the Caribbean (10.0%), the Middle East (2.7%), and Africa (2.6%). For concentrates (Figure 4), they were Asia (63.9%), Europe (32.6%), North America (2.6%), and the Middle East (0.9%).

In Table 1, preliminary data show that Canada imported 7128.6 Mt of iron ore in 2011 valued at $904.8 million, a decrease of almost 1.0 Mt (12.3%) from 2010. The bulk of the imported

concentrates and pellets (98.8%) came from the United States. Imports decreased (pellets by 34.7% and concentrates by 12.5%) compared to 2010.

OUTLOOK

The 2012 outlook for steel demand is cautious due to continued financial uncertainty and volatility over the markets. Nevertheless, the global steel sector is expected to grow in 2012, although at a lower rate. Overcapacity will continue to be an issue as increased capacity in rapidly growing economies comes on stream (source: Ernst & Young).

Outside China, iron ore mines are ramping up production and new projects are being developed to respond to the surge in demand. This could cause a bottleneck in the mining project pipeline, which could delay the implementation of some projects. In its forecasts, UNCTAD indicated that, while the market is certainly moving towards a balance between supply and demand, equilibrium will only be reached in 2013 at the earliest. It is estimated that iron ore use will increase from 1922 Mt in 2011 to about 2000 Mt in 2012 and 2080 Mt in 2013.

Canadian iron ore greenfield projects and the present investment by Canadian operating mines should lead to a continued increase in shipments and exports over the coming years.

Notes: (1) For definitions and valuation of mineral production, shipments, and trade, please refer to the document entitled "Definitions and Valuation: Mineral Production, Shipments, and Trade." (2) Information in this review was current as of June 30, 2012. (3) This and other reviews, including previous editions, are available on the Internet at www.nrcan.gc.ca/minerals-metals/business-market/canadian-minerals-yearbook/4070.

Iron Ore - Other Information

INTRODUCTION

Iron ores are rocks and minerals commonly found in the earth's crust, where they occur in combination with other elements from which metallic iron (Fe), which contains iron oxide and carbonates, can be economically extracted when heated in the presence of a reducing agent such as coke. The ores are usually rich in iron oxides (certain hematite ores contain up to 66% Fe) and vary in colour from dark grey, bright yellow and deep purple to rusty red. The iron itself is usually found in the form of magnetite (Fe_3O_4, 72.4% Fe), hematite (Fe_2O_3, 69.9% Fe), goethite (FeO(OH)), limonite (FeO(OH).n(H_2O)), or siderite ($FeCO_3$, 48.29% Fe). Its most important mineral forms are magnetite, hematite, and siderite. The term "iron ore" is used when the rock is sufficiently rich in iron minerals to be mined economically.

Canada's Labrador Trough contains world-class iron deposits that have been mined since 1954. This band extends for about 1100 kilometres (km) southeast of Ungava Bay through both Quebec and Labrador. Further south, it turns southwest past the Wabush and Mount Wright areas to within 300 km of the St. Lawrence River. The degree of metamorphism is variable, ranging from

intense in the northern and southern portions to greenschist facies in the central portion. Several deposits of highly metamorphosed magnetite-specularite iron formation (medium- to fine-grained) are located west of Ungava Bay. North of Schefferville, several billion tonnes of taconite are outlined in fine-grained, cherty magnetite-iron formation. In the area from Wabush Lake to Mount Wright, a medium- to coarse-grained friable specularite-quartz iron forms several large deposits.

In Brazil, some ore that contains practically no other minerals can grade as high as 68% Fe. The crude ore that is mined in Canada typically grades between 30% and 44% Fe. In general, ores containing a higher percentage of iron are more valuable. If ore has more than 54% Fe, it is classified as high-grade and requires no further beneficiation other than sizing. Ore grading less than 54% Fe is considered low-grade and requires upgrading to become a marketable product. High-grade iron ore is marketed in two sizes. The first, which is ore greater than 8 millimetres (mm) in size, is called "lump ore." Ore that is less than 8 mm in size is called "fine ore."

All Canadian open-pit iron ore operations are truck and shovel type. Therefore, Canadian mines crush and grind the ore and then use gravitational and magnetic concentration methods to produce concentrates with an iron content of about 65%. To improve the iron grade in their operations, Canadian producers use a variety of beneficiation processes (e.g., the use of spirals, high- and low-intensity magnetic separators, and high-tension separators) to upgrade the iron content by extracting the silica content and other impurities from the ore. Depending on grain size, the concentrate is then shipped as is or is agglomerated into balls of about one centimetre in diameter and is fired to produce hard iron ore pellets. Steel companies use the pellets and charge them in blast furnaces where the minerals are reduced to metallic iron. Unpelletized concentrates are sintered before being charged by the blast furnace.

In standard iron ore pelletizing, the iron ore is ground and then mixed with small amounts of bentonite. Bentonite binds the grains, allowing further processing (agglomeration) into balls or pellets by the tumbling and induration effect using straight grate processes. These are then sintered in rotary kilns to obtain a hard outer surface. About 25% of the world's iron ore output is pelletized. The other basic forms of iron ore used in metal production include lump ore prepared by crushing and screening, and sinter produced from natural or screened fines. Bentonite absorbs the water, functions as a binder, and enhances the strength of the pellets. On the downside, bentonite adds unwanted silica to the blast furnace, which increases the demand for flux and coke.

World resources are estimated to exceed 800 billion tonnes (t) of crude iron ore containing more than 230 billion t of iron. The leading producing countries in order are China, Australia, and Brazil. Worldwide, 50 countries produce iron ore, but 96% of this ore is produced by only 15 of those countries. Within this marketplace, the power is concentrated in only a few hands, most notably the industry's "big three" producers.

HISTORY OF IRON ORE MINING IN CANADA

The smelting and casting of iron was Canada's first industry (source: *Geology of Iron Deposits in Canada* [Volume 1], by G.A. Gross). Before European settlements were established, there was evidence of Inuit exploitation of iron meteorites for metal. In the 13th century at the Viking settlement at l'Anse aux Meadows on the far northern tip of Newfoundland and Labrador Island, local bog iron was roasted and wrought to make nails for ships.

Champlain reported iron in Acadia in 1604 and other deposits were known as early as 1667. Throughout the following century, other deposits were discovered and exploited in Nova Scotia, Newfoundland, British Columbia, Ontario, and Quebec. In about 1670, deposits of bog iron were found near Trois-Rivières, Quebec, and by the 1740s, les Forges du Saint-Maurice was producing top-quality cast iron stoves, pots, kettles, bullets, and cannons.

With the development of Canadian sources of ore, Canadian processing plants were constructed. The development of major iron ore areas gave Canada an important position in the world's iron trade. The discovery and development of large iron ore reserves at Steep Rock Lake, Ontario, was one of the vital steps in Canada's rise to importance in international iron ore trade.

The development of the iron range in Labrador and New Quebec was the most significant step in the establishment of the iron mining industry in Canada, with the area becoming one of the world's most important sources of iron for many years. By 1950, sufficient hematite-geothite ore of direct-shipping quality had been proven to warrant the development of the Quebec and Lac Labrador Knob in the Schefferville area. The accompanying construction of 360 miles of railway north from the seaport of Sept-Îles, the establishment of docking facilities there, and the establishment of hydro power facilities to serve the industry enabled the first ore shipment in 1954.

By 1959, the production of iron ore in Canada had risen from less than 3.5 million tonnes (Mt) to nearly 22 Mt within 10 years, positioning Canada at the time as the fourth largest producer in the world behind Russia, the United States, and France, but ahead of China, Sweden, West Germany, Venezuela, and the United Kingdom by about 1.5-7.0 Mt.

For an example of the historic involvement of the Iron Ore Company of Canada, visit its web site at www.ironore.ca/main.php?sid=m&mid=110&lng=1.

Imports of iron ore products in the Canada-U.S. market are usually split 70% for agglomerates (i.e., pellets) and 30% for non-agglomerates (i.e., concentrates). U.S., Canadian, and Venezuelan producers are the main competitors in the pellets market, while Brazilian, Canadian, Venezuelan, and Australian producers battle for the concentrates market.

Canadian producers control major market shares in each of the consuming areas of the Canada-U.S. pellets market. However, they appear to have some difficulty in competing against U.S. pellets in the Great Lakes area. Although Canadian producers' free on board pellet costs are lower than those of their U.S. counterparts, the shipping distance to reach the market is greater and, in places, costlier. Canadian producers also control most of the market for concentrates in Canada and a major portion of the market in the United States' Great Lakes area. However, competition is fierce in the concentrates market on the Eastern Seaboard and in the U.S. Gulf Coast areas where Brazil and Venezuela are regular suppliers.

Iron ore consumers in the Great Lakes area can be supplied using three different routes: the Great Lakes system for ore from U.S. producers located westward on the shores of Lake Superior; the St. Lawrence Seaway to transport Canadian and imported iron ore; and the Mississippi River to barge in imported iron ore, mostly from South America.

The main entry point for iron ore on the Eastern Seaboard is the Port of Sparrows located on the outskirts of Baltimore (northeast of Washington, D.C.). It serves as an unloading point for the area's steel producers and as a transfer point for iron ore heading by rail towards Pittsburgh and Great Lakes consumers.

As is the case for the Eastern Seaboard area, the Gulf Coast area is an entry point for suppliers to reach both coastal consumers and those consumers located inland that can be reached by barging iron ore on navigable waters. For example, iron ore can be shipped to Chicago on the Mississippi River from New Orleans, or from Mobile, Alabama, up the Alabama River to Birmingham.

Large quantities of iron ore are carried on the Great Lakes and on the St. Lawrence Seaway for shipment to both domestic and foreign markets. Canada's Labrador Trough iron ore producers ship out of three ports located on Quebec's north shore: Port-Cartier, Pointe-Noire, and Sept-Îles.

North American integrated steel producers primarily use pellets in their operations to produce pig iron. Integrated steel producers in Europe and the Far East have generally used sinter (made from iron ore concentrates) combined with lesser amounts of coarse ore pellets.

Pricing mechanisms have many subtleties and variations relating to cost, freight rates, quality factors, and exchange rates, but the underlying forces are still dictated by the balance between supply and demand.

Iron ore prices have historically been negotiated annually in closed-door talks between individual miners and their customers in Asia and Europe. Once one set of agreements/contracts was concluded, the other miners generally followed with similar arrangements (i.e., setting the "market price"). This arrangement goes back to the days when it was the Japanese who led the negotiations and everything was timed according to the end of their financial year. To some, this arrangement is a vestige of something that no longer exists.

Prices for fines are usually established first and are used as a benchmark for pellets and lump ore negotiations. Often, fines and lump or pellet premiums are established together as part of an overall package. Most iron ore prices were fixed annually under long-term sales contracts, although the spot market has become more important with the economic downturn. After some 40 years (source: *Metal Bulletin*, April 2010) of annual benchmark price negotiations between the main miners and steelmakers, a new quarterly pricing system has suddenly emerged from the three largest iron ore exporters, and customers have little choice but to go along with it.

There is a spot market for iron ore that tends to cover single-cargo sales not covered by longer-term contracts. It is used particularly when there has been an upturn in steel demand and integrated steelworks quickly expand output. It is generally lump and fine material, which can be used to increase blast furnace output in the short term, that is traded on the spot market. The price system for pellet feed has no worldwide unified standard. The negotiated Eastern Canadian, seaborne, and international prices for blast furnace pellets are usually settled annually between producers and their customers. In general, concentrate prices are about one half that of pellet prices.

When considering the future of iron ore pricing, it is important to understand that most of the iron ore is sold under long-term contracts and that buying iron ore is not like buying other metals. One of the most important considerations for steel mills is the consistency of quality of the iron ore. The operator of a blast furnace wants to absolutely be able to trust that the iron ore to be delivered will be of the same quality as the last batch.

USES

Iron ore is the raw material used to make pig iron, which is one of the main raw materials in making steel. Roughly 98% of all iron ore shipped worldwide is used in the production of iron or steel, which is one of the most useful metals in the world. Iron ore products can be differentiated by grade, content of by-products such as silica, and metallurgical amenability. The three basic types of iron ore product are sinter feed, lump, and pellets. Sinter feed, or fines, is typically a by-product of lump iron ore processing and is fed into blast furnaces after the sintering process.

Steel production is the driving force for almost all iron ore demand. However, technological changes in iron ore mining through the production of finished steel have been major contributors in determining the quantities and properties of the iron ore demanded. There are two technologies used to produce steel: basic oxygen furnaces (BOF), which are charged with molten blast furnace iron and ferrous scrap at the integrated steel mills; and electric arc furnaces (EAF), which are charged with scrap and/or direct reduced iron (DRI) at the mini-mill plants.

Steel is created by smelting iron ore in a blast furnace to separate the iron from the other mineral impurities naturally present, known as slag. The resulting liquid iron settles to the bottom of the furnace and cools in a bed of sand, resulting in an intermediate material known as pig iron. Notably, to create one tonne of pig iron, steel producers start with approximately two tonnes of iron ore. In its final form as steel, iron is used 20 times more than all other metals combined. From bridges, skyscrapers, and railways to ships, cars, electrical power lines, telephone networks, and even paperclips, iron is the mainstay of our fast-developing modern world and is transformed into the essential ingredients of people's everyday lives. Steel is strong, durable, and extremely versatile. The many different kinds of steel consist almost entirely of iron with the addition of small amounts of carbon (usually less than 1%) and other metals to form different alloys (e.g., stainless steel).

HEALTH AND THE ENVIRONMENT

When looking at mining operations and potential greenfield projects, the effects of operating plants and environmental considerations need to be evaluated with respect to the cost and benefits of translating mineral wealth into national wealth.

While the existing operations provide economic life (e.g., employment, revenues, etc.) in remote areas, the pellet-making process is a source of greenhouse gas emissions (carbon dioxide) and air pollutants (particulate matter, nitrogen oxides, and sulphur oxides).

Iron ore pellets are manufactured by regrinding the concentrate, blending with additives, rolling into balls, and hardening at high temperatures in induration furnaces. The chemical composition of iron ore consists of oxygen and iron bonded together into molecules. The conversion to metallic iron involves smelting through a direct reduction process to remove the oxygen. Oxygen-iron bonds are strong. To dissociate the iron from the oxygen, a stronger elemental bond must be presented to attract the oxygen. At high temperatures, carbon bonds more strongly to iron than oxygen, and coal is therefore used as the preferred ingredient. Thus, the iron ore must be powdered and mixed with coke to be burnt in the smelting process. As carbon dioxide is generated in the simple combination process of chemically stripping oxygen from iron, the smelting of iron and carbon must be conducted in an oxygen-deficient environment to promote the burning of carbon to produce carbon monoxide (and not carbon dioxide).

As part of the Government of Canada's Regulatory Framework for Air Emissions, Environment Canada intends to regulate emissions of air pollutants and greenhouse gases from major industrial facilities, including from the iron ore pelletizing industry. Natural Resources Canada is a participating member in the Base-Level Industrial Emissions Requirements (BLIERs) Iron-Ore Pelletizing (IOP) Sector Group, which is mandated to reach a consensus with industry, governments, and non-governmental organizations on meeting a good base level of environmental performance.

With respect to greenfield projects, securing international mineral investment is an added challenge in translating mineral wealth into national wealth. In one extreme example, a 50-year-old known deposit located 483 km inside the Arctic Circle is among many new potential ventures where similar considerations could be applied. One example is the Mary River project on Baffin Island in Nunavut. The deposit's richness (US$23.0 billion of iron ore) and purity (65-70% Fe) made it a gem to be possessed. Despite its attractiveness, no company had the wherewithal to mine it until now.

Although the Mary River project will require more than 2000 workers to build 24 bridges, stretches of road, warehouses, fuel depots, landfills, and an airstrip, as well as the docks at Milne Inlet and in the Steensby Inuit communities, an Environmental Impact Statement was prepared and presented. It states all aspects of the project through construction, operation, and closure, similar to other projects where a government(s) environmental assessment process is required. This project is quite a challenge since the area is inhabited by unique wildlife; is home to terrestrial mammals, including caribou, Arctic fox, and hare; and has an abundance of marine mammals in the region, including polar bears, narwhals, beluga whales, and blowhead whales. Migratory birds in the area include snow geese, rough-legged hawks, and gyro-falcons.

Concerns about this project include limiting or preventing potential contamination from sewage, wastewater, and explosive equipment-washing, as well as a loss of fish habitat. One of the biggest impacts could come from the frequency of shipping the ore to seaborne markets.

This mega-mine is believed to be the largest mineral extraction project in the Arctic and highlights the huge commercial potential of the Far North. All of this is now largely possible because of global warming, which has left shipping lanes in the Arctic open year round, and partly because of rising commodity prices and demand for raw materials in developing countries far from Canada's Far North.

In the end, after the non-governmental organizations, governments, and individuals review the plans, it will be up to the local Inuit to decide whether the project goes ahead and gives them an opportunity to obtain some new economic wealth.

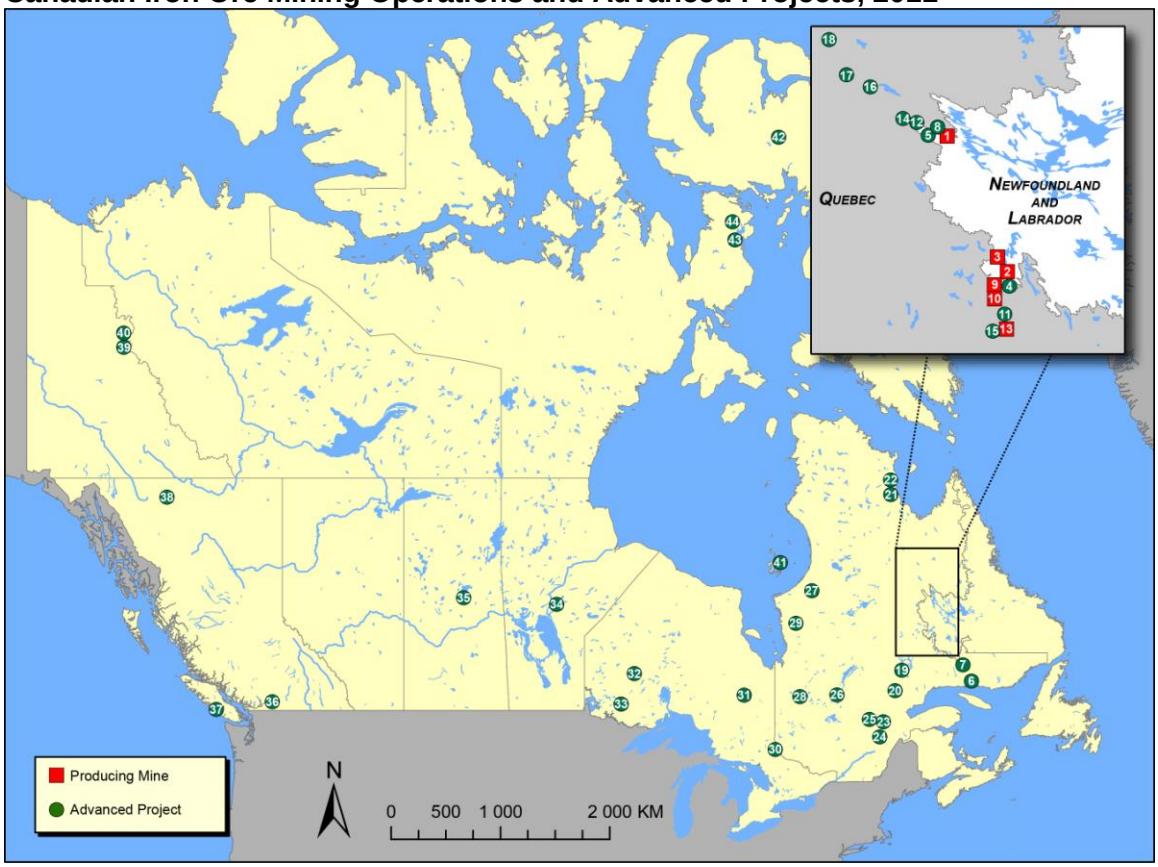
OTHER SOURCES OF INFORMATION

U.S. Geological Survey (USGS) iron ore yearly articles
http://minerals.usgs.gov/minerals/pubs/commodity/iron_ore/

World Steel Association
www.worldsteel.org/#

Canadian Steel Producers Association
www.canadiansteel.ca

Figure 1
Canadian Iron Ore Mining Operations and Advanced Projects, 2011



Numbers refer to locations on map above.

Number	Operation
NEWFOUNDLAND AND LABRADOR	
1.	James
2.	Scully
3.	Carol Lake
4.	Kami
5.	LabMag
QUEBEC	
6.	Everett
7.	Magpie
8.	DSO
9.	Bloom Lake
10.	Mount Wright
11.	Fire Lake North
12.	Goodwood
13.	Fire Lake

14. KeMag
15. Peppler Lake
16. Lac Ritchie
17. Lac Otelnuk
18. Hematite Lake
19. Lac Gueret North
20. La Blache
21. Hopes Advance
22. Ungava
23. Charlevoix
24. Saint Urbain
25. St. Charles de Bourget
26. BlackRock
27. Great Whale Mines
28. Iron-T
29. Lac Duncan

ONTARIO

30. Titan
31. Clay-Howells
32. Lake St. Joseph
33. Bending Lake

MANITOBA

34. Pipestone Lake

SASKATCHEWAN

35. Ennis Lake

BRITISH COLUMBIA

36. Lodestone Mountain
37. Brynnor
38. Good

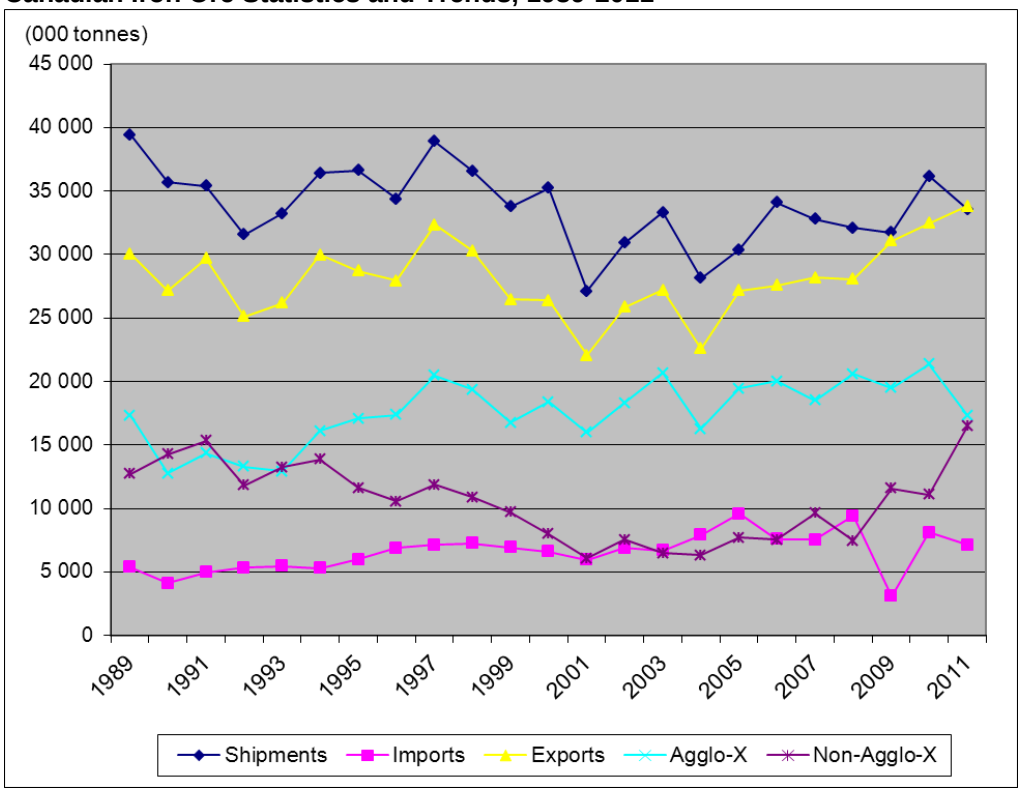
YUKON

39. Crest
40. Iron Creek

NUNAVUT

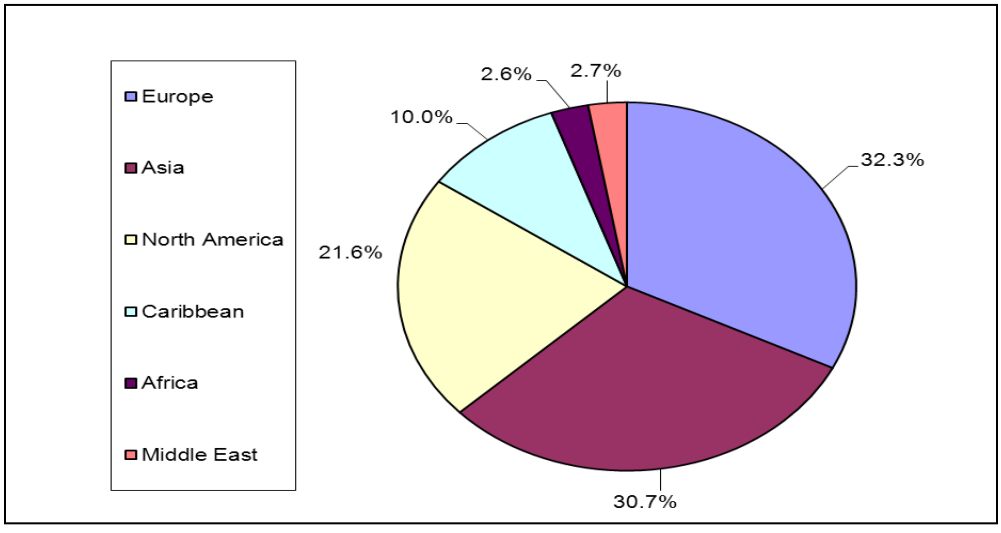
41. Haig Inlet
42. Mary River
43. Roche Bay
44. Tuktu

Figure 2
Canadian Iron Ore Statistics and Trends, 1989-2011



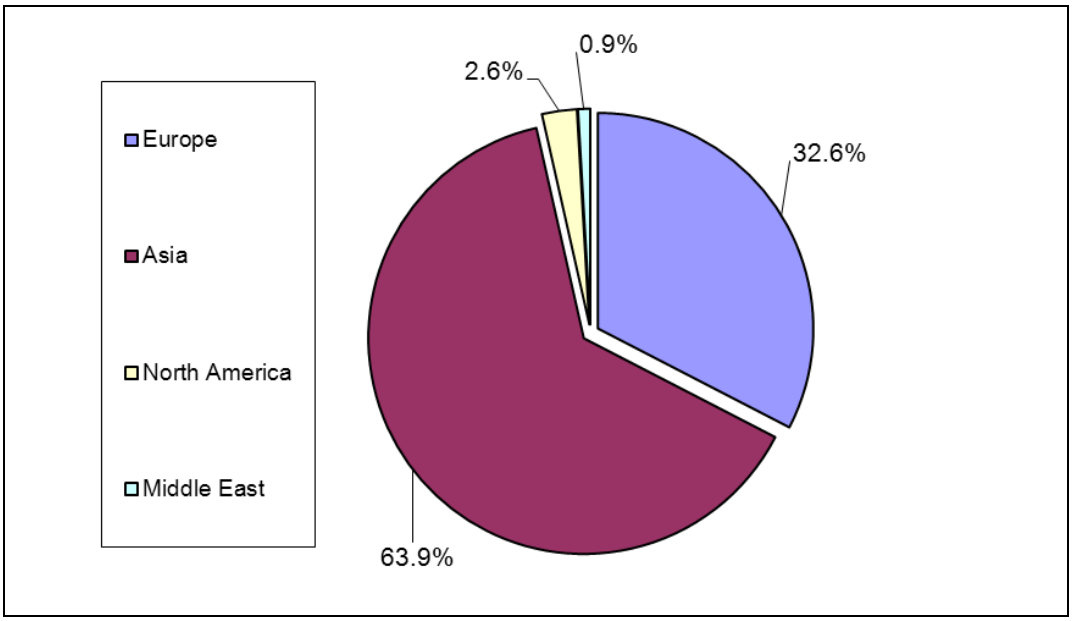
Source: Natural Resources Canada.
(p) Preliminary.
Agglo-X: Agglomerated exports; Non-Agglo-X: Non-agglomerated exports.

Figure 3
Canadian Agglomerated Export Markets, By Region, 2011



Source: Natural Resources Canada.

Figure 4
Canadian Non-Agglomerated Export Markets, By Region, 2011



Source: Natural Resources Canada.

TARIFFS

Item No.	Description	Canada			United States	European Union	Japan
		MFN	GPT	USA	Canada	Conventional Rate (1)	WTO (2)
26.01	Iron ores and concentrates, including roasted iron pyrites						
2601.11	Iron ores and concentrates, other than roasted iron pyrites: non-agglomerated	Free	Free	Free	Free	Free	Free
2601.12	Iron ores and concentrates, other than roasted iron pyrites: agglomerated	Free	Free	Free	Free	Free	Free

Sources: Canadian *Customs Tariff*, effective January 2011, Canada Border Services Agency; *Harmonized Tariff Schedule of the United States*, 2011; *Official Journal of the European Union* (Tariff Information), October 29, 2010, edition; *Customs Tariff Schedules of Japan*, 2011.
GPT General Preferential Tariff; MFN Most Favoured Nation; WTO World Trade Organization.
(1) The customs duties applicable to imported goods originating in countries that are Contracting Parties to the General Agreement on Tariffs and Trade or with which the European Community has concluded agreements containing the most-favoured-nation tariff clause shall be the conventional duties shown in column 3 of the Schedule of Duties. (2) WTO rate is shown; lower tariff rates may apply circumstantially.

TABLE 1. CANADA, IRON ORE PRODUCTION AND TRADE, 2009-11

		2009		2010		2011 (p)	
		(tonnes) (1)	($000)	(tonnes) (1)	($000)	(tonnes) (1)	($000)
PRODUCTION (mine shipments)							
	Newfoundland and Labrador	17 221 399	1 578 932	19 075 946	2 986 892	16 523 386	2 651 514
	Quebec	14 433 638	x	17 008 634	x	16 995 159	x
	British Columbia	72 568	x	93 315	x	54 759	x
	Total (2)	**31 727 605**	**2 673 757**	**36 177 895**	**5 314 154**	**33 573 304**	**5 329 081**
EXPORTS							
2601.11	Iron ore concentrates, non-agglomerated						
	China	3 282 013	311 859	3 718 878	334 402	9 561 835	1 093 379
	France	2 032 610	158 363	2 089 383	140 459	2 148 358	155 802
	Netherlands	493 970	48 908	154 863	10 513	1 484 002	154 680
	Japan	454 816	41 029	537 991	40 297	699 889	79 221
	Germany	2 673 463	235 927	2 200 900	161 738	903 298	61 293
	United States	244 692	24 469	238 859	30 024	331 539	41 651
	Spain	718 101	62 499	370 244	24 117	444 756	28 869
	Bahrain	–	–	150 379	8 631	152 298	25 003
	Other countries	1 688 325	154 281	1 634 187	123 491	761 790	72 753
	Total	**11 587 990**	**1 037 335**	**11 095 684**	**873 672**	**16 487 765**	**1 712 651**
2601.12	Iron ore, agglomerated						
	United States	2 865 783	336 867	4 100 136	439 687	3 579 478	567 029
	China	4 373 087	584 812	3 583 704	471 624	3 576 647	539 663
	Netherlands	377 164	50 795	143 316	11 436	1 492 330	199 025
	Trinidad and Tobago	926 561	113 780	1 754 772	176 933	1 689 720	196 947
	Germany	2 372 593	228 763	5 107 146	559 959	1 428 998	179 289
	France	1 424 962	156 887	1 461 051	127 459	1 552 178	170 212
	Taiwan	456 746	38 555	738 886	85 660	990 422	119 896
	Egypt	611 398	58 506	455 658	53 859	446 754	91 458
	Italy	452 403	58 877	660 047	58 733	427 533	74 483
	Qatar	454 450	45 956	153 428	14 398	305 987	62 886
	Japan	149 984	11 249	304 685	36 390	399 991	62 602
	United Kingdom	858 162	133 697	915 954	80 067	418 411	52 077
	Other countries	4 165 356	504 513	2 008 711	182 104	1 015 861	132 183
	Total	**19 488 649**	**2 323 257**	**21 387 494**	**2 298 309**	**17 324 310**	**2 447 750**
Total exports		**31 076 639**	**3 360 592**	**32 483 178**	**3 171 981**	**33 812 075**	**4 160 401**
IMPORTS							
2601.11	Iron ore concentrates, non-agglomerated						
	Chile	110	2	22	. . .	51 328	12 778
	Mexico	–	–	21 505	4 880	25 496	5 251
	United States	24 609	2 719	80 312	2 108	52 413	3 852
	Sweden	18 103	2 433	26 763	4 697	508	112
	Other countries	5 960	565	338	16	462	37
	Total	**48 782**	**5 719**	**128 940**	**11 701**	**130 207**	**22 030**
2601.12	Iron ore, agglomerated						
	United States	3 058 408	293 930	7 997 175	904 858	6 993 983	882 505
	Venezuela	197	10	–	–	4 333	218
	Other countries	12	. . .	14	. . .	65	4
	Total	**3 058 617**	**293 940**	**7 997 189**	**904 858**	**6 998 381**	**882 727**
Total imports		**3 107 399**	**299 659**	**8 126 129**	**916 559**	**7 128 588**	**904 757**

Sources: Natural Resources Canada; Statistics Canada.
– Nil; **. . .** Amount too small to be expressed; (p) Preliminary; x Confidential.
(1) Dry tonnes for production (shipments) by province or territory; natural weight for imports and exports. (2) Total iron ore shipments include shipments of by-product iron ore.
Notes: Numbers may not add to totals due to rounding. Harmonized System (HS) code descriptions in this table may have been abbreviated. For detailed HS code descriptions related to this commodity, please refer to the corresponding tariffs table.

TABLE 2. IRON ORE WORLD PRODUCTION, SHIPMENTS, GROSS WEIGHT, (1) BY COUNTRY, 2008-10 (r)

Country	2008	2009	2010	2009 to 2010	Global Rank
	(000 tonnes)			(% change)	
China	824 000	880 000	1 070 000	21.59	1
Australia	342 000	394 000	433 000	9.90	2
Brazil	351 246	310 000	370 000	19.35	3
India	215 000	225 000	230 000	2.22	4
Russia	99 900	92 000	101 000	9.78	5
Ukraine	72 688	66 476	78 171	17.59	6
South Africa	48 983	55 313	58 709	6.14	7
United States	53 600	26 700	49 900	86.89	8
Canada	**32 102**	**31 728**	**36 178**	**14.03**	**9**
Iran	32 000	26 000	28 000	7.69	10
Kazakhstan	21 486	22 281	24 229	8.74	11
Sweden	23 800	17 700	25 300	42.94	12
Venezuela	20 650	14 900	14 000	-6.04	13
Mexico	11 688	11 677	13 998	19.88	14
Mauritania	10 950	10 270	11 000	7.11	15
Peru	7 823	6 698	9 160	36.76	16
Chile	9 316	8 242	9 130	10.77	17
North Korea	5 136	5 300	5 300	0.00	18
Turkey	4 697	4 170	4 500	7.91	19
Malaysia	982	1 470	3 466	135.78	20
Mongolia	1 387	1 379	3 203	132.27	21
New Zealand	2 020	2 092	2 439	16.59	22
Austria	2 033	2 002	2 050	2.40	23
Bosnia and Herzegovina	1 482	1 615	1 600	-0.93	24
Algeria	2 077	1 307	1 469	12.39	25
Greece	1 500	1 500	1 500	0.00	26
Thailand	2 029	1 401	1 400	-0.07	27
Egypt	773	1 780	1 000	-43.82	28
Vietnam	1 000	1 000	1 000	0.00	29
Norway	668	711	712	0.14	30
South Korea	366	455	513	12.75	31
Germany	455	364	390	7.14	32
Pakistan	250	270	290	7.41	33
Tunisia	211	151	165	9.27	34
Colombia	473	281	77	-72.60	35
Nigeria	62	50	50	0.00	36
Indonesia	65	45	46	2.22	37
Morocco	9	31	45	45.16	38
Portugal	14	14	14	0.00	39
Total	**2 204 921**	**2 226 373**	**2 593 004**	**16.48**	**n.a.**

Source: U.S. Geological Survey, 2010 Review on Iron Ore, estimated production for 2010.
n.a. Not applicable; (r) Revised.
(1) Insofar as availability of source permits, gross weight in this table represents the non-duplicative sum of marketable direct-shipping iron ore and iron ore concentrates. Iron agglomerates produced from imported iron ore have been excluded under the assumption that the ore from which such materials are produced has been credited as marketable ore in the country it was mined.

TABLE 3. WORLD'S LARGEST PRODUCERS OF IRON ORE, AS OF JANUARY 2011

Rank	Company	Base Country	Capacity (Mt/y)	Share (%)
1	Vale Group	Brazil	417.1	19.2
2	Rio Tinto Group	United Kingdom	273.7	12.6
3	BHP Billiton Group	Australia	188.5	8.7
4	ArcelorMittal Group	United Kingdom	78.9	3.6
5	Fortescue Metals Group	Australia	55.0	2.5
6	Evrazholding Group	Russia	50.4	2.3
7	Metalloinvest Group	Russia	44.7	2.1
8	AnBen Group	China	44.7	2.1
9	Metinvest Holding Group	Ukraine	42.8	2.0
10	Anglo American Group	South Africa	41.1	1.9
11	LKAB Group	Sweden	38.5	1.8
12	CVG Group	Venezuela	37.9	1.7
13	Cleveland-Cliffs Group	United States	34.6	1.6
14	NMDC Group	India	32.6	1.5
15	Imidro Group	Iran	29.8	1.4
16	CSN Group	Brazil	28.0	1.3
17	Shougang Beijing Group	China	26.5	1.2
18	U.S. Steel Group	United States	23.5	1.1
19	ENRC - Eurasian Natural Resources	Kazakhstan	19.7	0.9
20	Wuhan Iron & Steel Group	China	18.6	0.9
n.a.	**Total top 20**	n.a.	**1 526.7**	**70.1**
n.a.	**Total world**	n.a.	**2 177.3**	**100.0**

Source: Metals Consulting International Limited, www.steelonthenet.com.
Mt/y Million tonnes per year; n.a. Not applicable.

TABLE 4. WORLD IRON ORE PRICE TREND, F.O.B. AUSTRALIAN PORT, 2001-11

Year	12-Month Variation	Price Range (US$/tonne)
2001	Jan. to Dec.	16-18
2002	Jan. to Dec.	17-19
2003	Jan. to Dec.	17-18
2004	Jan. to Dec.	18-23
2005	Jan. to Dec.	24-39
2006	Jan. to Dec.	38-47
2007	Jan. to Dec.	46-53
2008	Jan. to Dec.	56-98
2009	Jan. to Dec.	58-82
2010	Jan. to Dec.	60-123
2011	Jan. to Dec.	135-187

Source: Metals Consulting International Limited, www.steelonthenet.com.
f.o.b. Free on board.
Notes: Australian export prices are used as the benchmark for world prices. Iron ore is defined as iron ore and concentrates, excluding roasted iron pyrites.

TABLE 5. CHINA'S IRON ORE IMPORTS, BY COUNTRY OF ORIGIN, 2010 AND 2011

Country	2010 (a)			2011 (b)
	(Mt)	(%)	Rank	(Mt)
Australia	265.5	42.9	1	296.8
Brazil	130.9	21.1	2	142.9
India	96.8	15.6	3	73.3
South Africa	29.6	4.8	4	n.a.
Iran	14.6	2.4	5	n.a.
Ukraine	11.0	1.8	6	n.a.
Indonesia	7.7	1.2	7	n.a.
Peru	7.4	1.2	8	n.a.
Chile	6.6	1.1	9	n.a.
Russia	6.4	1.0	10	15.6
Kazakhstan	6.2	1.0	11	4.8
Venezuela	5.3	0.8	12	5.1
Canada	**4.4**	**0.7**	**13**	**12.1**
Mauritania	4.3	0.7	14	n.a.
Mexico	3.0	0.5	15	n.a.
Japan	2.7	0.4	16	n.a.
Mongolia	2.7	0.4	17	5.5
Others	2.6	0.4	18	n.a.
Malaysia	2.5	0.4	19	5.5
Myanmar	2.4	0.4	20	n.a.
North Korea	2.1	0.3	21	n.a.
Vietnam	1.9	0.3	22	n.a.
Thailand	1.2	0.2	23	n.a.
United States (r)	1.0	0.1	24	2.9
Norway	0.9	0.1	25	n.a.
New Zealand	0.8	0.1	26	n.a.
Total top four	**522.7**	**84.4**	**n.a.**	**n.a.**
Total others	**97.4**	**15.6**	**n.a.**	**n.a.**
Total world	**620.1**	**100.0**	**n.a.**	**n.a.**

(a) The source for 2010 data is Metals Consulting International Limited. (b) The source for 2011 data is Platts (the data are incomplete for most countries).
Mt Million tonnes; n.a. Not applicable; (r) Revised.