



# Mining



The mining industry posted a strong performance in 2011. Prices were high as demand from developing countries, especially China, remained robust. High prices supported production increases—new mines began production; further expansion plans were announced; and mineral exploration was at record levels.



The value of mineral shipments totalled about \$4.6 billion in 2011 (see chart), reflecting both higher production and prices. This represents an increase of 22% from 2010 and the highest value on record. Exploration expenditures increased over 60%, mainly due to various iron ore and gold projects. Total mining-related employment (including employment associated with construction and development activities at Vale's nickel processing facility) was about 6,800 person years, the highest level in over three decades.

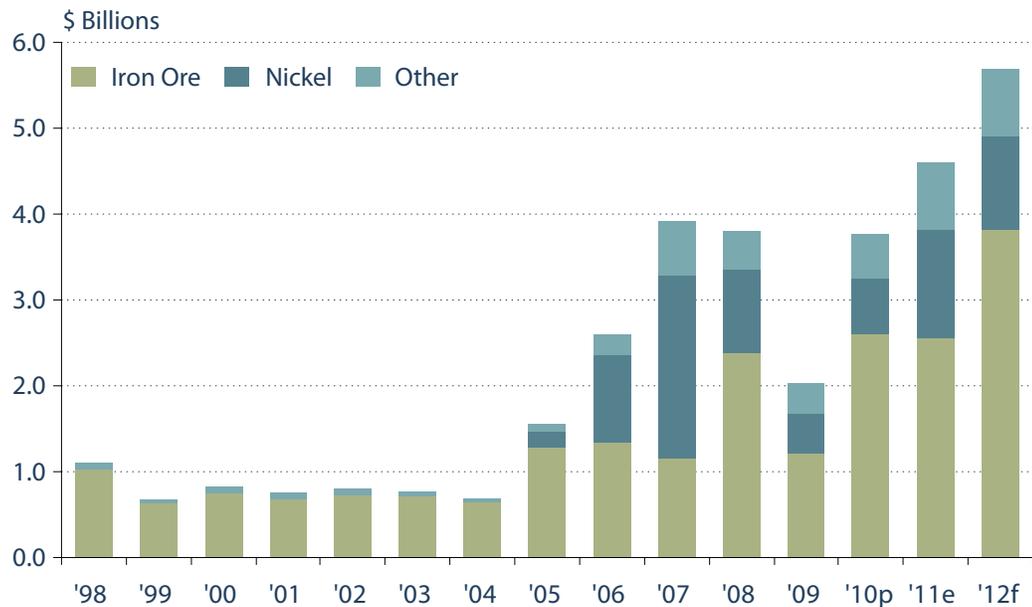
## Market Conditions



Demand for mineral products was robust for much of 2011. Steel production in China continued to flourish, supporting demand and prices for iron ore. Some slippage in prices occurred in the last few months of the year, reflecting slower growth in China and the European sovereign debt crisis.

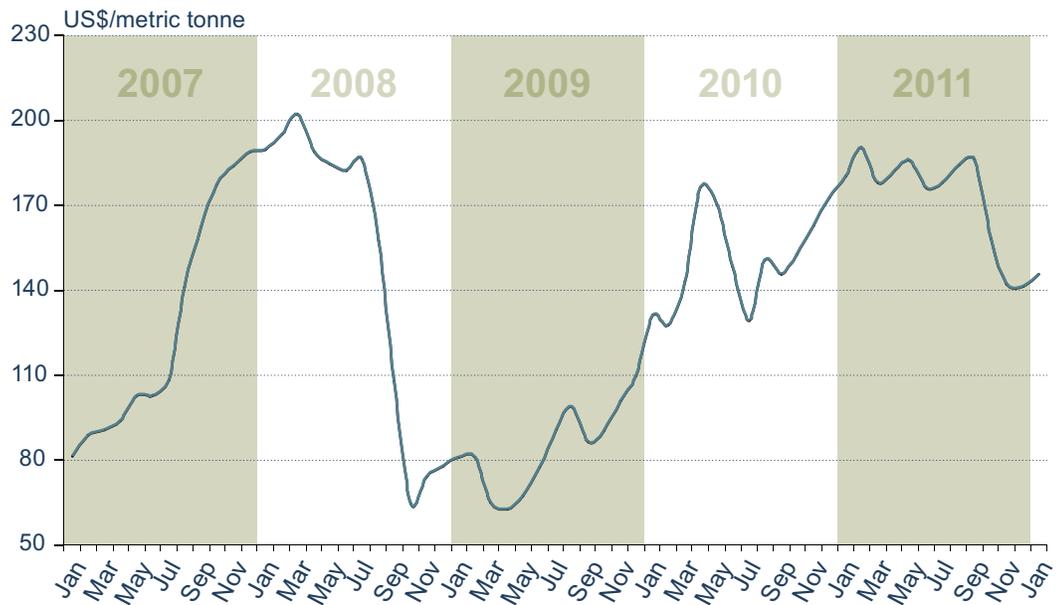
Average iron ore spot prices for 2011 rose 15%-25% over the previous year (see chart). Market volatility caused some iron ore producers to shift from quarterly prices to monthly prices and others are expected to follow.

## Mineral Shipments



p: preliminary; e: estimate; f: forecast  
 Source: Department of Natural Resources; Natural Resources Canada

## Iron Ore Monthly Spot Prices



Note: Indian Ore 63.5% Fe, dry basis, delivered to Chinese Northern Ports  
 Source: The AME Group

# IRON ORE PROJECTS

## LABRADOR

### PRODUCING MINES

**Iron Ore Company of Canada (IOC)** - In phase 2 of expansion program; Project Genesis under consideration (*Carol Lake*)

**Wabush Mines** - Continuing its manganese separation project (*Scully Mine*)

**Labrador Iron Mines Holdings Limited (LIM)** - Began operations in April 2011; first shipment in October 2011 (*DSO Project*)

### DEVELOPING PROJECTS

**Tata Steel Minerals Canada Ltd.** - Site clearing and construction of a work camp underway (*Elross Lake*)

**Alderon Iron Ore Corp.** - Completed a pre-feasibility study on one of three deposits (*Kami*)

### ADVANCED EXPLORATION

**Tata Steel Global Minerals Holdings Pte Ltd. / New Millennium Iron Corp.** - Undertaking a \$50 million feasibility study on several large taconite deposits (*LabMag*)

**New Millennium Iron Corp.** - Early stage drilling along trend from LabMag Project (*Perault Lake*)

**Century Iron Mines Corporation / Champion Minerals Inc.** - Favourable assay results from its drilling program (*Attikamagen*)

**Cap-Ex Ventures Ltd.** - Second high grade magnetite zone discovered (*Block 103*)

**Century Iron Mines Corporation / Altius Resources Inc.** - Exploration begins on a new joint venture (*Astray/Grenville*)

**NL Government** - Completed a field and research program in preparation for a new resource estimate (*Julienne Lake*)

**Grand River Ironsands/Petmin Limited/Cardero Resource Corporation Ltd.** - Announced a new investment of up to \$25 million in the project in 2011 (*Churchill River*)

In 2011, nickel and copper prices also rose substantially over 2010 levels. Nickel prices increased about 5% and copper prices increased about 17%. Prices reached an annual average of US\$10.38/pound for nickel and US\$4.00/pound for copper.

## Iron Ore

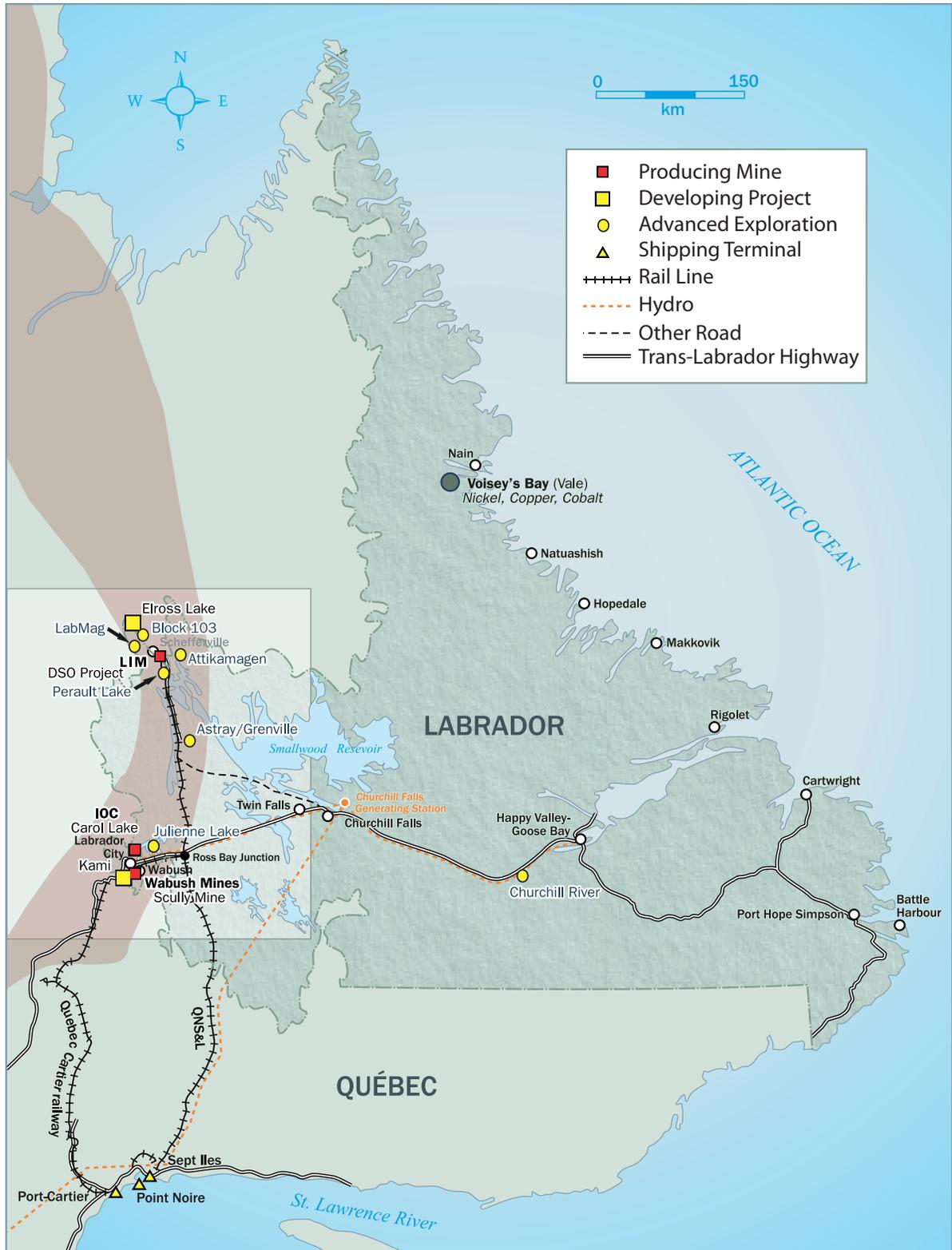
Iron ore shipments from the province's three producing operations totalled about 17 million tonnes in 2011, a decrease of 11.6% relative to 2010, due to declines in production at the Iron Ore Company of Canada (IOC) and Wabush Mines. The value of shipments also fell slightly.

### Iron Ore Company of Canada

Total production from IOC declined in 2011 as the company encountered equipment problems and weather related operating problems in the winter months. However, these issues were resolved as the year progressed. Pellet and concentrate sales were 13.2 million tonnes in 2011, compared to 15.3 million tonnes in 2010. Employment in 2011 was approximately 1,600 person years.

IOC's Concentrator Expansion Project (CEP) continues to progress. Construction of Phase 1 is complete and commissioning began in the first quarter of 2012. This phase will increase production capacity from 18 million tonnes to 22 million tonnes. Construction of Phase 2 is expected to be completed by the end of 2012 and commissioning is slated for the first quarter of 2013. This phase is expected to increase capacity further to 23.2 million tonnes. The CEP includes a Phase 3 that would increase production to 26 million tonnes; this phase is currently under consideration.

## IRON ORE PROJECTS LABRADOR



IOC is also investigating an additional expansion plan (Project Genesis) that would increase production to 50 million tonnes annually. This entails a staged expansion involving investment in the company's mines, plants, rails and ports. The company completed an order of magnitude study and the engineering selection process has begun. If the project is sanctioned, first production would be expected in 2015.

## **Wabush Mines**

Iron ore production at Wabush Mines declined in 2011 but is expected to expand in the future. Significant capital expenditures are planned to increase production to 5 million tonnes by 2013. This includes \$30-\$35 million to replace existing equipment and to acquire new equipment in the pit; \$20 million to improve concentrator equipment reliability; up to \$30 million on environmental projects; and \$30 million for full implementation of a manganese reduction project upon approval by Cliffs Natural Resources.

## **Labrador Iron Mines Ltd.**

Labrador Iron Mines Ltd. (LIM) began operations in April 2011 and shipped its first iron ore to China in October. The company is the first new iron ore producer in the province since 1965 when Wabush Mines started producing.

The company mines and processes direct shipping iron ore (DSO) in northwestern Labrador. While a part of the iron ore produced is of high grade (65% iron content) and suitable for direct shipping to market, the remaining lower grade ore (about 54%-59% iron content) is minimally processed at the facility before shipment. In 2011, 340,000 tonnes of ore were railed directly to Sept-Îles without processing; and 572,000 tonnes of ore was processed, yielding approximately 232,000 tonnes of lump and sinter fines. LIM has an agreement with IOC for the sale and shipping of all of its 2011 and 2012 iron ore production.

The project operates seasonally; processing and mining were shut down in early November and mid-December, respectively. Mining operations resumed on April 10 and processing is scheduled to begin in May, subject to weather conditions. The company employs approximately 80 people during operations.

The company has plans to expand the project. This could mean the addition of a separate plant by 2013 with the capacity to produce 2.5-3.0 million tonnes of ore per year. Planned additions to the existing plant will provide similar throughput for a combined capacity of 5-6 million tonnes of ore. This expansion project was registered with the Department of Environment and Conservation in December 2011 and was released from further Environmental Assessment in March 2012.

## Voisey's Bay

Vale Newfoundland and Labrador (VNL) operates the Voisey's Bay mine in Labrador. Total production (nickel, copper and cobalt) reached over 120,000 tonnes in 2011, up 60% compared to 2010. This increase reflected the settlement of a 17-month labour dispute in January 2011. The company shipped over \$1.7 billion of metal concentrates in 2011, up over 90% compared to 2010, mainly the result of increased nickel production.

The construction of VNL's US\$3.6 billion nickel processing facility in Long Harbour continues with building construction and infrastructure upgrading. Budgeted capital expenditures for 2011 were approximately \$817 million and employment in the province was about 2,000 person years. As of January 2012, the project was estimated to be about 59% complete with approximately 2,400 workers on site. The project is expected to be completed in 2013 and the plant is projected to reach full capacity 18 months after completion. Once operational, the facility will produce 50,000 tonnes of finished nickel per year and employ approximately 475 people.

## Other Mines

Rambler Metals and Mining Canada Ltd. (RMM) mines and processes ore from its copper-gold Ming Mine on the Baie Verte Peninsula. RMM completed construction of a new copper mill adjacent to the existing Nugget Pond gold mill in 2011 and commissioning began in October. Since November 2011, and while commissioning of the copper circuit is ongoing, RMM is processing high grade gold ore in the gold mill. Employment at the site is currently about 150 persons and is expected to reach about 200 in 2013. The project is expected to process about 630 tonnes of ore per day and have a mine life of six years. The first shipment from the mill is expected in the second quarter of 2012.

Anaconda Mining Inc. began gold production in 2008 at its Pine Cove mine near Baie Verte. The company completed a redevelopment of the mill in 2010 and operations are approaching design specifications of 1,000 tonnes per day. Employment at the mine is about 45-50 person years.

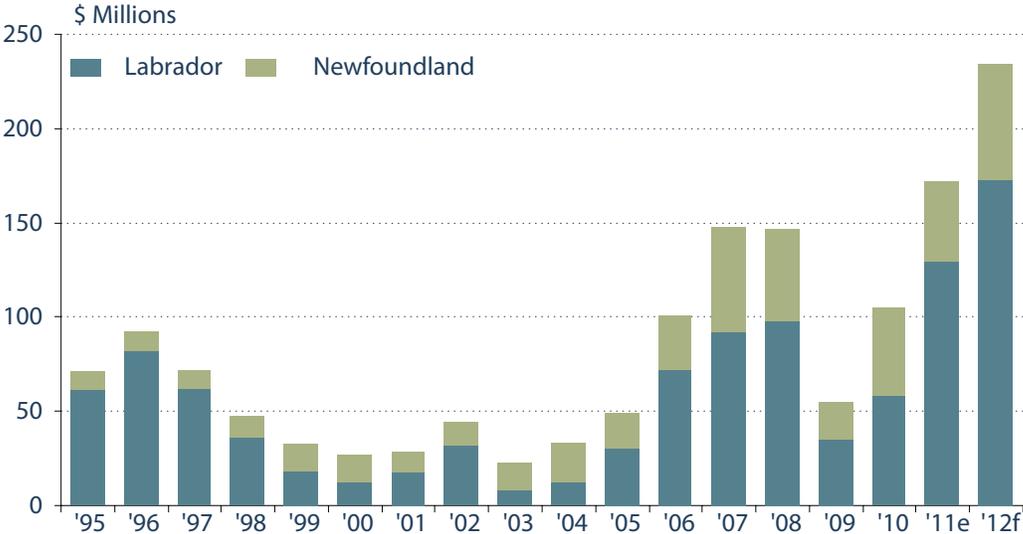
The Teck Duck Pond copper-zinc mine is located in central Newfoundland. Copper and zinc production for 2011 were 13,200 tonnes and 21,300 tonnes, respectively. This compares with copper and zinc production of 15,000 tonnes and 20,200 tonnes in 2010. The operation employs approximately 330 people annually. Teck Duck Pond operations are currently scheduled to end mining in the first quarter of 2015. However, the ongoing exploration program may extend the mine life.

There are other mines in the province: Beaver Brook Antimony Mine (antimony), Atlantic Minerals (limestone/dolomite), Hi-Point Industries (peat) and Newfoundland Pyrophyllite (pyrophyllite). These operations benefitted from a robust commodity market in 2011.

# Exploration

Exploration expenditures increased to an estimated \$172 million in 2011 from the \$105 million recorded in 2010 (see chart). The major commodities of interest were iron ore, copper and gold, reflecting strong demand and prices for these metals. There was also significant interest in rare earth elements<sup>4</sup> in the province, as well as renewed interest in uranium—expenditures for each of these commodities were estimated to be roughly \$10 million in 2011. In March 2012, the Nunatsiavut Government officially lifted a three-year moratorium on uranium mining on Labrador Inuit Lands, which should bode well for future exploration.

## Mineral Exploration Expenditures



e: estimate; f: forecast  
Source: Department of Natural Resources

# New Developments

Mineral development activity in the province is supported by strong market conditions. Investment in developing properties continued in 2011 and several projects advanced.

Tata Steel Minerals Canada Ltd.'s (TSMC) Elross Lake project is a joint-venture owned by Tata Steel of India and New Millennium Iron Corp. TSMC is developing a direct shipping iron ore deposit in northwestern Labrador/northeastern Quebec. The project is split into two phases and both have been released from environmental assessment. Construction of a work camp began in the second quarter of 2011 and site clearing for a plant is underway. TSMC expects to begin commissioning the plant in the third quarter of 2012, with full operating capacity expected between November 2012 and January 2013. The project is expected to produce four million tonnes of iron ore

4 Rare earth elements (or metals) are a group of 17 chemical elements and are mainly used in the high-tech manufacturing sector (e.g. flat-screen TVs and superconductors) and in “green” technologies (e.g. wind turbines and hybrid gas–electric vehicles) because of their magnetic and conductive properties.

## MINING

concentrate per year (with some ore being mined in Quebec) and employ about 188 people. Tata Steel and New Millennium are also undertaking a \$50 million feasibility study for several large taconite (low grade iron content) deposits in the same area.

Newspar continues efforts to reactivate the underground fluorspar mine located at St. Lawrence on the Burin Peninsula. The company is an equal partnership between Canada Fluorspar Inc. (CFI) and Arkema (a multinational French chemical company). Newspar plans to develop two deposits, complete upgrades to the existing mill, and construct a tailings management facility and a new marine terminal. The provincial government approved a \$17 million loan for the construction of the marine terminal. In June 2011, Arkema invested \$15.5 million in CFI to acquire 19.9% of the company. A second level of investment was completed in October 2011 that involved Arkema and CFI injecting \$60 million and \$14 million, respectively, into Newspar. Newspar expects construction to begin this year and production to start in year 2014. The operation is expected to create about 150 jobs during production.

Alderon Iron Ore Corp. is advancing the Kamistiatusset (Kami) iron ore project located in western Labrador near Labrador City and Wabush. The company recently released a pre-feasibility study on one of three possible ore bodies. The study indicates that the mine could produce eight million tonnes of iron concentrates per year over a 15-year mine life. The project was registered for environmental assessment in October 2011. The registration contains provisions to increase production to 16 million tonnes per year in a two-phase capital expansion. The capital cost of the project is estimated at \$989 million. Construction and operational employment are estimated at about 770 and 270 respectively.

Demand for minerals is expected to remain strong, however, the European debt crisis and a potential slowdown in China present risks.

The value of mineral shipments is expected to increase by about 24% to \$5.7 billion. If realized, this would set a new record. The rise mainly reflects an increase in iron ore production and prices.

An increase in the production of iron ore is expected as Phase 1 of IOC's CEP is implemented and LIM enters its first full year of operation.

The value of shipments from Voisey's Bay is expected to decrease approximately 14% due to lower nickel production and prices.

Construction of Vale's nickel processing plant at Long Harbour will continue with building construction and equipment setting.

- Capital expenditures of \$1.2 billion are slated for 2012.
- Peak employment is anticipated in the second quarter of 2012 at approximately 3,500 people.

Exploration expenditures are expected to increase to \$234 million, a 36% increase over the record expenditure set in 2011. This increase is due primarily to the advanced exploration projects for iron ore in western Labrador.

Total mining-related employment is expected to increase more than 13% due mainly to increases at the Long Harbour nickel processing facility and IOC.