Copper

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1997 production:	$2.1 billion
World rank:	Fourth
Exports (concentrate and unwrought):	$1.77 billion

Canada	1997	1998[e]	1999[f]
	(000 tonnes)		
Copper mine production	658	700	700
Refined copper production	560	566	598
Refined consumption	225	243	250

[e] Estimated; [f] Forecast.

Copper's properties, particularly its high electrical and thermal conductivity, good tensile strength, elevated melting point, non-magnetic properties, and resistance to corrosion, make it and its alloys very attractive for electrical transmission, water tubing, castings and heat exchangers. Copper is the most efficient conductor of electrical power, signals and heat of all the industrial metals. In Canada, more than half of the refined copper consumed annually is used for electrical applications, mostly as wire.

ANNUAL AVERAGE SETTLEMENT PRICES, LONDON METAL EXCHANGE

1994	1995	1996	1997	1998[e]
		(US$/t)		
2 307	2 930	2 294	2 276	1 660

[e] Estimated.

CANADIAN OVERVIEW

- Canadian mine production of copper increased in 1998 due to the start-up of several new mines in 1997 and 1998, including the Huckleberry, Mount Polley and Kemess mines in British Columbia and the Raglan mine in Quebec.
- In October 1998, Royal Oak Mines Inc. announced that its Kemess gold-copper mine in north-central British Columbia had reached commercial production. Royal Oak began construction of the Kemess facilities in July 1996 and started limited production in the concentrator on May 19, 1998. The Kemess mine is expected to produce an average of approximately 7800 kg/y of gold and 27 000 t/y of copper over a mine life of approximately 16 years.
- Boliden Westmin Limited announced that it would suspend operations at its Gibraltar mine in December 1998. Boliden acquired the operation in early 1998 when it completed the takeover of Westmin Resources Limited. The company stated that its decision to close the mine was based on low ore grades and low copper prices.
- Boliden announced in November 1998 that it would temporarily suspend production at its Myra Falls operation in mid-December in order to address challenging ground conditions in the Battle Zone of the mine. The company expects that full production will resume by April 1, 1999.
- HBMS is proceeding with the development of its Konuto Lake deposit, located 20 km west of Flin Flon, Manitoba. The project, which is expected to begin commercial operations in the first quarter of 1999, will produce about 10 000 t/y of copper in concentrate plus zinc. The mine is expected to operate for approximately six years. HBMS is also proceeding with a feasibility study on its Triple Seven deposit, which is adjacent to the company's Callinan mine in Flin Flon. The deposit contains a preliminary reserve estimate of 13.4 Mt grading 5.8% zinc and 3.3% copper, plus gold and silver.

WORLD OVERVIEW

- In 1998, world mine production of copper is forecast to increase to 12.0 Mt from about 11.5 Mt in 1997. World production of refined copper is expected to increase to 13.8 Mt in 1998 from less than 13.6 Mt in 1997, while world refined copper consumption is expected to increase to almost 13.4 Mt from 13.1 Mt in 1997.

- As a result of the economic downturn in Southeast Asia and rising copper output, copper prices weakened in the second half of 1997 and remained depressed throughout 1998. The average copper price on the London Metal Exchange (LME) in 1998 to mid-December was US$1664/t (75.5¢/lb). The average LME copper price in 1997 was US$2276/t (103.2¢/lb).

- At the time of writing, it was expected that smelting and refining charges for 1999 contracts would be set in the range of US$65-$70/dry metric tonne (dmt) and 6.5¢-7.0¢/lb). Contract prices for the first half of 1998 were set at roughly US$100/dmt and 10¢/lb, declining to US$85/dmt and 8.5¢/lb in the second half of the year.

MARKET OUTLOOK

Copper consumption growth in Europe and the United States, which was very strong during 1998, is expected to slow somewhat during 1999. Although consumption in China is expected to experience relatively strong growth in 1999, demand throughout much of the rest of Southeast Asia will remain depressed. This region experienced a significant decline in copper consumption in 1998.

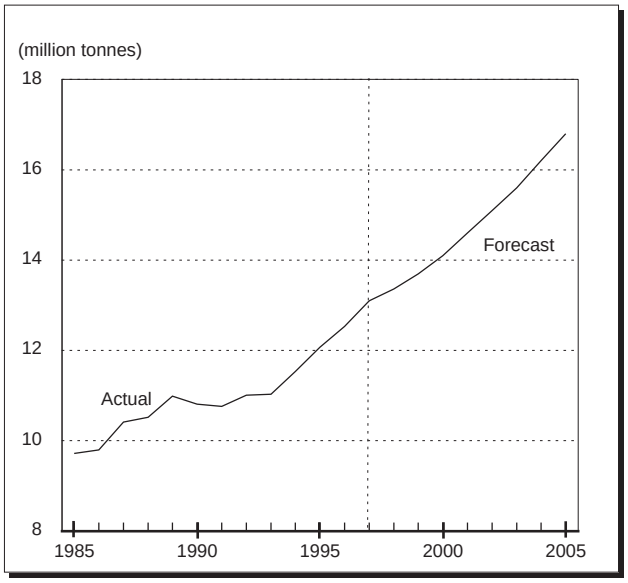
Without significant further cutbacks of copper output, it is expected that there will be a world copper supply surplus of between 250 000 and 350 000 t in 1999.

For the period 2000-2005, copper consumption is expected to grow at an annual average rate of about 3.5%. The largest increases in copper consumption will occur in the construction, transportation, and electrical and electronics industries. China and India are expected to account for a significant portion of this growth.

A number of promising new markets for copper could provide significant growth opportunities. These include certain roofing applications, fire suppression systems, natural gas systems, solar power generation, data communications, and the storage of spent nuclear fuel.

While aluminum has largely replaced copper in original-equipment automotive radiators, new fabrication techniques such as no-flux brazing could allow copper to regain a significant share of this important market. In addition, the expected increase in the number of electrical circuits in automobiles could provide a significant boost for copper demand. In recent years, there has been a noticeable increase in the intensity of copper use in residential applications in North America. Part of this change is attributable to the construction of larger houses and the growth of home-based offices.

Figure 1
World Copper Consumption, 1985-2005



Source: Natural Resources Canada.

CANADIAN PRODUCTION OUTLOOK

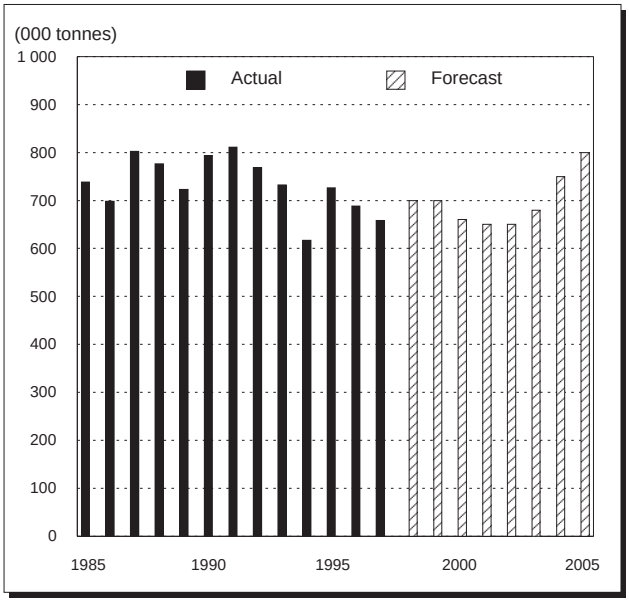
Depressed market conditions for the various nonferrous metals have resulted in the deferral of a number of exploration and development projects in Canada.

While Canadian copper mine production should remain constant or increase slightly in 1999, it is expected that there will be a slight decline in copper mine output beginning in 2000 as closures and cutbacks outweigh the effects from the start-up of a limited number of possible new operations, including the Kudz Ze Kayah and Minto projects in the Yukon and Tulsequah Chief in British Columbia.

The reduced output will largely result from the closure of Noranda's Gaspé and Heath Steele operations and reduced output at Inco's Canadian operations.

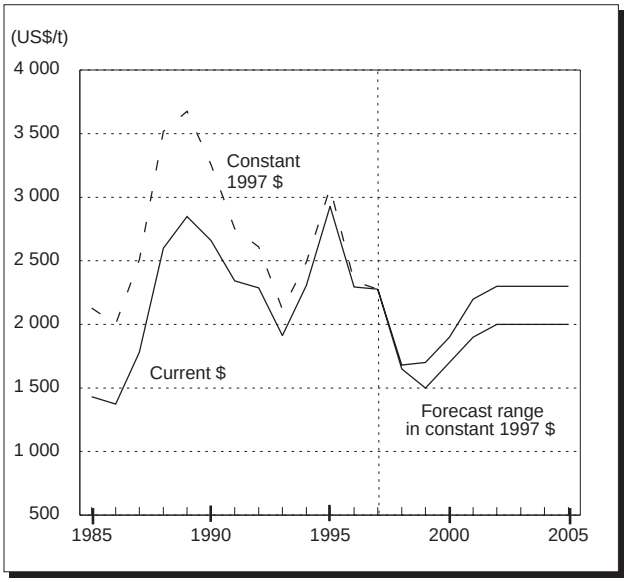
In the longer term, Canadian copper mine production should recover to annual output levels in excess of 800 000 t. Possible new projects include the Casino, Fyre Lake, and Wolverine prospects in the Yukon; Red Chris and Prosperity in British Columbia; Triple Seven in Manitoba; and the Voisey's Bay project in Labrador.

Figure 2
Canadian Mine Production of Copper, 1985-2005



Source: Natural Resources Canada.

Figure 3
Copper Prices, 1985-2005
Annual LME Settlement



Source: Natural Resources Canada.

PRICE OUTLOOK

While copper consumption is forecast to experience growth of about 2.5% in 1999, it is expected that further increases in world copper mine production capacity, particularly in South America and Australia, will continue to exert downward pressure on prices. An improvement in copper prices can be expected in 2000 when the growth of world production capacity is forecast to slow and demand for copper in Southeast Asia improves.

In 1999, copper is expected to trade within a range between US$1500 and $1700/t (US66¢ and 77¢/lb). For the first half of the next decade, copper prices are expected to trade in a range between US$2000 and $2300/t (US$0.91 and $1.04/lb) in constant 1997 dollars.