THE MINERAL INDUSTRY OF

NORTH KOREA

By Chin S. Kuo

The gross domestic product of North Korea decreased again as it did in 1994 when it contracted 1.7%. There were reportedly food shortages and deteriorating infrastructure in North Korea. The country was unable to produce enough rice to sustain an already undernourished population. Poor weather, lack of fuel to run farm equipment, and soil degradation were the factors. In 1995, a flood wiped out 40% of the country's arable land. North Korea appealed to international aid groups and other countries for help. The Red Cross raised \$2.7 million¹ in donations, but still needed \$1.7 million to complete the initial phase of the aid program.

North Korea owed \$10.6 billion to foreign lenders, of which three-quarters was owed to the Organization of Economic Cooperation and Development nations. The country was in desperate need for foreign capital and encouraged foreign investment in agriculture and light industry.

Despite the country's low-wage, disciplined work force, contract processing was the only activity in which many foreign companies could invest. Other factors such as inadequate infrastructure, weak legal protection, and lack of financial network had hindered the prospect of foreign investment. One exception was that Broken Hill Proprietary Co. of Australia had been pursuing contracts to mine for zinc and diamonds. The Government allowed the investors to take controlling equity stakes in joint ventures.

North Korea's two-way trade with the outside world fell considerably. China remained the country's largest trading partner. The United States eased trade restrictions with North Korea in January 1995 and, in addition, would allow direct telephone calls between the two nations and would permit travelers to use credit cards in North Korea. In a small easing of embargo on goods, the United States permitted imports of magnesite, which was one of the few North Korean products for which there was a large demand in the United States. Minerals Technologies Inc. of the United States was the first to sign a contract to import 100,000 metric tons (t) of magnesite and magnesia into the U.S. in 1995. North Korea also ended its embargo on U.S. goods.

North Korea planned to open its first economic free zone at the Rajin-Sonbong area in May 1995. That was effectively the only place foreigners could invest directly. South Korean and other foreign investors who invested in the

economic zone would be given tax and other business privileges as incentives. The country was in need of foreign investment in telecommunication, power generation, transportation, and other infrastructure.

The development of the Tumen River project at the border of China, North Korea, and Russia was estimated to require about \$20 billion over 20 years. The project involved developing an international port and free trade zone at the Tumen River delta. Environmental protection and conservation of natural resources also were being considered. The objective of the project was to foster the development of a broad trade bloc consisting of northeast China, Japan, Mongolia, North Korea, the Republic of Korea, and the Far East region of Russia.

A high-grade iron ore deposit was found off the coast of Unryl county in South Hwanghae Province. The deposit was expected to be developed in the future. It is close to the Unryl Mine, the region's largest iron ore producer. (See table 1.)

The country's cement production capacity was estimated at 18.6 million metric tons per year (Mt/yr). Sunchon and Sangwon are the two largest producers with capacities rated at 3 and 2 Mt/yr, respectively. About 1 Mt/yr of total cement output was exported to China, Pakistan, the Republic of Korea, and Vietnam.

North Korea has substantial reserves of magnesite estimated at 300 million tons (Mt)² and has been an intermittent supplier of magnesia to Japan and Europe through North Korean Magnesia Clinker Export and Import Co. Magnesite was mined mainly from deposits near Tanchon, South Hamgyang Province. Magnesite production was from two open pit mines, the larger of which is at Taehung. Capacity of dead burned magnesite production, which was based on coke, was estimated at between 1 and 2 Mt/yr. There is a magnesia plant at Tanchon. Production there was lower grade magnesia, which was mostly used by the country's steel industry.

The major coal-producing center is in South Pyongan Province where the Anju, Sunchon, Tokchon, Pukchang, Kaechon, and other coal-producing complexes are located. North Korea produced about 70 Mt of anthracite in 1995. The country imported only 2 Mt/yr of coal from China and was expected to be self-sufficient in coal consumption. The expansion of the coal-mining sector would increase coal

production by 150% in 1996. Current improvements included installation of a new conveyor system at Jangan Mine in the Pukchang complex and at planned new coal faces at Jiktong Youth Mine in the Sunchon complex. The Wonbuk Pit in the Anju complex, with four coal-cutting faces and a 1,400-meter conveyor system, went into production with a capacity of 200,000 metric tons per year.

In 1995, Shell Pacific Enterprises of the United Kingdom planned to invest \$2 million to build an oil storage and supply system in the Rajin-Sonbong free economic and trade zone. The company was to lease land and construct a wharf for heavy oil.

North Korea received shipments of heavy oil from the United States and Korean Peninsula Energy Development Organization (KEDO) under a nuclear pact. The first shipment of 50,000 t was delivered to Sonbong port in

January, and the second shipment of 100,000 t in October. The interim oil supplies were to reimburse North Korea for the energy lost by its frozen nuclear program.

The country and KEDO agreed to build two light-water nuclear reactors. The first was to be completed by 2003 under the \$4.5 billion project. KEDO planned to provide North Korea with a 20-year interest-free loan.

Major Source of Information

Central Institute of Mining Industry Pyongyang, North Korea

¹Where necessary, values have been converted from Korean won (W) to U.S. dollars at the rate of W2.15=US\$1.00 for 1995.

²Industrial Minerals, Feb. 1996, p. 43.

${\bf TABLE~1}$ NORTH KOREA: PRODUCTION OF MINERAL COMMODITIES e/ 1/

(Metric tons unless otherwise specified)

Commodity 2/		1991	1992	1993	1994	1995
METALS		100	100	100	400	100
Cadmium metal, smelter		100	100	100	100	100
Copper:		15,000	16,000	16,000	16,000	16,000
Mine output, Cu content		15,000	16,000	16,000	16,000	16,000
Metal:						
Smelter:		20,000	21,000	22,000	22,000	24,000
Primary		20,000	21,000	23,000	23,000	24,000
Secondary Total		5,000	5,000 26,000	5,000 28,000	5,000 28,000	5,000
Refined:		25,000	20,000	20,000	20,000	29,000
Primary		19,000	20,000	22,000	22,000	22,000
Secondary		5,000	5,000	5,000	5,000	5,000
Total		24,000	25,000	27,000	27,000	27,000
Gold, mine output, Au content	kilograms	5,000	5,000	5,000	5,000	5,000
Iron and steel:	Kilogranis	3,000	3,000	3,000	3,000	3,000
Iron ore and concentrate, marketable:						
Gross weight	thousand tons	10,000	10,500	10,500	11,000	11,000
Fe content	do.	4,700	4,900	4,900	4,900	5,100
Metal:	uo.	4,700	4,700	4,700	4,700	3,100
Pig iron	do.	6,500	6,600	6,600	6,600	6,600
Ferroalloys, unspecified	do.	120	120	120	120	120
Steel, crude	do.	8,000	8,100	8,100	81,000	8,100
Lead:	<u>uo.</u>	0,000	0,100	0,100	01,000	0,100
Mine output, Pb content		80,000	75,000	80,000	80,000	80,000
Metal:		00,000	,5,000	00,000	00,000	00,000
Smelter, primary only		70,000	65,000	70,000	70.000	70,000
Refined:						
Primary		75,000	70,000	75,000	75,000	75,000
Secondary		5,000	5,000	5,000	5,000	5,000
Total		80,000	75,000	80,000	80,000	80,000
Silver, mine output, Ag content		50	50	50	50	50
Tungsten, mine output, W content	_	1,000	1,000	1,000	900	900
Zinc:						
Mine output, Zn content		200,000	200,000	210,000	210,000	210,000
Metal, primary		175,000	175,000	200,000	200,000	200,000
INDUSTRIAL MINERA	ALS					
Barite		100,000	100,000	110,000	110,000	120,000
Cement, hydraulic	thousand tons	16,000	17,000	17,000	17,000	17,000
Fluorspar		41,000	41,000	41,000	40,000	40,000
Graphite		35,000	38,000	38,000	38,000	40,000
Magnesite, crude	thousand tons	1,600	1,600	1,600	1,600	1,600
Nitrogen, N content of ammonia	do.	550	550	600	600	600
Phosphate rock		500,000	500,000	510,000	510,000	520,000
Salt, all types		580,000	590,000	590,000	600,000	600,000
Sulfur	thousand tons	240	240	240	250	250
Talc, soapstone, pyrophyllite		170,000	170,000	180,000	180,000	180,000
MINERAL FUELS AND RELATED	MATERIALS					
Coal:						
Anthracite	thousand tons	70,000	70,000	71,000	70,000	71,000
Lignite	do.	20,000	21,000	21,000	20,000	20,000
Total	do.	90,000	91,000	92,000	90,000	91,000
Coke	do.	3,000	3,000	3,000	3,000	3,000
Petroleum refinery products:	 					
	housand 42-gallon barrels	8,400	8,500	8,600	8,600	8,600
Jet fuel and kerosene	do.	1,700	1,800	1,800	1,800	1,800
Distillate fuel oil	do.	7,600	7,800	7,800	7,900	7,800
Residual fuel oil	do.	4,100	4,200	4,300	4,300	4,200
Refinery fuel and other products	do.	2,200	2,300	2,400	2,400	2,400
Total	do.	24,000	24,600	24,900	25,000	24,800
a/ Hettmotod						

e/ Estimated.

 $^{1/\,}Table$ includes data available through July 22, 1996.

^{2/} In addition to the commodities listed, crude construction materials such as sand and gravel and other varieties of stone presumably are produced, but available information is inadequate to make reliable estimates of output levels.