

# THE MINERAL INDUSTRY OF NORTH KOREA

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North Korea's economic activities remained under state control. Collective agriculture and state-owned companies accounted for about 90% of all economic activities. In the 1990's, North Korea's economy was affected by the political changes in China and Russia that disrupted much of the financial support from these countries. Floods and famine had also led to serious deterioration of the industrial structure. In 1999, the Supreme People's Assembly approved the state budget for revenues and expenditures at \$9.39 billion, which was an increase of 3% compared with that of 1998, which was about one-half of that of 1994. Expenditures for the farming and power sectors were increased by 15% and 11%, respectively, compared with those of 1998 (Korea Annual, 2000, p. 277). Little information was publicly available on the minerals industry in North Korea.

Iron ores were mined near Musan and the Tumen River in North Hamgyong Province and in the Provinces of North P'yongan and South Hwanghae. The Musan iron ore complex had a designed output capacity of about 10 million metric tons per year (Mt/yr) of ore that was moved in slurry form by pipeline about 98 kilometers to the Kim Chaek iron and steel complex in Chongjin, which had an output capacity of about 6 Mt/yr. Iron ores from the Unyul Mine at Unyul in South Hwanghae Province and the Tokyon Mine at Uiju in North P'yongan Province were shipped by sea or railway to the 5.4-Mt/yr- capacity Hwanghae Iron and Steel Works, which was located at Songnim in North Hwanghae Province. The Kangson Iron and Steel Complex at Taean in Namp'o expanded its steel output capacity to 3 Mt/yr in the late 1980's. The Chongjin, the Muchon, the Puryong, and the Pyongyang facilities were small casting plants that used open hearths and electric arc furnaces. In the early 1990's, the Government proposed that the construction of iron works be located on the lower reaches of the Taedong River and in Sobu.

The country's copper production was from the Muchang Mine in Changang Province, the Kapsan Mine in Yanggang Province, and the Tanchon Mine in South Hamgyong Province. Substantial copper mineralization occurrences were discovered in the Provinces of North Hwanghae and South Pyongan. The Komdok Mine at Tanchon in South Hamgyong Province was the country's largest lead and zinc producer. Other lead and zinc operations included the Sankok Mine at Kowon in South Hamgyong Province, the Kyesong Mine in Changang Province, the Kaun Mine at Much'on in Kangwon Province, and Sungchang Mine in South Pyongan Province. Smelting-refining facilities at Hungnam, Munpyong, Namp'o, Pyongbuk, and Tanchon produced lead and zinc metals and copper. Additional copper smelter facilities were at Haeju and

Tanchon. Annual production capacity for lead and zinc was estimated to be 200,000 metric tons (t) and for copper, 100,000 t. North Korean refineries also recovered molybdenum. The Republic of Korea imported about 2,100 t of zinc from North Korea in the first 4 months of 1999 (Mining Journal, 2000).

Gold occurrences were discovered in the Unsan region of North Pyongan Province and in the Provinces of Kwangwon, North Hwanghae, and South Pyongan. Molopo Australia NL had been active in North Korea in the past several years. Through its subsidiary, Yak 50 Gold Mining NL, Molopo held 50% interest in joint venture the Kumsan Joint Venture Co., and Korea Hungsong Trading, which was a wholly owned subsidiary of the Korea Hungsong Economic Group, held the remaining shares; the Group was involved with gold and base-metal mining and production. The joint venture received approval from the Government to explore for and produce gold from selected project areas in North Korea. Projects that were undertaken were grouped into four categories: tailings dumps, hard rock gold deposits, rights to operate a low-grade gold concentrate (less than 16-gram-per-ton) processing plant, and marine alluvial gold deposits (Molopo Australia NL, 1999 annual report, accessed February 18, 2000, at URL <http://www.molopo.com.au/report99/operations.html>).

Nickel was mined from the Pugan area, Ch'ongjin, North Hamgyong Province, and Kumsong, Kangwon Province; manganese from Cholwon, Kangwon Province; and tungsten from the Kyongsu Mine at Taegung, South Pyongan Province and from the Mannyon Mine at Sinpyong, North Hwanghae Province. In the 1980's, North Korea was one of the largest magnesite producing countries in the world with a production capacity of about 1 Mt/yr. In recent years, output was believed to have declined. Aurora Partners, which was a U.S.-based company, formed White Gold Mountain Partners with, Korea Magnesia Clinker Industry Group to mine, process, and export magnesia products from North Korea. The joint venture planned to export 200,000 t of magnesia products to Asian and U.S. markets (Financial Times, 2000).

North Korea produced anthracite and lignite. Deposits of bituminous coal were small. More than 90% of the anthracite deposits occurred widely in South Pyongan Province on the west coast and 90% of lignite occurred throughout North Hamgyong Province on the east coast.

Oil and gas are not commercially produced in North Korea. All the country's requirements for petroleum were met by imports. There is a potential for commercial quantities of hydrocarbons in the Hambury and the Sinpo areas. Soco International of the United Kingdom and Taurus Petroleum of Sweden held oil exploration concessions in these areas. China,

the Republic of Korea, Russia, and BP Amoco were discussing possibility of importing natural gas into the Republic of Korea from the Kovykta gasfield near Irkutsk, Russia. North Korea was being considered as one possible route for the pipeline link to the Republic of Korea and would be less costly than the subsea alternative.

## References Cited

- Financial Times, 2000, US group in first N Korea deal: Financial Times [London], August 23, p. 1.  
Korea Annual, 2000, North Korea today: Korea Annual, 821 p.  
Mining Journal, 2000, South Korea raises zinc imports: Mining Journal, v. 334, no. 8587, June 16, p. 471.

TABLE 1  
NORTH KOREA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/ METALS	1995	1996	1997	1998	1999
Cadmium metal, smelter	100	100	100	100	100
Copper:					
Mine output, Cu content	16,000	16,000	15,000	14,000	14,000
Metal:					
Smelter:					
Primary	24,000	24,000	24,000	23,000	20,000
Secondary	5,000	5,000	5,000	4,500	5,000
Total	29,000	29,000	29,000	27,500	25,000
Refined:					
Primary	22,000	23,000	23,000	23,000	20,000
Secondary	5,000	5,000	5,000	5,000	5,000
Total	27,000	28,000	28,000	28,000	25,000
Gold, mine output, Au content	5,000	5,000	5,000	4,500	4,500
Iron and steel:					
Iron ore and concentrate, marketable:					
Gross weight	1,100 r/	1,100 r/	1,000 r/	700 r/	700
Fe content	510 r/	510 r/	490 r/	300 r/	300
Metal:					
Pig iron	500 r/	500 r/	450 r/	250 r/	250
Ferrous alloys, unspecified	12	10	10	10	10
Steel, crude	1,200	1,000	1,000	1,000	1,000
Lead:					
Mine output, Pb content	80,000	80,000	75,000	70,000	70,000
Metal:					
Smelter, primary	70,000	65,000	65,000	60,000	60,000
Refined:					
Primary	75,000	75,000	75,000	75,000	70,000
Secondary	5,000	5,000	5,000	5,000	5,000
Total	80,000	80,000	80,000	80,000	75,000
Silver, mine output, Ag content	50	50	50	45	40
Tungsten, mine output, W content	900	900	900	800	700
Zinc:					
Mine output, Zn content	210,000	210,000	210,000	200,000	190,000
Metal, primary	200,000	200,000	200,000	180,000	180,000
INDUSTRIAL MINERALS					
Barite	120,000	110,000	120,000	100,000	70,000
Cement, hydraulic	17,000	17,000	17,000	17,000	16,000
Fluorspar	40,000	39,000	39,000	30,000	25,000
Graphite	40,000	40,000	40,000	35,000	33,000
Magnesite, crude	1,600	1,600	1,600	1,500	1,000
Nitrogen, N content of ammonia	600	600	600	550	500
Phosphate rock	520,000	520,000	520,000	450,000	350,000
Salt, all types	600,000	590,000	590,000	550,000	500,000
Sulfur	250	250	260	250	240
Talc, soapstone, pyrophyllite	180,000	180,000	180,000	150,000	120,000
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite	71,000	70,000	70,000	55,000	50,000
Lignite	20,000	20,000	20,000	30,000	30,000
Total	91,000	90,000	90,000	85,000	80,000
Coke	3,000	2,900	2,900	2,000	2,000

r/ Revised.

1/ Table includes data available through November 30, 2000.

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