## THE MINERAL INDUSTRY OF

## NORTH KOREA

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North Korea's gross domestic product in 1994 showed a decline of 5% from that in 1993. The country's exports fell and its imports also declined slightly and, as a result, the trade deficit rose substantially. Annually, between \$180 million² and \$225 million was being remitted indirectly to North Korea by the General Federation of Korean Residents in Japan. The country had all but completely defaulted on the reimbursement of its foreign debts since 1985 and, consequently, North Korea found it difficult to introduce new foreign capital.

The country pushed for an open-door policy and attempted to attract foreign investment. The Government's economic reform was launched in April 1994. It reportedly planned to open the Najin-Sonbong area, as well as Shinuiju, Nampo, Chongjin, and Wonsan, and to liberalize investment by foreigners in these areas. The Najin-Songbong special economic zone offers legal protection, tax holidays, tariff benefits, land-lease, and offshore banking privileges. South Koreans would be allowed to ship duty-free raw materials, facilities, and equipment to the port of Najin. Some 30 joint-venture firms were in operation. North Korea secured development funds totaling \$4.3 million from the United Nations Development Program.

North Korea reportedly planned 93 projects in 10 sectors, including port, railway, road, and industrial bases in the special economic zone. The development schedules were in three phases. The top priority was on port development. The country planned to invest \$1.6 billion on Najin, Sonbong, and Chongjin by 2010 to improve port facilities. Railways and roads connecting these ports would be expanded. Nine industrial complexes were planned in the Najin-Sonbong area. North Korea was to increase the capacity of the existing 100-megawatt (MW) heavy-oil powerplant to between 400 MW and 500 MW.

Samsung Corp. of South Korea reportedly planned to invest in the railroad line connecting the Najin-Songbong special economic zone with Hunchun, in China's Jilin Province. Samsung also would finance development of the port of Najin. South Korea was considering extension of a multimillion-dollar "soft" (low-interest, long-term) loan to China for infrastructural improvements on China's border with North Korea. Some of the industrial conglomerates, such as Hyundai Corp. and Daewoo Corp., both of South Korea, were developing trade and manufacturing links with the North. Daewoo reportedly planned to build a light-industry assembly complex in Nampo, North Korea.

China was the largest trading partner of North Korea, followed by Japan, Russia, and South Korea, in order of importance. North Korea shipped steel, cement, and seafood products to China, which, in turn, exported crude oil, grain, and electric and electronic products to North Korea. Trade between North Korea and China was about \$735 million in 1993, of which \$300 million was border trade along the Tumen River separating the two countries. Border trade declined sharply in 1994 to \$192 million, due largely to North Korea's foreign exchange crisis.

North Korea's energy policy of depending primarily on coal and the decline in oil imports caused by the lack of hard currency resulted in the country's suffering an acute energy crisis. Gasoline was transported from China across the border to supplement North Korea's critically short supply. The energy shortage resulted in shutting down manufacturing plants, and causing the country's economy to contract further.

Exports of North Korea's mineral commodities were under strict Government control. However, it was reported that Inphung Trading Corp. began exporting North Korean wollastonite and molybdenum concentrates to various countries, including Japan. The company had previously exported copper concentrates and kaolin.

North Korea was an important source of low-priced raw materials and low-grade metals for many Japanese metals companies. Japan imported copper cathode, lead, magnesia, zinc ingots, and other nonferrous metals from North Korea. Among the ferrous metals, North Korea supplied high-silicon-content pig iron to Japan. Other exports to Japan also included aluminum alloys, copper scrap, and ferroalloys, such as ferrochromium. The metals trade with Japan was intended to generate much-needed hard currency.

North Korea also earned hard currency through re-exports. The country transshipped cars and electronic goods to China and Russia. North Koreans bought East European cars and resold them in China at discounted prices by circumventing Chinese tariffs. However, this through-trade was hardly enough to finance the restructuring of North Korea's aging or useless industrial plants.

North Korea and Russia set up a trading company in the North Korean special economic zone. The joint venture planned to facilitate trade between the two countries via the North Korean port of Najin. It also aimed to cooperate with North Korean enterprises in producing goods for export to other countries.

The country reported sizable achievements in geological

prospecting. Gold deposits were reportedly discovered in Yanggang and Chagang Provinces. Apatite, boron, gypsum, silica, zirconium, and other industrial minerals also were found at various locations. A coal deposit containing more than 130 million metric tons<sup>3</sup> (Mmt) was discovered at depth in Anju area, South Pyongan Province. New coal deposits had recently been found in Ryanggang Province.

The Kimchaek iron and steel complex began production of rollers employing a process that was modern, mechanized, and automated. The country's steelmaking capacity was reportedly estimated at 13.6 million metric tons per year (Mmt/a) and output of crude steel was around 8 Mmt/a. No progress had reportedly been made on a 3-Mmt/a steel project at Taedongang. Kyoei Steel Ltd. of Japan was contemplating whether to offer technical assistance to North Korea for construction of new electric furnaces at Doomankang and renovation of existing ones at Chunleema in North Korea. In 1992, Kyoei Steel sold an older continuous casting system to North Korea.

Toen Trading Co. of Japan purchased 12 decommissioned Russian submarines for scrap at a shipyard in North Korea's port of Najin. Labor costs in North Korea were relatively low. Each submarine would yield approximately 2,000 metric tons of ferrous scrap and was to be sold to China, Japan, and the United States.<sup>4</sup>

The largest North Korean uranium smelter, Namchun Chemical Enterprise Co., reduced operations reportedly because of fuel shortages. The plant could treat 200,000 metric tons per year (mt/a) of uranium ore, but had processed only 100 mt/a in recent years. Processed uranium was shipped to the main nuclear complex of Yongbyon for further processing.

North Korea was one of the world's largest producers of

magnesia and exported magnesia clinker to more than 10 countries. Magnesite deposits in Tanchon, South Hamgyang Province, were estimated at over 1,000 Mmt.<sup>5</sup>

The coal industry was treated favorably in that it was reportedly given a 2.6% increase for investment in the state budget. The industry was to concentrate on securing more coal reserves and on modernizing coal-cutting equipment. The Sunchon and Tokochon District coal mining complexes reportedly produced more coal than planned. A new coal mine with a production capacity of 100,000 mt/a was to begin production in 1994 at the Anju coal mining complex. The country's coal production was around 90 Mmt/a.

Exploitation of North Korea's mineral resources would require establishing infrastructure where none has existed or was poorly developed. The Government's investment in the power industry rose 3% compared with 1993. The industry was to accelerate construction of large hydroelectric and thermal powerplants currently underway. A thermal powerplant was being built in the industrial city of Hamhung. The power generating equipment would be automated and computerized through introduction of the latest technology. The Changjagang power station produced 9,000 to 10,000 kilowatt hours of electricity, more than its daily capacity, while the Hochongang and Pujongang power stations operated at a high level of capacity.

<sup>&</sup>lt;sup>1</sup>Text prepared June 1995.

<sup>&</sup>lt;sup>2</sup>Where necessary, valued have been converted from Korean won (W) to U.S. dollars at the rate of W2.15=US\$1.00 for 1994.

<sup>&</sup>lt;sup>3</sup>Summary of World Broadcasts, May 18, 1994, p. WD/1.

<sup>&</sup>lt;sup>4</sup>American Metal Market, Mar. 4, 1994, p. 11.

<sup>&</sup>lt;sup>5</sup>Summary of World Broadcasts, May 4, 1994, p. WD/1.

## TABLE 1 NORTH KOREA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/2/

(Metric tons unless otherwise specified)

Commondia 2/	1000	1001	1002	1002	1004
Commodity 3/	1990	1991	1992	1993	1994
METALS					
Aluminum metal ingot, primary Cadmium metal, smelter	100	100	100	100	100
Copper:	100	100	100	100	100
Mine output, Cu content	15,000	15,000	16,000	16,000	16,000
Metal:		- ,	-,	-,	
Smelter:					
Primary	25,000	20,000	21,000	23,000	23,000
Secondary	5,000	5,000	5,000	5,000	5,000
Total	30,000	25,000	26,000	28,000	28,000
Refined: Primary	25,000	19,000	20,000	22,000	22,000
Secondary	10,000	5,000	5,000	5,000	5,000
Total	35,000	24,000	25,000	27,000	27,000
Gold, mine output, Au content kilograms	5,000	5,000	5,000	5,000	5,000
Iron and steel:	2,000	2,000	2,000	2,000	2,000
Iron ore and concentrate, marketable:					
Gross weight thousand tons	10,000	10,000	10,500	10,500	11,000
Fe content do.	4,700	4,700	4,900	4,900	4,900
Metal:	- <b>-</b>	< #OO			
Pig iron do.	6,500	6,500	6,600	6,600	6,600
Ferroalloys, unspecified do.	120	120	120	120	120
Steel, crude do. Lead:	8,000	8,000	8,100	8,100	8,100
Mine output, Pb content	80,000	80,000	75,000	80,000	80,000
Metal:	80,000	30,000	73,000	30,000	60,000
Smelter, primary only	65,000	70,000	65,000	70,000	70,000
Refined:		,		,	,
Primary	70,000	75,000	70,000	75,000	75,000
Secondary	6,000	5,000	5,000	5,000	5,000
Total	76,000	80,000	75,000	80,000	80,000
Silver, mine output, Ag content kilograms	50	50	50	50	50
Tungsten, mine output, W content	1,000	1,000	1,000	1,000	900
Zinc: Mine output, Zn content	230,000	200,000	200,000	210,000	210,000
Metal, primary	200,000	175,000	175,000	200,000	200,000
INDUSTRIAL MINERALS	200,000	175,000	173,000	200,000	200,000
Barite	100,000	100,000	100,000	110,000	110,000
Cement, hydraulic thousand tons	16,000	16,000	17,000	17,000	17,000
Fluorspar	40,000	41,000	41,000	41,000	40,000
Graphite	35,000	35,000	38,000	38,000	38,000
Magnesite, crude thousand tons	1,500	1,600	1,600	1,600	1,600
Nitrogen, N content of ammonia do.	500	550	550	600	600
Phosphate rock	500,000	500,000	500,000	510,000	510,000
Salt, all types	580,000	580,000	590,000	590,000	600,000
Sulfur thousand tons Talc, soapstone, pyrophyllite	230 _170,000	240 170,000	240 170,000	240 180,000	250 180,000
MINERAL FUELS AND RELATED MATERIALS	170,000	170,000	170,000	180,000	180,000
Coal:					
Anthracite thousand tons	68,000	70,000	70,000	71,000	70,000
Lignite do.	22,000	20,000	21,000	21,000	20,000
Total do.	90,000	90,000	91,000	92,000	90,000
Coke do.	3,000	3,000	3,000	3,000	3,000
Petroleum refinery products:					
Gasoline thousand 42-gallon barrels	8,500	8,400	8,500	8,600	8,600
Jet fuel and kerosene do.	1,800	1,700	1,800	1,800	1,800
Distillate fuel oil do.	7,800	7,600	7,800	7,800	7,900
Residual fuel oil do. Refinery fuel and other products do.	4,200 2,200	4,100 2,200	4,200 2,300	4,300 2,400	4,300 2,400
Total do.	$\frac{2,200}{24,500}$	24,000	24,600	24,900	25,000
10	۷٦,500	۵٦,000	27,000	۷٦,۶00	23,000

<sup>1/</sup> Table includes data available through June 29, 1995.
2/ Data are rounded to three significant digits.
3/ 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.