

THE MINERAL INDUSTRY OF NORTH KOREA

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During 1996, the growth of North Korea's gross domestic product declined, marking the seventh consecutive year of economic contraction, which was estimated to be 3%. The economic situation was the result of energy shortages and poor harvests caused by natural disasters. More than 70% of the country's production facilities were idle. One of the worst food crises in North Korea's history was the consequences of the 1995 floods, which slashed its food crops by one-fifth. Needing an estimated 1.5 to 2 million metric tons of rice in 1996, the country received about 700,000 metric tons (t) from Japan, the Republic of Korea, and other countries. An appeal by the United Nations yielded pledges of food aid of \$6 million each from the United States and Japan and \$3 million from the Republic of Korea.

North Korea continued its energetic promotion of its Rajin-Sonbong free economic and trade zone and secured \$282 million in foreign investment. The deals included a \$180 million hotel casino complex by Emperor Group of Hong Kong. The investors also initialed memoranda of understanding, bringing the total proposed investment to \$840 million. The port facilities at Rajin were reportedly undergoing improvement, and a communications infrastructure was being installed (Far Eastern Economic Review, 1997).

Attraction of foreign investment was hindered generally by a grossly inadequate infrastructure, weak legal protection for foreign companies, uncompetitive wages and conditions, and the continuing political uncertainties caused by the nuclear issue and the standoff with the Republic of Korea. The lack of a credible financial network for cross-border transactions was another problem. A consortium of 60 banks in Western countries filed a lawsuit in the United States against North Korea, seeking \$1.4 billion in unpaid principal and interest.

North Korea's foreign trade totaled about \$1.03 billion. China was North Korea's only dependable trading partner. Across the border, wheat flour and corn were imported from China, and coal, iron ore, silicon, and timber were exported from North Korea. Official bilateral trade in 1995 reached \$550 million, heavily in favor of China (Far Eastern Economic Review, 1996). The trade was slowed down, however, and the volumes of commodities were shrinking. Smugglers exchanged North Korea's copper-wire cables and scrap metal for China's instant noodle and maize powder. The estimated values of the goods smuggled across the border ranged from \$30 to \$300 million (Far Eastern Economic Review, 1996).

Japan planned to provide probably more than \$10 million per year of the cost of fuel oil to be shipped to North Korea, while two light-water nuclear reactors were being built. The United

States was to provide 500,000 t of fuel oil, worth \$50 million, per year to cover the country's energy needs. The fuel oil shipments were part of a deal worked out by the United States and North Korea.

The Government placed a high priority on the development of the iron and steel industry, which was one of the country's most important basic industries. The Musan iron ore mining complex was the largest producer, with an output level of about 10 million metric tons per year (Mt/yr) of iron ore. The ore was converted into slurry and transported by a pipeline to the nearby Kim Chaek steel plant, with a production capacity of 4 Mt/yr of raw steel. The other main steel producer was the Nampo steel plant, with a capacity of 3 Mt/yr. The country also produced nonferrous metals, notably lead and zinc. The Komdok processing complex underwent equipment modernization and was capable of treating 100,000 metric tons per year (t/yr) of lead-zinc ore.

Taehung Youth General Mining Enterprise, a magnesite producer, operated the Puktu and the Muhak Mines and a magnesia clinker plant in the Machon Mountains. Mine output was reported to be more than 1 Mt/yr of magnesite, which was calcined to produce more than 100,000 t/yr of clinker (Industrial Minerals, 1996). Much of the clinker was further processed at the Tanchon Magnesia Works and the Songjin Fireproof Material Factory.

The country produced about 91 Mt/yr of coal. The Anju coal mining complex in North Hamgyong Province was the largest, with a total capacity of 7 Mt/yr. Two new mines, the Chili and the Soho, were commissioned, and new equipment was added to some mines in the Saebyol and the southern districts. The production capacity in the Suncheon coal mining complex was rated at 3 Mt/yr. The country also produced 1 Mt/yr of coking coal from the Kukdon and the Yangjong Mines.

Expansion of the coal mining industry was underway to increase coal output. Improvements being planned included the installation of a new conveyor system at the Jangan coal mine in the Pukchang coal mining complex. New coal faces were planned at the Jiktong Youth coal mine in the Suncheon coal mining complex. In January, the Wonbuk Pit in the Anju coal mining complex, north of Pyongyang, was started and has a capacity of 200,000 t/yr of coal. In a related development, a new methane plant, with a capacity of more than 100 cubic meters per day, was inaugurated at the Chonsong Youth coal mine.

Beach Petroleum of Australia acquired a 100% interest in a production-sharing block in a frontier area off North Korea (Oil & Gas Journal, 1996). It covers 28,000 square kilometers of

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coastal and deeper waters. The block lies southwest of Russia's Sakhalin oil province. Only two stratigraphic wells had been drilled, and both had oil indications. North Korea's two oil refineries, with a combined capacity of 3 Mt/yr, were shut down because they had not received crude oil from China.

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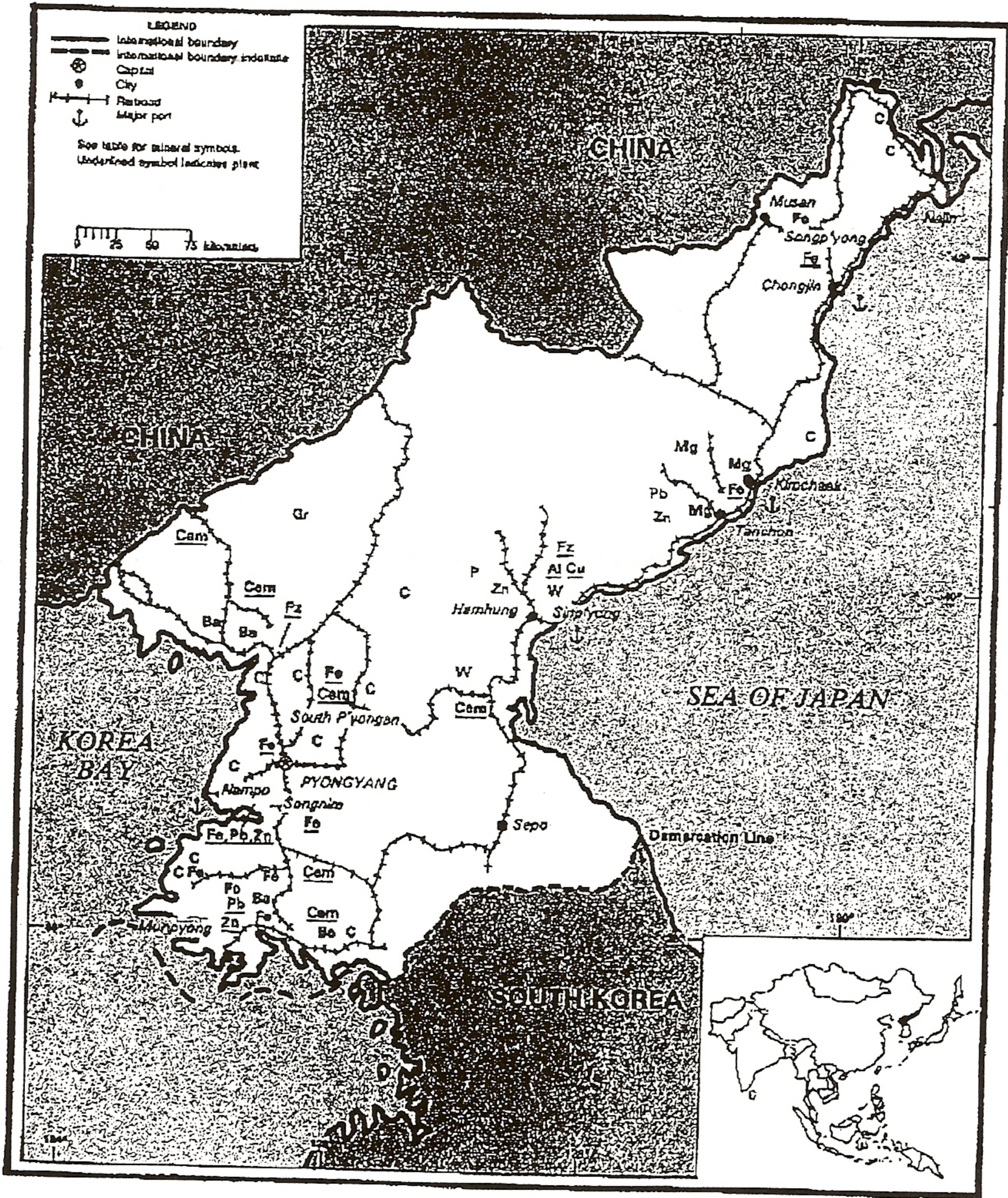
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Major Source of Information

Central Institute of Mining Industry
Pyongyang, North Korea



NORTH KOREA



c = coal
 Mg = magnesite
 Fe = iron
 Pb = lead
 Zn = zinc

<http://minerals.er.usgs.gov/minerals/pubs/country/maps/93159.gif>

2/19/99

Cem - cement
 Gr - graphite

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MAP SYMBOLS

Commodity	Symbol				
Alunite	Alu	Iron and steel	Fe	Shale	Sh
Alumina	Al	Iron ore	Fe	Silicon	Si
Aluminium	Al	Jade	Jade	Sillimanite	Sim
Andalusite	And	Kaolin	Kao	Silver	Ag
Antimony	Sb	Kyanite	Ky	Soapstone	So
Arsenic	As	Lapis lazuli	Laz	Soda ash, trona	NaAsh
Asbestos	Asb	Lead	Pb	Sodium sulfate	NaSO ₄
Asphalt	Asp	Lignite	Lig	Stone	St
Barite	Ba	Lime	Lime	Strontium	Sr
Bauxite	Bx	Limestone	Ls	Sulfur	S
Bentonite	Bent	Liquefied natural gas	LNG	Talc	Tc
Beryllium/beryl	Be	Liquefied petroleum gas	LPG	Tantalum	Ta
Bismuth	Bi	Lithium	Li	Tellurium	Te
Bitumen (natural)	Bit	Magnesite	Mag	Thorium	Th
Boron	B	Magnesium	Mg	Tin	Sn
Bromine	Br	Manganese	Mn	Titanium	Ti
Cadmium	Cd	Marble and alabaster	Marb	Titanium dioxide	TiO ₂
Calcium/calcite	Ca	Marl	Ma	Tungsten	W
Carbon black	CBl	Mercury	Hg	Umbel	Um
Cement	Cem	Mica	M	Uranium	U
Cesium	Cs	Molybdenum	Mo	Vanadium	V
Chromite	Cr	Natural gas	NG	Vermiculite	Vm
Clays	Clay	Natural gas liquids	NGL	Wollastonite	Wo
Coal	C	Nepheline Syenite	Neph	Wonderstone	Ws
Cobalt	Co	Nickel	Ni	Yttrium	Y
Columbium (niobium)	Cb	Nitrates	Nit	Zinc	Zn
Copper	Cu	Nitrogen (ammonia plants)	N	Zirconium	Zr
Corundum	Cn	Ochre	Oc		
Cryolite	Cry	Oil sands	OSs		
Diamond	Dm	Oil shale	OSh		
Diatomite	Dia	Olivine	Ol		
Dolomite	Ds	Opal	Opal		
Emerald	Em	Peat	Peat		
Emery	E	Perlite	Per		
Feldspar	Feld	Petroleum, crude	Pet		
Ferroc alloys	EA	Petroleum refinery products	Pet		
Ferrochrome	FeCr	Phosphate	P		
Ferromanganese	FeMn	Pig iron	Pig		
Ferronickel	FeNi	Pigments, iron	Pigm		
Ferrosilicon	FeSi	Platinum-group metals	PGM		
Fertilizer	Fz	Potash	K		
Fluorspar	F	Pozzolana	Pz		
Gallium	Ga	Pumice	Pum		
Garnet	Gt	Pyrite	Py		
Gemstones	Gm	Pyrophyllite	Pyrp		
Germanium	Ge	Quartz or quartzite	Qtz		
Gold	Au	Rare earths	RE		
Graphite	Gr	Rhenium	Re		
Gypsum	Gyp	Rutile	Ru		
Ilmenite	Il	Salt	Salt		
Indium	In	Sand and gravel	Sd/Gvl		
		Sandstone	Ss		
		Selenium	Se		
		Sepiolite, meerschaum	Sep		
		Serpentine	Serp		

MAP LEGEND

- Symbol = Mine, including beneficiation plants, well
- Circled Symbol = Group of producing mines or wells
- Underlined Symbol = Processing plant or oil refinery, including smelters and metal refineries
- (Symbol) = Undeveloped significant resource