



2012 Minerals Yearbook

NORTH KOREA

THE MINERAL INDUSTRY OF NORTH KOREA

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The economy of North Korea (the Democratic People's Republic of Korea) continued to grow in 2012. According to the Bank of Korea, North Korea's real annual gross domestic product (GDP) increased by 1.3% in 2012 compared with that of the previous year. This growth was attributed mainly to growth in the agriculture, forestry, and fishing sector, for which output increased by 3.9%; growth in the manufacturing sector, for which production increased by 1.6%; and a 1.6% increase in power generation in the energy sector (Bank of Korea, 2013).

Government Policies and Programs

In 2012, North Korea renewed its special economic zones agreement with China, negotiated a new payment structure with Russia to settle its \$11 billion Soviet-era debt, and proposed new agricultural and industrial policies to boost domestic production. Despite international economic sanctions, the Government sought to attract foreign investment to improve the overall standard of living in North Korea (U.S. Central Intelligence Agency, 2013).

Minerals in the National Economy

The North Korean Government controlled the Nation's economy, including its mining activity and financial market. The Government directed a large share of the GDP to the military sector, which affected the country's overall economic performance. Although the mineral industry's production capacity was limited by the country's restricted financial and technical resources, the mineral industry supported the country's military sector expenses, as well as met the country's industrial requirements for raw materials. Detailed or updated mining and mineral production data have not been available in the country's official reports in the previous 5 years, and the production estimates in table 1 are based on the historic production data and (or) extracted from public media reports.

Production

Mining output was estimated to have increased by 0.8% in 2012 compared with that of 2011 and included a 1.2% increase in coal production but a 0.5% decrease in metallic mineral production. The output of the manufacturing sector increased by 1.6% in 2012 compared with that of 2011 and included a 4.7% increase in light industrial production (mainly because of increases in the production of food and tobacco), and a 0.2% increase in heavy and chemical industrial production combined (mainly because of increases in the production of chemical products and transportation equipment) (Bank of Korea, 2013).

Structure of the Mineral Industry

North Korea's mineral industry included a coal mining sector, a ferrous and nonferrous metals mining and processing sector,

and an industrial minerals mining and processing sector. Most of the large-scale mining and mineral processing enterprises in North Korea were owned and operated by the central Government. Provincial and local governments owned and operated various small- and medium-scale mining and mineral processing facilities. Companies from China, the Republic of Korea, and other countries participated in joint ventures with North Korea for the development and operation of the cement, coal, copper, graphite, iron ore, lead and zinc, magnesite, molybdenum, and precious metals production facilities in North Korea (table 2).

Mineral Trade

The value of North Korean exports in 2012 increased by 3.3% to \$2.88 billion from \$2.79 billion in 2011. Of this amount, the export value of minerals decreased by 0.2%. The value of the country's total imports increased by 10.2% to \$3.93 billion from \$3.53 billion (revised) in 2011. Of this amount, the import value of transportation equipment increased by 39.6%. Total North Korean exports to the Republic of Korea decreased in value by 6.2% from that of 2011. Bilateral trade between the Republic of Korea and North Korea increased by 15.0% to \$1.97 billion in 2012. The Kaesong Industrial Complex accounted for 99.5% of this trade, and electronic goods were the primary trading items. North Korea exported more than 2 metric tons of gold to China in 2012 to earn \$100 million (Bank of Korea, 2013; Business Insider, 2013).

Commodity Review

Metals

Copper.—Wanxiang Resources Co. Ltd. of China held a 51% stake in the Hyesan copper mine and had been investing in the mine since 2007. Wanxiang and the Ministry of Mining Industries of North Korea set up the Hyesan-China Joint Venture Mineral Co. to operate the Hyesan copper mine, which is located in Yanggang Province near Changbai City in China's Jilin Province. The mine had a designed output capacity of 50,000 to 70,000 metric tons per year of copper concentrate, and it resumed production in the fourth quarter of 2011. Wanxiang was unable to obtain significant profit from copper ore shipped to China in 2012.

A major difficulty for investing in North Korea is that contracts or agreements have limited binding power on North Korean partners, which are often unpredictable in their policies. No copper production from the Hyesan copper mine was reported for 2012. Although North Korea has rich mineral deposits, the country lacks the technology to mine and refine the copper ore, as well as a transportation network to ship the ore (Yonhap News, 2012; PEdaily.cn, 2013; WantChinaTimes.com, 2013).

Industrial Minerals

Rare Earths.—According to Asia Times Online, North Korea has deposits of about 20 Mt of rare-earth metals (REMs) in the eastern and western parts of country but does not have the technology to explore the REM resource nor to manufacture rare-earth-based products. North Korea would likely need international assistance through joint projects to explore the REM resources and to produce and (or) possibly export REMs. The Republic of Korea had expressed interest in working with North Korea to explore and mine the REM deposits and to use the REMs to manufacture industrial products. An REM reprocessing plant was located in Hamhung but was not fully operational (Petrov, 2012a, b).

Outlook

Because of the mineral industry's significance to the country's economy, the Government of North Korea is likely to continue working to attract international investment in the country's mineral sector. The increasing international demand for minerals, especially the demand from China and Russia, is expected to stimulate North Korea's production of mineral commodities, such as coal, iron ore, magnesite, molybdenum, nickel, sand, and zinc.

In March 2010, when a North Korean submarine sunk the Republic of Korea's Navy ship *Cheonan*, the Republic of Korea stopped all trade with North Korea except at the Kaesong Industrial Complex, and in November 2010, there was a serious cross-border clash between the two countries. North Korea's economic cooperation with the Republic of Korea is expected to continue recovering slowly in the future after the 2010 interruption.

The country's mining and associated business infrastructure, such as international banking, Internet connections, mobile phone coverage, and power supply are expected to be

established, improved, and regulated gradually, beginning in the economic free zones in the border areas, to improve communications and promote economic cooperation with China, the Republic of Korea, Russia, and even Western European countries. North Korea's political control will constrain the country's economic system and further economic development or reform, however (U.S. Central Intelligence Agency, 2013).

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TABLE 1
NORTH KOREA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³		2008	2009	2010	2011	2012
METALS						
Cadmium metal, smelter ⁴		200	200	200	200	200
Copper:						
Mine output, Cu content ⁴		12,000	12,000	12,000	12,000	12,000
Metal, primary and secondary: ⁴						
Smelter		15,000	15,000	15,000	15,000	15,000
Refinery		15,000	15,000	15,000	15,000	15,000
Gold, mine output, Au content ⁴	kilograms	2,000	2,000	2,000	2,000	2,000
Iron and steel:						
Iron ore and concentrate, marketable:						
Gross weight	thousand metric tons	5,316 ⁵	5,300	5,300	5,300	5,300
Fe content	do.	1,488 ⁵	1,500	1,500	1,500	1,500
Metal:						
Pig iron ⁴	do.	900	900	900	900	900
Ferroalloys, unspecified ⁴	do.	10	10	10	10	10
Steel, crude	do.	1,279 ⁵	1,300	1,300	1,300	1,300
Lead: ⁴						
Mine output, Pb content		13,000	13,000	13,000	13,000	13,000
Metal, primary and secondary:						
Smelter		13,000	13,000	13,000	13,000	13,000
Refinery		9,000	9,000	9,000	9,000	9,000
Silver, mine output, Ag content ⁴		20	20	20	20	20
Tungsten, mine output, W content		270	100	100	100	100
Zinc: ⁴						
Mine output, Zn content		70,000	70,000	70,000	70,000	70,000
Metal, primary and secondary		75,000	75,000	75,000	75,000	75,000
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	6,415 ⁵	6,400	6,400	6,400	6,400
Fluorspar ⁴		12,500	12,500	12,500	12,500	12,500
Graphite ⁴		30,000	30,000	30,000	30,000	30,000
Magnesite, crude ⁴		150,000	150,000	150,000	150,000	150,000
Nitrogen, N content of ammonia ⁴	thousand metric tons	100	100	100	100	100
Phosphate rock, P ₂ O ₅ equivalent ⁴		300,000	300,000	300,000	300,000	300,000
Salt, all types ⁴		500,000	500,000	500,000	500,000	500,000
Sulfur ⁴	thousand metric tons	42	42	42	42	42
Talc, soapstone, pyrophyllite		50,000	50,000	50,000	50,000	50,000
MINERAL FUELS AND RELATED MATERIALS						
Coal, anthracite	thousand metric tons	25,060 ⁵	36,000	41,000	41,000	41,492 ⁵
Coke ⁴	do.	2,000	2,000	2,000	2,000	2,000

do. Ditto.

¹Estimated data are rounded to no more than three significant digits.

²Table includes data available through September 25, 2013.

³In addition to the commodities listed, crude construction materials, such as sand and gravel and other varieties of stone, and refined petroleum products and rare-earth-based products presumably are produced, but available information is inadequate to make reliable estimates of output.

⁴Because of the lack of official reported data, most of the mineral commodity production numbers have been estimated for the past 5 years.

⁵Reported figure by Bank of Korea.

TABLE 2
NORTH KOREA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
Cement	Sunchon Cement Complex	Sunchon, Pyongannam Province	3,000
Do.	Samgwong Cement Complex	Samgwong, Kangwon Province	2,500
Do.	Gomusan Cement Factory	Cheongjin, Hamgyongbuk Province	2,000
Do.	Cheonnaeri Cement Factory	Cheonae, Hamgyongnam Province	1,000
Coal	Anju Coal Mining Complex and Sunchon Coal Mining Complex	Anju, Kaechon, Pukchang, Sunchon, and Tokechon, South Pyongan (Pyongannam) Province; and North Pyongan (Pyonganbuk) Province	9,500
Do.	Saebol Coal Mining Complex and Northern Coal Mine Enterprise	Saebyo, North Hamgyong (Hamgyongbuk) Province	6,000
Copper, mine output, Cu content	Hyesan Youth Copper Mine (51% owned by Luanhe Industrial Group and another unnamed Chinese company)	Hyesan, Yanggang Province	13
Gold, mine output, Au content	kilograms Gumsan (Kumsan) Joint Venture Co.	Sierra near Changjin northwest of Hamgyongbuk Province	530
Do.	do. Daebong Mine	Yanggang Province	150
Graphite	Yeongchon Graphite Mine (Joint venture of Korea Resources Corp. and the Government of North Korea)	Yeongchon, Yonan County, South Hwanghae Province	3
Iron ore, concentrate, gross weight	Ministry of Metal and Machinery, Department of Mines, Musan Iron Ore Mine Complex	Near the town of Musan, Hamgyongbuk Province	10,000
Do.	Unryul Mine	Unryul, Hwanghaenam Province	1,000
Lead:			
In concentrate	Korea Zinc Industrial Group	Komdok, near Tancheon, Hamgyongnam Province	20
Refined	do.	Munpyong, Kangwon Province	32
Magnesite, concentrate, gross weight	Korea Magnesia Clinker Industry Group (KMCIG)	Daehung and Yongyang, Hamgyongnam Province; Paek Bai near Kim Chaeck, Hamgyongbuk Province	2,500
Magnesia clinker	Korea Magnesia Clinker Industry Group (KMCIG) and Quintermina AG	Danchon and Daehung, Hamgyongnam Province; Song Jin, Hamgyongbuk Province	1,200
Steel, crude			
Do.	Kim Chaek Iron and Steel Complex (Ministry of Metal and Machinery)	Chongjin, Hamgyongbuk Province	2,400
Do.	Hwanghae (Hwanghai) Iron Works	Songjin, North Hamgyong Province	1,500
Do.	Kangson Works	Kangson, Hwanhaebuk Province	960
Do.	Chollima Steel Works	Chollima District, Nampo City, Pyungnam Province	760
Zinc:			
In concentrate	Korea Zinc Industrial Group	Komdok near Tancheon and Sankok near Kowon, Hamgyongnam Province; Nakyong, Hwanhaenam Province	80
Refined	do.	Munpyong, Kangwon Province; Tancheon, Hamgyongnam Province	100

^eEstimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto.

Sources: Korea Resources Corp. and North Korea Resource Institute.