



# 2019 Minerals Yearbook

---

**NORTH KOREA [ADVANCE RELEASE]**

---

# THE MINERAL INDUSTRY OF NORTH KOREA

By Jaewon Chung

North Korea had various mineral resources, such as metallic minerals (copper, gold, iron, lead, manganese, molybdenum, nickel, rare earths, silver, tungsten, and zinc), industrial minerals (graphite, magnesite, and phosphate rock), and mineral fuels and related materials (coal and uranium). Mineral production in North Korea was insignificant compared with the country's reserves owing to its limited infrastructure, technology, and investment. The country's mineral reserves could not be verified by outside sources owing to the confidential nature of the Government information and the country's different system of assessing economic extraction (Lee, 2017, p. 263–264, 271; Koh and others, 2019, p. 262–265).

## Minerals in the National Economy

The mineral industry remained important to North Korea's economy. In 2019, the country's real gross domestic product (GDP) increased by 0.4%, which was the first positive growth since 2016 (3.9%); the nominal GDP was \$28.3 billion.<sup>1</sup> The growth of the GDP was attributed mainly to increases in the output of the construction sector (a 2.9% increase) and the agriculture, forestry, and fishing sector (an 1.4% increase). The output of the manufacturing and mining sectors decreased by 1.1% and 0.7%, respectively. In 2019, the manufacturing sector accounted for 18.7% of the country's nominal GDP; the mining sector, 11.0%; and the construction sector, 9.7% (Bank of Korea, 2020).

The value of North Korea's exports in 2019 increased to \$278 million from \$243 million in 2018, although this was still a significant decrease from the value in 2017 of \$1.77 billion. The decrease in 2018–19 was due to the tighter sanctions imposed by the United Nations (U.N.) Security Council under Resolution 2371 in August 2017, Resolution 2375 in September, and Resolution 2397 in December following the country's nuclear and missile tests. In 2019, North Korea's major mineral commodity exports included iron and steel (valued at \$35 million, of which ferrosilicon<sup>2</sup> accounted for \$31 million); ores, slag, and ash (valued at \$22 million); mineral fuels and mineral oils (\$12 million); and inorganic chemicals (\$6.3 million). China received 100% of North Korea's exports of ores, slag, and ash; 96% of its exports of iron and steel; 92% of its exports of mineral fuels and mineral oils; and 68% of its exports of inorganic chemicals (Statistics Korea, 2020a, p. 120, 127–128, 130, 134; United Nations Security Council, 2020a; United Nations Statistics Division, 2020).

<sup>1</sup>North Korea's gross domestic product was estimated from the prices and value-added ratios of the Republic of Korea (Bank of Korea, 2020). Values have been converted from Republic of Korea won (KRW) to U.S. dollars (US\$) at an annual average exchange rate of KRW1,165=US\$1.00 for 2019.

<sup>2</sup>Iron and steel were included in the 2017 United Nations sanctions on North Korea's trade; ferrosilicon might have been classified as silicon by the Government of China (Statistics Korea, 2020b).

The value of North Korea's imports in 2019 increased to \$2.97 billion from \$2.60 billion in 2018. The country's major mineral commodity imports included mineral fuels (valued at \$346 million) and inorganic chemicals (\$26 million). China supplied nearly 100% of North Korea's imports of inorganic chemicals. China and Russia supplied 92% and 8% of North Korea's imports of mineral fuels and mineral oils, respectively (Statistics Korea, 2020a, p. 120, 127, 130).

The mineral resource laws (Act No. 14 of 1993 and Amendment Act No. 2979 of 2013) provide the basic guidelines for the country's mineral exploration, development, and use, and its estimation of mineral reserves. Coal-mining activities are subject to the country's coal laws (Act No. 3044 of 2009 and Amendment Act No. 2052 of 2012). Development and production of coal from small-scale mines (for local use only) are governed by Act No. 256 of 2014. Sea salt activities are governed by Act No. 255 of 2014 (Democratic People's Republic of Korea, 2016, p. 198, 199, 242–248, 254–260; National Intelligence Service, 2017, p. 647, 655).

## Production

In 2019, North Korea's production of refined lead increased by an estimated 50% compared with that of 2018, and production of anthracite and bituminous coal, by 12% each. According to Korea Resources Corp. (2011, p. 5), lignite is referred to as bituminous coal in North Korea. The production of mined zinc decreased by 50% (estimated) compared with that of 2018; production of tungsten decreased by 20% (estimated); raw steel, 16%; mined iron (Fe content), 14%; and mined lead, 13% (estimated). Data on mineral production are in table 1.

## Structure of the Mineral Industry

North Korea's mineral industry was dominated by coal and iron ore mining. Mining and mineral-processing enterprises were primarily owned and operated by the Government. The Ministry of Atomic Energy Industry managed the country's nuclear program; the Ministry of Chemical Industry, salt production; the Ministry of Coal Industry, coal mines; the Ministry of Construction and Building-Materials Industry, cement production; the Ministry of Metallurgical Industry, iron ore and magnesite mines and iron and steel and nonferrous metal production; the Ministry of Oil Industry, petroleum extraction; and the Ministry of Mining Industry, all other mines. The Ministry of State Natural Resources Development was engaged in the exploration for mineral resources (Park and others, 2018, p. 103–104).

Since 2004, Chinese, French, Japanese, and Swiss companies had signed a total of 40 contracts to develop and operate mineral facilities in North Korea, including gold deposits (10 mining sites), iron deposits (9), coal deposits (9), copper deposits (5), and other mineral deposits (7). Of these 40 contracts, only

10 mines that had been signed with Chinese companies were considered active as of 2017 (the latest year for which data were available) (Lee, 2018). Table 2 is a list of major mineral industry facilities.

Tancheon (Tanchon) was the country's major mineral industry area. The area had 56 active mines (for graphite, lead, magnesite, iron ore, phosphate rock, and zinc) and some mineral processing facilities and related infrastructure (Jeon, 2019).

In October 2019, the Government announced the completion of the Phalhyang dam in North Hamgyong Province. Work on the associated Orangchon power stations was still ongoing, however. When fully operational, the power stations would have a combined capacity of 134 megawatts (Pyongyang Times, The, 2018; Koh, 2019).

## Commodity Review

### Metals

**Iron Ore.**—North Korea's iron ore production decreased to 2.83 million metric tons (Mt) in 2019 from 3.28 Mt in 2018 and 5.74 Mt in 2017 owing to the U.N. sanctions under Resolution 2371 of August 5, 2017, which included a ban on exports and imports of iron and iron ore from North Korea. The Musan open pit mine in North Hamgyong Province was North Korea's largest iron mine. The mine had the capacity to produce 11 million metric tons per year (Mt/yr) of iron ore. The actual mining operation rate was about 20% of its mining capacity owing to outdated infrastructure, power shortages, and the U.N. sanctions (tables 1, 2; Lee, 2018; Kim, 2019).

**Rare Earths.**—In October, North Korea considered the possibility of granting Chinese companies mining rights to extract rare earths in exchange for investment in a solar powerplant in the country, according to the Association of China Rare Earth Industry (Son, 2019). North Korea is thought to have abundant light rare-earth resources, and high-quality rare-earth deposits exist in Cholsan, North Pyongan Province, near the border with China. Construction of a 2.5-gigawatt solar powerplant would cost \$2.5 billion. It was unclear whether such an arrangement would be in compliance with U.N. Resolution 2270 (2016), which banned the supply, sale, or transfer of rare-earth minerals from North Korea to other countries (Son, 2019).

### Industrial Minerals

**Fertilizer.**—As of 2019, North Korea had the capacity to produce 1.91 Mt/yr of chemical fertilizer, although the country produced only 612,000 metric tons (t) in 2019 compared with 605,000 t in 2018. The country's annual consumption of chemical fertilizer was about 1.55 Mt. Imports of fertilizers were mainly from China (Statistics Korea, 2020a, p. 103).

In mid-2019, the Hungnam Fertilizer Complex suspended production. The complex was the country's largest and oldest fertilizer factory. Fertilizer production (mainly nitrogen fertilizer) at the complex had gradually decreased for several years owing to the shortages of electricity and raw materials. In March, the Haeju Smeltery started to operate a new-process production line for phosphatic compound fertilizer at its

Haeju Phosphate Fertilizer Plant; the process was reported to have increased productivity while requiring less labor and less electricity. In late 2019, the construction of the Sunchon Phosphate Fertilizer Factory was in the final stage. The construction site was the old Sunchon Nitrolime Fertilizer Factory in Sunchon, which was demolished in 2016 and 2017. A groundbreaking ceremony for the new factory was held in July 2017 (DPRK Today, 2019; Jang, 2019c; NK Chosun, 2019; Zwirko, 2019).

**Sand and Gravel (Construction).**—In July, a North Korean company reached agreement with a Chinese company to export sand from the Chongchon River to China. The sand from the river has been considered good quality in terms of the grain size and roundness, and it has been used by the domestic construction industry. Under the agreement, 1 million cubic meters (about 1.6 Mt) of sand was exported by December 2019 at a price of \$3 per cubic meter of sand. U.N. Resolution 2397 that was put in place in 2017 banned the export and import of sand from North Korea (Jang, 2019a).

### Mineral Fuels

**Coal.**—In 2019, the country's total production of coal increased by 12% to about 20.3 Mt. North Korean coal production was used mainly by the domestic markets because coal exports had been partially or fully banned by the U.N. sanctions of 2016 and 2017. The domestic coal price<sup>3</sup> increased by 23% to \$37 per metric ton in South Hamgyong Province in April compared with that of March; and 120% to \$16 per metric ton in Pyongyang in October compared with that of August. The different local coal prices resulted mainly from the proximity to major coal mines. The jump in local coal prices was likely attributable to increases in seasonal domestic demand and coal exports (table 1; Jang, 2019b; Kang, 2019).

The U.N. Security Council (2020b, p. 25) reported that North Korea unofficially exported 3.7 Mt of coal between January and August 2019. The Security Council estimated the export price to be \$100 per metric ton, whereas Daily NK (Jang, 2019b) estimated it to be \$24 to \$48 per metric ton. According to the United Nations Statistics Division (2020), the country exported 22.5 Mt of coal at the price of \$53 per metric ton in 2016 prior to the tighter sanctions put in place in 2017.

### Outlook

In the short and medium terms, the tighter U.N. sanctions placed on North Korea's trade in 2017 will likely continue to lead to decreases in North Korea's output of major minerals, such as copper concentrate, iron ore, and magnesite. If the demand from China remains stable, North Korea may increase its production and export of nonsanctioned commodities, such as tungsten. Fertilizer production will increase as the Hungnam Fertilizer Complex resumes operations and the Sunchon phosphate fertilizer factory starts production. In the long term, the mineral industry will remain important to North Korea's

<sup>3</sup>Where necessary, values have been converted from North Korean Won (KPW) to U.S. dollars (US\$) at the annual average exchange rate of KPW8,000=US\$1.00 for 2019.

economy but will likely continue to face challenges, such as the lack of infrastructure, technology, and investment.

## References Cited

- Bank of Korea, 2020, Gross domestic product estimates for North Korea in 2019: Seoul, Republic of Korea, Bank of Korea, July 31, 8 p. (Accessed December 28, 2020, at [https://www.bok.or.kr/ucms/cmnn/file/fileDownload.do?menuNo=400069&atchFileId=FILE\\_00000000018890&fileSn=2.](https://www.bok.or.kr/ucms/cmnn/file/fileDownload.do?menuNo=400069&atchFileId=FILE_00000000018890&fileSn=2.))
- Democratic People's Republic of Korea, 2016, Law of Democratic People's Republic of Korea (enlarged edition): Pyongyang, North Korea, Bup-ryool, 542 p. [In Korean.]
- DPRK Today, 2019, New establishment of phosphatic compound fertilizer process at the Haeju smeltery: DPRK Today [Pyongyang, North Korea], November 24. (Accessed January 4, 2021, at <https://dprktoday.com/news/42599.>)
- Jang, Seul Gi, 2019a, North Korea earning foreign currency by selling river sand: Daily NK [Seoul, Republic of Korea], August 7. (Accessed December 31, 2020, at [https://www.dailynk.com/english/north-korea-earning-foreign-currency-by-selling-river-sand/.](https://www.dailynk.com/english/north-korea-earning-foreign-currency-by-selling-river-sand/))
- Jang, Seul Gi, 2019b, North Korea's coal smuggling continues full speed ahead: Daily NK [Seoul, Republic of Korea], October 22. (Accessed January 4, 2021, at [https://www.dailynk.com/english/north-koreas-coal-smuggling-continues-full-speed-ahead/.](https://www.dailynk.com/english/north-koreas-coal-smuggling-continues-full-speed-ahead/))
- Jang, Seul Gi, 2019c, N. Korea's largest fertilizer complex no longer operational: Daily NK [Seoul, Republic of Korea], November 16. (Accessed December 31, 2020, at [https://www.dailynk.com/english/north-korea-largest-fertilizer-plant-no-longer-operational/.](https://www.dailynk.com/english/north-korea-largest-fertilizer-plant-no-longer-operational/))
- Jeon, Sangse, 2019, Sustainable development plan of mineral resources in the Korean Peninsula, in 2019 Forum on Development of Mineral Resources in North Korea: Seoul, Republic of Korea, Forum on Development of Mineral Resources in North Korea, p. 13–27. [In Korean.]
- Kang, Mi Jin, 2019, Coal prices in North Korea spike in April: Daily NK [Seoul, Republic of Korea], May 10. (Accessed January 4, 2021, at [https://www.dailynk.com/english/coal-prices-in-north-korea-spike-in-april/.](https://www.dailynk.com/english/coal-prices-in-north-korea-spike-in-april/))
- Kim, Hanna, 2019, North's the largest iron mine Musan "stopped owing to sanctions... more workers left": Seoul Pyongyang News [Seoul, Republic of Korea], November 28. (Accessed December 29, 2020, at <http://www.spnews.co.kr/news/articleView.html?idxno=24171.>) [In Korean.]
- Koh, Byung-joon, 2019, N. Korea completes dam construction to ease power shortages: Yonhap News [Seoul, Republic of Korea], December 5. (Accessed December 30, 2020, at <https://en.yna.co.kr/view/AEN20191205001600325.>)
- Koh, S.M., and others, 2019, Geology and mineralization of the Northern Korean Peninsula: Daejeon, Republic of Korea, Korea Institute of Geoscience and Mineral Resources, November, 322 p. [In Korean.]
- Korea Resources Corp., 2011, Developmental status of mineral resources in North Korea: Seoul, Republic of Korea, Korea Resources Corp., December, 647 p. [In Korean.]
- Lee, Inwoo, 2017, Statistics of mineral resources in North Korea, in Major statistics indicators of North Korea 2017: Daejeon, Republic of Korea, Statistics Korea, December, p. 263–271. (Assessed May 22, 2020, at <https://kosis.kr/upsHtml/upload/Magazine/NEW/IF/bukhanY17.pdf.>) [In Korean.]
- Lee, Inwoo, 2018, Cooperative development plan of mineral resources in the Korean Peninsula, in 2018 Forum on Development of Mineral Resources in North Korea: Seoul, Republic of Korea, Forum on Development of Mineral Resources in North Korea, p. 3–14. [In Korean.]
- National Intelligence Service, 2017, Law of North Korea: Seoul, Republic of Korea, National Intelligence Service, 1,017 p. (Accessed August 17, 2018, at [http://www.nis.go.kr/resources/down/2017\\_north\\_law\\_01.pdf.](http://www.nis.go.kr/resources/down/2017_north_law_01.pdf.)) [In Korean.]
- NK Chosun, 2019, North, report on the Haeju Smeltery's development and production of phosphatic compound fertilizer: NK Chosun [Seoul, Republic of Korea], March 18. (Accessed January 4, 2021, at
- Park Y.-J., Lee, G., Han, G., and Yoon, C., 2018, North Korea's apparatus and stateness [sic] in the Kim Jong Eun era: Seoul, Republic of Korea, Korea Institute for National Unification, December 15, 310 p. (Accessed December 18, 2019, at [https://repo.kinu.or.kr/bitstream/2015.oak/9928/1/%ec%97%b0%ea%b5%ac%ec%b4%9d%ec%84%9c%2018-22%20%ea%b9%80%ec%a0%95%ec%9d%80%20%ec%8b%9c%eb%8c%80%20%eb%b6%81%ed%95%9c%ec%9d%98%20%ea%b5%ad%ea%b0%80%ea%b8%b0%ea%b5%ac%ec%99%80%20%ea%b5%ad%ea%b0%80%ec%84%b1\\_\(0201%20%ec%b5%9c%ec%a2%85\).pdf.](https://repo.kinu.or.kr/bitstream/2015.oak/9928/1/%ec%97%b0%ea%b5%ac%ec%b4%9d%ec%84%9c%2018-22%20%ea%b9%80%ec%a0%95%ec%9d%80%20%ec%8b%9c%eb%8c%80%20%eb%b6%81%ed%95%9c%ec%9d%98%20%ea%b5%ad%ea%b0%80%ea%b8%b0%ea%b5%ac%ec%99%80%20%ea%b5%ad%ea%b0%80%ec%84%b1_(0201%20%ec%b5%9c%ec%a2%85).pdf.)) [In Korean.]
- Pyongyang Times, The, 2018, Kim Jong Un inspects hydropower plant construction site: The Pyongyang [North Korea] Times, July 7. (Accessed December 30, 2020, at <http://www.pyongyangtimes.com.kp/?bbs=27111.>)
- Son, Hyemin, 2019, North Korea trades rare earth mine rights to China for investment in solar plants: Radio Free Asia [Washington, DC], October 21. (Accessed December 30, 2020, at <https://www.rfa.org/english/news/korea/nk-rare-earth-solar-10212019133544.html.>)
- Statistics Korea, 2020a, Major statistics indicators of North Korea 2020: Daejeon, Republic of Korea, Statistics Korea, December, 290 p. (Accessed January 4, 2021, via [https://kosis.kr/bukhan/nsoPblict/selectNkStatsIdct.do?menuId=M\\_03.](https://kosis.kr/bukhan/nsoPblict/selectNkStatsIdct.do?menuId=M_03.))
- Statistics Korea, 2020b, Statistics-based analysis of North Korea's trade features and trends: Daejeon, Republic of Korea, Statistics Korea, December, 13 p. (Accessed December 31, 2020, at
- United Nations Security Council, 2020a, Resolutions: New York, New York, United Nations website. (Assessed January 4, 2021, at <https://www.un.org/securitycouncil/sanctions/1718/resolutions.>)
- United Nations Security Council, 2020b, Selected sanctions committee documents—S/2020/151: New York, New York, United Nations, March 2, 266 p. (Assessed January 4, 2021, at [https://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/S\\_2020\\_151.pdf.](https://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/S_2020_151.pdf.))
- United Nations Statistics Division, 2020, United Nations Comtrade database: New York, New York, United Nations Statistics Division. (Accessed December 31, 2020, via [https://comtrade.un.org/data/.](https://comtrade.un.org/data/))
- Zwirko, Colin, 2019, North Korean top-priority fertilizer plant appears to be nearing completion: NK PRO [Seoul, Republic of Korea], December 13. (Accessed December 31, 2020, at [https://www.nknews.org/pro/north-korean-top-priority-fertilizer-plant-appears-to-be-nearing-completion/.](https://www.nknews.org/pro/north-korean-top-priority-fertilizer-plant-appears-to-be-nearing-completion/))

TABLE 1  
NORTH KOREA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2015	2016	2017	2018	2019
METALS					
Copper: <sup>c</sup>					
Mine, concentrates, Cu content	20,000	25,000	10,000	10,000	10,000
Smelter:					
Primary	10,000	10,000	10,000	10,000	10,000
Secondary	5,000	5,000	5,000	5,000	5,000
Refinery:					
Primary	10,000	10,000	10,000	10,000	10,000
Secondary	5,000	5,000	5,000	5,000	5,000
Gold, mine, Au content <sup>c</sup>	2,000	1,000	1,000	1,000	1,000
					kilograms
Iron ore, mine:					
Gross weight	4,910	5,250	5,740	3,280	2,830
					thousand metric tons
Fe content	3,040	3,250	3,560	2,030	1,750
					do.
Iron and steel:					
Pig iron <sup>c</sup>	250	250	250	250	250
					do.
Raw steel	1,079	1,220	1,090	810	680
					do.
Lead: <sup>c</sup>					
Mine, Pb content	35,000	42,000	35,000	30,000	26,000
Refinery, primary	1,000	2,000	2,000	2,000	3,000
Silver, mine, Ag content <sup>c</sup>	50,300	30,000	20,000	20,000	20,000
					kilograms
Tungsten, mine, concentrate, W content <sup>c</sup>	70	50	310	1,410	1,130
Zinc: <sup>c</sup>					
Mine, Zn content	26,000	30,000	20,000	20,000	10,000
Smelter, primary and secondary	20,000	20,000	15,000	10,000	10,000
INDUSTRIAL MINERALS					
Cement, hydraulic	6,700	7,080	6,840	5,830	5,600
					thousand metric tons
Graphite: <sup>c</sup>					
Amorphous	1,000	1,000	1,000	1,080	1,080
Crystalline flake	4,500	4,500	4,500	4,920	4,920
Magnesite <sup>c</sup>	320,000	350,000	380,000	70,000	70,000
Salt, sea salt <sup>c</sup>	70,000	100,000	100,000	100,000	100,000
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite	12,400	21,700	15,200	12,700	14,200
					thousand metric tons
Bituminous <sup>3</sup>	11,600	9,320	6,500	5,420	6,060
					do.
Total	24,000	31,000	21,700	18,100	20,300
					do.
Coke, metallurgical	174	185	176	174 <sup>r</sup>	174 <sup>e</sup>
					do.

<sup>c</sup>Estimated. <sup>r</sup>Revised. do. Ditto.

<sup>1</sup>Table includes data available through December 30, 2020. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits.

<sup>2</sup>In addition to the commodities listed, cadmium, ferrosilicon, fertilizer, nitrogen, petroleum products, phosphate rock, rare earths, sand and gravel, silica, stone, and sulfur may have been produced, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Lignite is referred to as bituminous coal in North Korea.



TABLE 2  
NORTH KOREA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>	
Cement	Cheonnaeri Cement Factory	Cheonnaeri County, Gangwon Province	1,000	
Do.	Gomusan Cement Factory	Chongjin, North Hamgyong Province	2,000	
Do.	Sangwon Cement Complex	Sangwon County, Pyongyang	2,000	
Do.	Sunchon Cement Complex	Sunchon, South Pyongan Province	3,000	
Coal:				
Anthracite	Duckcheon Coal Mining Complex (Ministry of Coal Industry)	Six major mines, Duckcheon, South Pyongan Province	4,000	
Do.	Gangdong Coal Mining Complex (Ministry of Coal Industry)	Mines of Gangdong Youth, Pyongyang	3,000	
Do.	Hamnam Coal Mining Complex (Ministry of Coal Industry)	Mines of 12.16, Dungeon, and Gowon, South Hamgyong Province	2,500	
Do.	Kujang Coal Mining Complex (Ministry of Coal Industry)	Mines of Ryong-deung and Ryong-moon, North Pyongan Province	2,000	
Do.	Sunchon Coal Mining Complex (Ministry of Coal Industry)	Mines of 2.8 Jikdong Youth, Chunsung Youth, Sinchang Youth, and Ryoung-dae, South Pyongan Province	4,500	
Bituminous <sup>1</sup>	Anju Coal Mining Complex (Ministry of Coal Industry)	Mines of Chungnam and Hwa-poong, Chungnam, South Pyongan Province	3,800	
Do.	Saebjol Coal Mining Complex (Ministry of Coal Industry) and Northern Coal Mine Enterprise	Mines of Gogunwon, Ryongbuk Youth, 6.13, and Suksung, North Hamgyong Province	3,700	
Copper, mine, Cu content	Hye-Joong Mineral Industry (Wanxiang Industrial Group, 51%, and Hyesan Youth Copper Mine, 49%)	Hyesan Youth copper mine, Ryanggang Province	15	
Fertilizer:				
Nitrogen	Hungnam Fertilizer Complex	Plant <sup>2</sup> in Hungnam District	700	
Do.	Namhung Youth Chemical Complex	Plant in Anju	550	
Phosphate	Haeju Smeltery	Haeju phosphate fertilizer plant, Haeju	NA	
Gold, mine, Au content	kilograms	Kumgang Corp. (Ministry of Mining Industry)	Soncheon Mine, Soncheon County, North Pyongan Province	3,000
Do.	do.	Ministry of Mining Industry	Unsan Mine, Unsan County, North Pyongan Province	2,600
Do.	do.	do.	Sungheung Mine, Hoechang County, North Pyongan Province	2,000
Do.	do.	do.	Daeyoudong Mine, Tongchang County, North Pyongan Province	1,000
Do.	do.	Workers' Party Bureau 39	Daebong Mine, Hyesan, Ryanggang Province	300
Graphite:				
Amorphous	metric tons	Ministry of Metallurgical Industry	Wonri Mine, Gaecheon, South Pyongan Province	1,100
Crystalline flake	do.	Kwangmyongsong General Corp.	Jeongchon Mine, Yon-an County, South Hwanghae Province	3,000
Do.	do.	Ministry of Metallurgical Industry	Heungsan Mine, Chungdan County, South Hwanghae Province	2,000
Iron ore:				
Concentrate	do.	do.	Dukhyun Mine, Uiju, North Pyongan Province	700
Ore	do.	do.	Musan Mining Complex, North Hamgyong Province	11,000
Do.	do.	do.	Eun-ryul Mine, Eun-ryul County, South Hwanghae Province	1,600

See footnotes at end of table.

TABLE 2—Continued  
NORTH KOREA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners		Location of main facilities	Annual capacity <sup>e</sup>
Iron and steel, raw steel	Ministry of Metallurgical Industry		Kim Chaek Iron and Steel Complex, Chongjin, North Hamgyong Province	2,400
Do.	do.		Hwanghae Iron Works, Songrim, North Hwanghae Province	1,500
Do.	do.		Chollima Steel Works (formerly Kangson Works), Namu District, South Pyongan Province	750
Do.	do.		September (formerly Dukhyun) Iron and Steel Complex, Uiju, North Pyongan Province	700
<b>Lead:</b>				
Concentrate, gross weight	General Bureau of the Tanchon Area Mining Industry (Ministry of Mining Industry)		Komduck Mine, Tanchon, South Hamgyong Province	32
Do.	Ministry of Mining Industry		Eunpa Mine, Eunpa County, North Hwanghae Province	26
Do.	do.		Seongcheon Mine, South Pyongan Province	8
Refined	Ministry of Metallurgical Industry		Moonpyong refinery, Mooncheon, Gangwon Province	32
Magnesia clinker	General Bureau of the Tanchon Area Mining Industry (Ministry of Mining Industry)		Sungjin refractory plant, Kim Chaek, North Hamgyong Province	300
Do.	do.		Tanchon magnesia plant, Tanchon, South Hamgyong Province	2,000
<b>Magnesite:</b>				
Concentrate	do.		Ryongyang Mine, Tanchon, South Hamgyong Province	300
Do.	do.		Ssang-ryong Mine, Kim Chaek, North Hamgyong Province	NA
Do.	Chosun Seungli Trading Co. (Ministry of Mining Industry)		Namgye Mine and Saeng-jang Mine, Ryanggang Province	NA
Ore	General Bureau of the Tanchon Area Mining Industry (Ministry of Mining Industry)		Daeheung Youth Hero Mine, Tanchon, South Hamgyong Province	NA
Phosphate rock	Ministry of Mining Industry		Ssang-ryong Mine, Kim Chaek, North Hamgyong Province	NA
Salt, sea salt	Ministry of Chemical Industry		Guisung saltern, Oncheon County, South Pyongan Province	30
Do.	do.		Kwangmyongsong saltern, Kumya County, South Hamgyong Province	NA
Do.	do.		Kwangryang-man saltern, Oncheon County, South Pyongan Province	NA
Do.	do.		Mamyang saltern, Sukcheon County, South Pyongan Province	NA
Silver, mine, Ag content	kilograms	Ministry of Mining Industry	Sungheung Mine, Hoechang County North Pyongan Province	6,500
Do.	do.	do.	Unsan Mine, Unsan County, North Pyongan Province	6,300
Do.	do.	do.	Daeyoudong Mine, Tongchang County, North Pyongan Province	1,400
Tungsten, concentrate, WO <sub>3</sub> content	do.	do.	Man-nyon Mine, Sinpyong County, North Hwanghae Province	4

See footnotes at end of table.

TABLE 2—Continued  
 NORTH KOREA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities	Annual capacity <sup>e</sup>
<b>Zinc:</b>			
Concentrate, gross weight	General Bureau of the Tancheon Area Mining Industry (Ministry of Mining Industry)	Komduck Mine, Tancheon, South Hamgyong Province	200
Do.	Ministry of Mining Industry	Eunpa Mine, Eunpa County, North Hwanghae Province	33
Do.	do.	Seongcheon Mine, Jangrim Workers District, South Pyongan Province	10
Refined	General Bureau of the Tancheon Area Mining Industry (Ministry of Mining Industry)	Tancheon Zinc refinery, Tancheon, South Hamgyong Province	100
Do.	Ministry of Metallurgical Industry	Moonpyong refinery, Mooncheon, Gangwon Province	110

<sup>e</sup>Estimated. Do., do. Ditto. NA Not available

<sup>1</sup>Lignite is referred to as bituminous coal in North Korea.

<sup>2</sup>Suspended production in 2019.