



# 2019 Minerals Yearbook

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**MONGOLIA [ADVANCE RELEASE]**

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# THE MINERAL INDUSTRY OF MONGOLIA

By Jaewon Chung

Historically, Mongolia's economy relied on herding and agriculture practices, but since the mid-2000s, it had become increasingly reliant on the mining sector. The country has extensive deposits of coal, copper, fluorite, gold, iron, molybdenum, tungsten, uranium, and zinc. In 2019, Mongolia was the world's third-ranked producer of fluorspar (excluding that of the United States), accounting for 10% of the world's production. The country had reserves of 22 million metric tons (Mt) of fluorspar, accounting for 7% of the world's reserves (table 1; Mineral Resources and Petroleum Authority of Mongolia, 2019, p. 7; McRae, 2020, 2021).

## Minerals in the National Economy

In 2019, the country's real gross domestic production (GDP) increased by 5.1% compared with a 7.2% (revised) rate of growth in 2018; the nominal GDP was \$14.0 billion. The slower rate of GDP growth was due to reduced growth in the mining and quarrying, manufacturing, and transportation (mainly for mineral exports), and storage sectors of the economy. The value added by the mining and quarrying sector decreased by 0.6% for the year compared with an increase of 6.1% in 2018. The mining and quarrying sector accounted for about 24% (\$3.3 billion<sup>1</sup>) of the GDP; manufacturing, 11%, transportation and storage, 4.5%; and construction, 4.1% (Asian Development Bank, 2020, p. 185; National Statistics Office of Mongolia, 2020, p. 333, 336–337; World Bank, The, 2020).

In 2019, total exports of goods increased by 9% to \$7.6 billion owing to the increased price and amount of metallurgical (coking) coal, gold, and iron ore exports. Mined products accounted for 89% of total exports, including coal (40%), copper ore concentrates (24%), iron ore (8%), and gold and crude petroleum (5% each). Total imports of goods increased by 4% to \$6.1 billion, of which diesel imports accounted for 11%; construction materials, 11%; and gasoline and other fuels, 8% (Bank of Mongolia, The, 2020, p. 14–16).

Regulations governing the mineral sector include the Law on Petroleum Products of 2005; the Law on Petroleum of 2014; and the 2014 amendments to the Minerals Law of 2006. In March 2019, in accordance with the 2014 amendments to the Minerals Law of 2006, the Parliament was set to increase the minimum royalty on gold to 5% (from 2.5%) of the sales value following the expiration on January 1, 2019, of the previously mandated royalty on gold. The changes became effective on April 8, 2019 (Mineral Resources Authority, 2016, p. 31, 38; Woolley and Odkhoo, 2016; Bank of Mongolia, The, 2020, p. 54; Mineral Resources and Petroleum Authority of Mongolia, 2020a).

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<sup>1</sup>Where necessary, values have been converted from Mongolian tugrik (MNT) to U.S. dollars (US\$) at the annual average exchange rate of MNT 2,663.54=US\$1.00 for 2019.

## Production

In 2019, significant production increases included that of fluorspar (metallurgical grade, by 40%), iron ore (Fe content, 37%), lime and gravel (24% each), cement (18%), and metallurgical coal (10%). Significant production decreases included that of salt (by 47%), fluorspar (acid grade, 41%), mined gold (21%), and copper (solvent extraction, 21%). Data on mineral production are in table 1.

## Structure of the Mineral Industry

Table 2 lists Mongolia's major mineral industry facilities. Most of the mining companies in Mongolia were owned by the state or by joint ventures between international companies and the Government of Mongolia. A few companies were wholly owned by foreign investors. Mineral Resources and Petroleum Authority of Mongolia (MRPAM) is the Government entity responsible for supporting the development of national policy on mining and petroleum and for administering the activities related to the country's "geological" resources.

The construction of a 415-kilometer (km) railway between the Tavan Tolgoi coal mine and Zuunbayan (northeast of Tavan Tolgoi) commenced in May 2019. Various mineral deposits of coal, copper, fluorspar, tungsten, and zinc are present along the railway. Another railway project, the 240-km railway project from Tavan Tolgoi to Gashuun Sukhait (along the Chinese border, southeast of Tavan Tolgoi), had been suspended since 2015; the construction of this project was resumed in 2019 and was scheduled to be completed by December 2020. Mineral exports were expected to increase to 50 million metric tons per year after these two projects are completed (Baljmaa, 2019; Unurzul, 2019b; Erdenes-Tavantolgoi JSC, 2020a, p. 11; 2020b).

## Commodity Review

### Metals

**Copper.**—Oyu Tolgoi LLC and Erdenet Mining Corp. (EMC) were the two leading copper mining operators in Mongolia. In 2019, Oyu Tolgoi LLC's Oyu Tolgoi Mine produced 675,000 metric tons (t) of copper concentrate (equal to 146,000 t of Cu content) compared with 725,000 t (159,000 t of Cu content) in 2018; the decrease was owing to the depletion of high-grade ore. In November, Oyu Tolgoi LLC completed development of shaft 2 at the underground project of the Oyu Tolgoi Mine; however, owing to the removal of two mid-access drives, the first production from the project would be delayed by 16 to 30 months, to between May 2022 and June 2023. Turquoise Hill Resources Ltd. of Canada managed Oyu Tolgoi LLC on behalf of all shareholders. Rio Tinto plc of the United Kingdom held a 50.8% stake in Turquoise Hill Resources (Turquoise Hill Resources Ltd., 2018; Oyu Tolgoi LLC, 2020, p. 6; Rio Tinto plc, 2020, p. 51, 271).

EMC's Erdenetiin-Ovoo Mine had a production capacity of 150,000 metric tons per year of copper. In March 2019, EMC was restructured as an enterprise fully owned by the Government. Prior to the restructuring, the company was owned by the Government (51%) and Mongolian Copper Corp. (MCC) (49%). MCC had acquired its share (valued at \$400 million) from Russia's Rostec Corp. in 2016 (table 2; Unurzul, 2019c, d).

**Gold.**—The Oyu Tolgoi Mine was also the country's leading producer of gold. In 2019, the Oyu open pit and the Hugo Dummett North underground project at the Oyu Tolgoi Mine had reserves of 227 t of gold (compared with 237 t in 2018) and 170 t of gold (compared with 177 t in 2018), respectively. In 2019, Oyu Tolgoi LLC produced 7,520 kilograms (kg) of gold compared with 8,880 kg in 2018 (Rio Tinto plc, 2020, p. 271, 274).

The Khundii project, which was owned by Erdene Resource Development Corp. of Canada, consisted mainly of the Bayan Khundii and the Altan Nar gold deposits in Bayankhongor Aimag. In August, Erdene secured a mining license for the Bayan Khundii deposit from the MRPAM. In 2019, reserves at Bayan Khundii were estimated to be 13,100 kg of gold, and indicated resources at Altan Nar were estimated to be 9,890 kg of gold and 73,200 kg of silver. The company expected to extract 1,900 kilograms per year (kg/yr) of gold from Bayan Khundii between 2021 and 2028 and 1,400 kg/yr of gold and 6,400 kg/yr of silver from Altan Nar between 2028 and 2031. The Khundii project was projected to create about 300 jobs (Erdene Resource Development Corp., 2019, p. 1–2; 2020, p. 5).

### **Industrial Materials**

**Fluorspar.**—Mongolrosvetmet LLC was the leading fluorspar producer in Mongolia; artisanal and small-scale miners also played a significant role in the country's fluorspar output. Mongolia produced fluorspar at both acid grade (more than 97% CaF<sub>2</sub>) and metallurgical grade (less than or equal to 97% CaF<sub>2</sub>). Acid-grade fluorspar production decreased to 48,000 t in 2019 after peaking at 81,000 t (revised) in 2018, whereas metallurgical-grade production continued to increase during 2016–19, from 240,000 t in 2016 to 670,000 t in 2019. All output of fluorspar had been exported owing to the lack of domestic consumption. In 2019, China and Russia were the two recipients of Mongolia's fluorspar exports, accounting for 73% (527,000 t of both grades worth about \$79 million) and 23% (165,000 t, \$27 million) of the total, respectively (table 1; Satterthwaite, 2019; United Nations Statistics Division, 2020).

**Lithium.**—In March, the MRPAM reported two registered lithium deposits in the country: the Munkhtiin (Muhkhtyn) Tsagaan Durvuljin deposit, which had resources of 2.28 Mt at grades of 0.65% lithium oxide, 0.15% rubidium, and 0.03% cesium; and the Khukh Del deposit, which had 37,700 t of lithium resources. Both deposits are located in Dundgobi Aimag (ZGM Daily, 2019; Mineral Resources and Petroleum Authority of Mongolia, 2020b).

### **Mineral Fuels**

**Coal.**—Mongolia extracted 30.1 Mt of metallurgical coal in 2018 and 33.0 Mt in 2019. The country ranked sixth in the world in the production of metallurgical coal in 2018 (the

latest year for which data were available), accounting for 2.9% of the world's production (table 1; U.S. Energy Information Administration, 2021).

In 2019, Erdenes Tavan Tolgoi (ETT) JSC—the country's leading metallurgical coal producer—extracted 16.2 Mt of metallurgical coal from the Tsankhi Block of the Tavan Tolgoi Mine; of this amount, the company exported 15.5 Mt to China, which accounted for 41% of the country's total coal exports (38 Mt) and 48% of its metallurgical coal exports (33.8 Mt) (Erdenes-Tavantolgoi JSC, 2020a, p. 3, 6–7).

In 2019, the Government of Mongolia postponed the 2018 plan to sell up to 30% (valued at from \$1 billion to \$3 billion) of ETT until May 2020 owing to the 2019–20 elections and other undisclosed reasons. The 2018 plan was to resume an initial public offering (IPO) for ETT through the Hong Kong Stock Exchange in mid-2019. The Government had previously sought to launch the IPO in 2011, but the launch had been deferred by complaints from companies in Japan and the Republic of Korea about the bidding process (Thomson Reuters, 2018; Nagumo, 2019; Unurzul, 2019a).

### **Outlook**

The mineral industry of Mongolia is oriented toward exports and thus is expected to remain sensitive to world markets. In the short term, Mongolia's mining activity is expected to contract owing to the weak external demand, which is mainly attributed to the slow economic growth in China. In the medium and long terms, the mining activity is likely to recover as the global demand bounces back. Mine outputs of coal (mainly metallurgical), copper, and gold are likely to increase, and the exports to China and Russia would also likely increase when the Oyu Tolgoi underground project and the construction of new railways through the Tavan Tolgoi coal mine are completed as planned.

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TABLE 1  
MONGOLIA: 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:					
Mine:					
Concentrates, Cu content	311,745	332,000 <sup>e</sup>	303,000 <sup>e</sup>	301,000 <sup>e</sup>	290,000 <sup>e</sup>
Solvent extraction <sup>3</sup>	14,990	15,010	14,689	14,175 <sup>r</sup>	11,758
Total mine, Cu content of concentrates and electrowon	327,000	347,000 <sup>e</sup>	318,000 <sup>e</sup>	315,000 <sup>e</sup>	302,000 <sup>e</sup>
Refinery, electrowon	14,990	15,010	14,689	14,175 <sup>r</sup>	11,758
Gold, mine, Au content	14,556	18,436	19,847	20,655	16,251
Iron ore, mine:					
Gross weight	6,061	4,936	7,695	6,225	8,572
Fe content	3,637	2,960	4,620	3,740	5,140
Iron and steel, raw steel	43,731	16,800	21,045	29,169	28,433
Molybdenum, mine, Mo content	2,557	2,688 <sup>r</sup>	2,924 <sup>r</sup>	2,731 <sup>r</sup>	2,688
Silver, mine, Ag content <sup>c</sup>	60,000	69,000	62,000	60,000	57,000
Tin, mine, Sn content	64	39	25	25	25 <sup>e</sup>
Tungsten, mine, concentrate, W content	351	732	510	1,938	1,900 <sup>e</sup>
Zinc, mine, Zn content <sup>e</sup>	44,800	50,100 <sup>r</sup>	41,000	44,000	41,600
INDUSTRIAL MINERALS					
Cement, hydraulic	410	432	675	934	1,098
Fluorspar:					
Acid grade <sup>4</sup>	47	34	55	81 <sup>r</sup>	48
Metallurgical grade <sup>5</sup>	270 <sup>r</sup>	240 <sup>r</sup>	280 <sup>r</sup>	480 <sup>r</sup>	670
Total	317	274	335	561	718
Lime, hydrated and quicklime	52	48	56	59	73 <sup>e</sup>
Salt	1,686	478 <sup>r</sup>	860 <sup>r</sup>	997 <sup>r</sup>	533
Sand and gravel, construction, gravel <sup>c,6</sup>	226	162	242	283	350
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite	2,663	9,971	65,892	115,325	120,000 <sup>e</sup>
Bituminous	3,255,000 <sup>r</sup>	3,628,000 <sup>r</sup>	8,215,000 <sup>r</sup>	9,225,000 <sup>r</sup>	10,000,000 <sup>e</sup>
Lignite	5,755,000 <sup>r</sup>	6,672,000	6,783,000 <sup>r</sup>	6,953,000 <sup>r</sup>	7,600,000 <sup>e</sup>
Metallurgical	14,966,000 <sup>r</sup>	24,786,000 <sup>r</sup>	27,807,000 <sup>r</sup>	30,101,000 <sup>r</sup>	33,000,000 <sup>e</sup>
Total	24,000,000	35,100,000	42,900,000	46,400,000	50,700,000
Coke, metallurgical	72,000	78,200 <sup>r</sup>	72,200 <sup>r</sup>	66,200 <sup>r</sup>	60,200
Petroleum, crude	8,769	8,249	7,624	6,389	6,876

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

<sup>1</sup>Table includes data available through November 24, 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, lead, gypsum, and limestone may have been produced, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>The copper content of solvent extraction output at the mine level is the same as electrowon refinery output because copper produced in the solvent extraction and electrowinning process is typically reported only at the refinery level.

<sup>4</sup>Flotation concentrate, includes some material less than 97% CaF<sub>2</sub>.

<sup>5</sup>May include some submetallurgical-grade fluorspar.

<sup>6</sup>Converted from cubic meters using a conversion factor of 1.6 metric tons of sand and gravel per cubic meter.



TABLE 2  
MONGOLIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities <sup>1</sup>	Annual capacity <sup>c</sup>
Cement	Khutul Cement and Lime JSC	Plant in Saikhan Soum, Selenge Aimag	1,000
<b>Coal:</b>			
Bituminous	Mongolyn Alt (MAK) Group, 100%	Eldev Mine, Dalanjargalan Soum, Dornogovi Aimag	500
Do.	do.	Naryn Sukhait Mine, Gurvantes Soum, Omnogovi (South Gobi) Aimag	3,000
Do.	Prophecy Development Corp.	Ulaan Ovoo Mine, Tushig Soum, Selenge Aimag	3,000
Lignite	Baganuur JSC (Erdenes Mongol on behalf of the Government, 75%, and others, 25%)	Baganuur Mine, Tov Aimag	3,000
Do.	Shivee-Ovoo JSC (Erdenes Mongol on behalf of the Government, 90%, and public, 10%)	Shivee Ovoo Mine, Dornogovi and Govisumber Aimags, 20 km from Choir	2,000
Metallurgical	Erdenes Tavan Tolgoi JSC (Erdenes Mongol on behalf of the Government, 65.2%; Government, 20%; others, 14.8%)	Tavan Tolgoi Mine, Omnogovi (South Gobi) Aimag, 200 km north of the China border	17,000
Do.	Moenco LLC	Khushuut Mine, Darvi Soum, Khovd Aimag	3,000
Do.	Mongolyn Alt (MAK) Group, 100%	Naryn Sukhait Mine, Gurvantes Soum, Omnogovi (South Gobi) Aimag	3,000
Do.	Mongolian Mining Corp.	Baruun Naran Mine, Omnogovi (South Gobi) Aimag, 60 km east of Dalanzadgad	5,500
Do.	do.	Ukhaa Khudag Mine, Omnogovi (South Gobi) Aimag, 80 km east of Dalanzadgad	8,600
Do.	Terra Energy LLC (TerraCom Ltd., 100%)	Baruun Noyon Uul (BNU) Mine, Omnogovi (South Gobi) Aimag, 80 km east of Naryn Sukhait Mine	1,500
Do.	SouthGobi Resources Ltd. (China Investment Corp., 23.75%, and China Cinda Asset Management Co. Ltd., 17%)	Ovoot Tolgoi Mine, Omnogovi (South Gobi) Aimag	6,500
Unspecified	Ikh Gobi Energy LLC	Mandakhnuur Mine, Mandakh Soum, Dornogovi Aimag	1,000
Do.	Usukh Zoos LLC	Khuren Shand Mine, Gurvantes Soum, Umnugobi Aimag	3,000
<b>Copper:</b>			
Mine, concentrate, Cu content	Erdenet Mining Corp. (Government, 100%)	Erdenetiin-Ovoo Mine, and processing plant, 180 km west of Darkhan	150
Do.	Mongolyn Alt (MAK) Group, 100%	Tsagaan Suvarga Mine, Omnogovi (South Gobi) Aimag, 560 km southeast of Ulaanbaatar	70
Do.	Oyu Tolgoi LLC [Turquoise Hill Resources Ltd., 66%, and Erdenes Oyu Tolgoi LLC (on behalf of the Government), 34%]	Oyu Tolgoi Mine, Omnogovi (South Gobi) Aimag, 80 km north of the China border	210
Refined	Achit Ikht LLC (Head of the Presidential Office, 51%, and Erdenet Mining Corp., 34%)	Solvent extraction-electrowinning plant in Orkhon Aimag (near Erdenetiin-Ovoo Mine)	10
Do.	Erdenet Mining Corp. (Government, 100%)	Erdmin solvent extraction-electrowinning plant, 180 km west of Darkhan	3
<b>Fluorspar:</b>			
Ore, gross weight	Mongolrostsvetmet LLC	Bor-Undur Mine, Hentiy Aimag, 310 km southeast of Ulaanbaatar; 3 underground and 2 open pit mines	600
Do.	Various artisanal and small-scale operators	Mines in various locations	NA
Concentrate, gross weight	Chuluut International LLC	Processing plant at Bayandelger Soum, Sukhbaatar Aimag	110
Do.	Mongolrostsvetmet LLC	Processing plant at Bor-Undur Mine, Hentiy Aimag, 310 km southeast of Ulaanbaatar	120

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities <sup>1</sup>	Annual capacity <sup>c</sup>
Gold, mine, Au content	kilograms	Bayan Airag Exploration LLC	Bayan-Airag Mine, Durbunjiil & Zavkhan Soum	NA
Do.	do.	Erdenet Mining Corp. (Government, 100%)	Erdenetiin-Ovoo Mine, and processing plant, 180 km west of Darkhan	160
Do.	do.	Mongolian Resource Corp. Ltd., 90%	Blue Eyes Mine, Bornuur Soum, Tov Aimag	NA
Do.	do.	Mongolrostsvetmet LLC	Zaamar placer gold operation, Tov Aimag, 240 km southwest of Ulaanbaatar	170
Do.	do.	do.	Zeregtsee placer mine, 240 km southwest of Ulaanbaatar	180
Do.	do.	North Asia Resources Holdings Ltd.	Khar Yamaat placer mine	NA
Do.	do.	Oyu Tolgoi LLC [Turquoise Hill Resources Ltd., 66%, and Erdenes Oyu Tolgoi LLC (on behalf of the Government), 34%]	Oyu Tolgoi Mine, Omnogovi (South Gobi) Aimag, 80 km north of the China border	10,000
Do.	do.	Steppe Gold Ltd.	Altan Tsagaan Ovoo Mine, Tsagaan Ovoo Soum	1,000
Do.	do.	Zinjin Mining Group Co. Ltd., 70%	Nari Tolgoi Mine, Jierigrong Sumu, Tov Aimag	1,500
Iron ore, gross weight		Darkhan Metallurgical Plant JSC	Tumurtei Mine, Khuder Soum, Selenge Aimag	11,000
Do.		do.	Tumur Mine, Khongor Soum, Darkhan-Uul Aimag	1,000
Do.		Lung Ming Mining Co. Ltd., 66.7%, and China Investment Corp., 33.3%	Eruu Gol Mine, Yeruu, Selenge Aimag 85 km southeast of Sukhbaatar	2,000
Do.		Mongolrostsvetmet LLC	Bargilt Mine and ore dressing plant 20 km from Bor-Undur	400
Iron and steel, raw steel		Darkhan Metallurgical Plant JSC	Plant in Darkhan, Darkhan-Uul Aimag	100
Lead, mine, Pb content		China Nonferrous Metals Group, 51%, and Government, 49%	Tumurtiin Ovoo Mine, Sukhe Bator, 180 km southwest of Choibalsan	10
Do.		Shandong Xianglong Co. Ltd.	Tsav Mine, Dornod Aimag	15
Lime		Khutul Cement and Lime JSC	Plant in Saikhan Soum, Selenge Aimag	65
Limestone		Mongolyn Alt (MAK) Group, 100%	Quarry, 14 km from the Olon Ovoot station of the Trans Mongolia railway	NA
Molybdenum, mine, Mo content		Erdenet Mining Corp. (Government, 100%)	Erdenetiin-Ovoo Mine and processing plant, 180 km west of Darkhan	3
Do.		Oyu Tolgoi LLC [Turquoise Hill Resources Ltd., 66%, and Erdenes Oyu Tolgoi LLC (on behalf of the Government), 34%]	Oyu Tolgoi Mine, Omnogovi (South Gobi) Aimag, 80 km north of the China border	NA
Petroleum, crude		PetroChina Company Limited Daching Tamsag-Mongolia LLC	Oilfield in Tamsag Basin	NA
Do.		China Petrochemical Corp. (Sinopec)	Oilfield in Southeast Gobi Basin	NA
Silver, mine, Ag content	kilograms	Erdenet Mining Corp. (Government, 100%)	Erdenetiin-Ovoo Mine, and processing plant, 180 km west of Darkhan	30,000
Do.	do.	Oyu Tolgoi LLC [Turquoise Hill Resources Ltd., 66%, and Erdenes Oyu Tolgoi LLC (on behalf of the Government), 34%]	Oyu Tolgoi Mine, Omnogovi (South Gobi) Aimag, 80 km north of the China border	30,000
Do.	do.	Steppe Gold Ltd.	Altan Tsagaan Ovoo Mine, Tsagaan Ovoo Soum	5,000
Tungsten, mine, W content	metric tons	Erdenet Mining Corp. (Government, 100%)	Erdenetiin-Ovoo Mine and processing plant, 180 km west of Darkhan	140
Do.	do.	SS Mongolia LLC	Khovd River Mine, Tsengel Soum, Bayan-Ulgii Aimag	3,300
Zinc, mine, Zn content		Tsairt Minerals Co. Ltd. (China Nonferrous Metals Group, 51%, and Government, 49%)	Tumurtiin Ovoo Mine, Sukhe Bator, 180 km southwest of Choibalsan	50
Do.		Shandong Xianglong Co. Ltd.	Tsav Mine, Dornod Aimag	15

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

<sup>1</sup>Abbreviations used for units of measure in this table include the following: km—kilometer.