



# 2013 Minerals Yearbook

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## MONGOLIA

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# THE MINERAL INDUSTRY OF MONGOLIA

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Mongolia is a landlocked country located between China and Russia. The country has large proven reserves of coal, copper, and fluorspar. Mineralized systems with copper, gold, molybdenum, tin, and tungsten are common in Mongolia. Mongolia depends on imported finished petroleum products and has been trying to develop its domestic petroleum sector by attracting foreign investors through revisions of the nation's legal framework and by offering tax incentives to oil refiners (U.S. Central Intelligence Agency, 2014; Woolley and Odkhuu, 2014, p. 1).

In 2013, Mongolia's real gross domestic product (GDP) rate of growth was 11.7%, the nominal GDP amounted to about \$11.5 billion, and the inflation rate was 13%. The country's economy has grown by about 10% per year since 2010 because of the strength of commodity exports to nearby countries and high domestic Government spending. Mongolia's economy has been increasingly driven by the exploitation of its vast mineral resources during the past 20 years. Mining accounted for 20% of the GDP in 2013, which was twice its share of a decade ago (Asian Development Bank, 2014; U.S. Central Intelligence Agency, 2014; World Bank, The, 2015a, c).

## Minerals in the National Economy

Mongolia's coal, copper, fluorspar, gold, molybdenum, tin, tungsten, and uranium deposits, among others, have attracted foreign direct investment, which was transforming Mongolia's economy from herding and agriculture to mining activities. Mongolia joined the World Trade Organization in 1997 to strengthen its participation in regional economic and trade activities. Mongolia has relied on Russia for energy supplies, on China for mineral exports, and on funds sent to Mongolia by Mongolians working in the Republic of Korea (U.S. Central Intelligence Agency, 2014).

In January 2013, 3,669 valid mineral resource licenses were registered in Mongolia—1,213 mining licenses and 2,456 exploration licenses (Mineral Resources Authority of Mongolia, 2014, p. 25). Mongolia's industry included mining and quarrying (including petroleum extraction), manufacturing (including production of unspecified nonmetallic mineral products, base metals, and fabricated metal products, except machinery), and power and water supply.

## Government Policies and Programs

Mineral resources in Mongolia are the property of the state. The Mineral Law of Mongolia regulates the prospecting and exploration for and mining of minerals within the country. Numerous other laws, guidelines, and procedures govern the prospecting, exploration, and mining of minerals, such as the Environmental Protection Law, the Land Law, the National Security Law, the Subsoil Law, and the Water and Forest Law.

The Mineral Resources Authority of Mongolia (MRAM) issued the Mining Sector's Policy of the Government of Mongolia Program 2008–2012, which included developing strategic deposits; conducting research on geologic formations and mineral distribution; providing general evaluations and geologic mapping; and improving the legal environment of the geology and mining sectors (Mineral Resources Authority of Mongolia, 2014, p. 28).

On February 7, 2013, the Petroleum Products Law was amended to require an additional license to trade petroleum products. The Petroleum Products Law, which was enacted on July 1, 2005, defined petroleum products as "all types of fuel products" and provided five subclassifications of activities in relation to petroleum products: import, production, trade, transportation, and storage. The import, production, and trade of petroleum products required a license; however, transportation and storage activities could be carried out without a specific license. On August 29, 2013, the Ministry of Mining approved the Specific Regulation of Petroleum Products Licenses by Ministerial Order #171 (Regulation). According to Article 2.2 of the regulation, all Mongolian companies must obtain a separate license in order to import or engage in retail or wholesale trade of petroleum products (Woolley and Odkhun, 2014).

## Production

In 2013, production of fluorspar (acid grade) decreased by about 52% compared with that of 2012; that of iron ore (gross weight) decreased by about 21%; iron ore (Fe content), by about 20%; coal, by about 17%; zinc (Zn content of mine output), by about 13%; and molybdenum (Mo content of mine output), by about 4%. The production of silver (Ag content of mine output) increased by about 53%, and that of gold (Au content of mine output), by about 49% (table 1).

## Structure of the Mineral Industry

Table 2 lists Mongolia's major mineral industry facilities. Most of the producing mining companies were owned by the state or were joint ventures between international companies and the Government of Mongolia. According to MRAM, there were some mining companies or facilities that were wholly owned by foreign investors.

## Mineral Trade

In 2013, Mongolia's exports were valued at about \$4.29 billion compared with \$4.38 billion in 2012. Export commodities included coal, copper, crude oil, fluorspar, and other nonferrous metals. China was the leading recipient of Mongolia's exports (by value), followed by Canada. Mongolia's imports were valued at about \$5.7 billion compared with \$5.9 billion in 2012. Import commodities included building

materials, fuel, and industrial consumer goods. Mongolia's major import trade partners included China, Japan, the Republic of Korea, Russia, and the United States. Mongolia's exports to the United States were valued at about \$20 million in 2013 compared with \$42 million in 2012; exports of sulfur and nonmetallic minerals were valued at about \$16 million and gemstones were valued at about \$76,000. Mongolia's imports from the United States were valued at about \$279 million in 2013 compared with \$665 million in 2012; imports of specialized mining equipment were valued at about \$7 million, industrial machinery was valued at about \$3 million, and petroleum products and iron and steel products were valued at about \$855,000 and \$468,000, respectively (U.S. Census Bureau, 2014a, b; U.S. Central Intelligence Agency, 2014).

## Commodity Review

### Metals

**Copper and Gold.**—Turquoise Hill Resources Ltd. of Canada owned the Oyu Tolgoi Mine and continued to develop the Oyu Tolgoi copper and gold project in 2013. The mine was located in the South Gobi region. The project consists of a series of porphyry deposits containing copper, gold, molybdenum, and silver that stretch for 26 kilometers (km) from the Hugo North deposit in the north through the adjacent Hugo South deposit, down to the Southern Oyu deposit, and further south to the Heruga deposit. The Oyu Tolgoi Mine was in preproduction in 2012 and began commercial operation in 2013 (Turquoise Hill Resources Ltd., 2014, p. 2–3).

On February 5, 2013, the comprehensive investment agreement between the Government and Turquoise Hill Resources indicated that the Oyu Tolgoi project was Mongolia's largest developed copper and gold mining project in the Gobi Desert, and would be one of the largest and highest grade copper and gold mines in the world. Turquoise Hill invested more than \$6 billion for phase 1 development of the project, and planned to implement cost savings and productivity initiatives to reach its 2014 goals of producing 17,000 kilograms (kg) to 18,700 kg (reported as 550,000 to 600,000 ounces) of gold in concentrates and 135,000 t to 150,000 t of copper in concentrates, and a \$180 million reduction in operating costs and capital expenditures (Turquoise Hill Resources Ltd., 2013; Thibeault, 2014, p. 5).

The Oyu Tolgoi's inaugural shipment of approximately 5,800 t of concentrate was sent to the Gants Mod border between China and Mongolia on July 9, 2013. The shipment was stored in a bonded warehouse until it was shipped to customers. By the end of 2013, 26,400 t of concentrate had been sold; Turquoise Hill paid royalties to the Government on the revenues that it received (Turquoise Hill Resources Ltd., 2014, p. 4–5).

On September 1, 2013, Oyu Tolgoi's mill met its design production capacity and processed approximately 100,000 t of ore in 1 day. On December 2, 2013, it set a processing record for the mill of 122,763 t of ore in 1 day. The Oyu Tolgoi mill and concentrator complex was the largest and most advanced industrial facility in Mongolia (Turquoise Hill Resources Ltd., 2014, p. 6–7).

At the end of 2013, Oyu Tolgoi employed 2,830 people, of whom 92% were Mongolian. Citizens occupied 50% of all supervisory and specialist positions and more than 35% of management and executive positions. For many local employees, this was their first job at an industrial complex of this size (Turquoise Hill Resources Ltd., 2014, p. 8–9).

In 2013, Oyu Tolgoi produced 290,000 metric tons (t) of concentrate that contained copper, gold, and silver. More than 72 million metric tons (Mt) of material was drilled, blasted, and dug out of the open pit and more than 20 Mt was processed through the concentrator. A total of 76,700 t of copper in concentrates was produced. The concentrate was sent to smelters in China to produce finished products for use in the construction and electronics industries (Turquoise Hill Resources Ltd., 2014, p. 3, 18).

### Mineral Fuels

**Coal.**—Lignite coal is found in the eastern and middle regions of Mongolia, bituminous coal is found in the southern and western regions of the country, and subbituminous coal is found in the central and northern regions. The combined estimated coal resources total about 12.9 billion metric tons. The country's unexploited Tavan Tolgoi coal deposit was reported to contain 6.4 Mt of coking coal resources and was classified as a strategic mineral deposit by Mongolia (Coal Mongolia, 2012, p. 21–23).

SouthGobi Resources Ltd., which was a joint venture of Canada, China, and Mongolia Coal, expanded its production in 2013 and exported coal to China. SouthGobi was a principal asset of Turquoise Hill Resources, which held a 56% interest in SouthGobi in 2013. Turquoise Hill took management control of SouthGobi in September 2012 and made changes to the board of directors and senior management. Rio Tinto was a majority shareholder in Turquoise Hill, and China Investment Corp. held a 16% interest in SouthGobi in 2013 (Turquoise Hill Resources Ltd., 2014, p. 20–21; SouthGobi Resources Ltd., 2015).

SouthGobi was focused on exploration and development of its South Gobi region metallurgical and thermal coal deposits to supply a wide range of coal products to Asian markets. SouthGobi operated the flagship Ovoot Tolgoi coal mine and owned the Ovoot Tolgoi open pit coal mine (Ovoot Tolgoi Mine) and three development projects—the Soumber deposit, the Zag Suuj deposit, and the Ovoot Tolgoi underground deposit. These projects are located in the Omnogovi Aimag, within 150 km of each other and close to the Mongolia-China border. In 2013, China was the world's leading consumer of coal and Mongolia's coal was powering China's heavy industries and coal-fired powerplants. China had rapidly developed infrastructure to access Mongolia's coal. A Chinese steel mill built a railway to Ceke along the Chinese border with Mongolia, where coal-loading facilities were available. A second railway from Ceke to the industrial city of Linhe, China, was also completed. The Mongolian Government designated the Shivee Khuren (or Ceke) border crossing as a permanent station to allow the export of Ovoot Tolgoi coal to customers in China (SouthGobi Resources Ltd., 2015).

The Ovoot Tolgoi Mine was an open pit operation, and most of the coal lies relatively close to the surface. In 2013,

SouthGobi produced 3.1 Mt of metallurgical and thermal coal and sold 3.3 Mt to China. The mine employed 431 people, and 98% of the workforce was Mongolian; about 370 Ovoot Tolgoi-based employees were residents of the four local districts near the mine (Turquoise Hill Resources Ltd., 2013, p. 20–21).

## Outlook

According to the World Bank, Mongolia's economic growth is expected to slow in 2014. Despite a 26% increase in mining sector activity, economic growth in the nonmining sectors decreased sharply. Domestic consumption remains relatively strong but the inflation rate is high, and the country faces external financial challenges (World Bank, The, 2014b, p. 4).

In January and August 2013, the Ovoot Tolgoi coal mine received three new pre-mining agreements, which cover the Soumber and the Zag Suuj deposits, from the Government. SouthGobi continues to approve mining licenses, and it is developing the prefeasibility study for the Soumber deposit, which has the potential to be SouthGobi's second producing mine. Initial production is targeted for 2015 (Turquoise Hill Resources Ltd., 2014, p. 20–21).

The revision of the Petroleum Law was an important step in the improvement and development of the petroleum sector in Mongolia. In addition, the Law of Mongolia on Investment, which was adopted in 2013, is another step in attracting more foreign and domestic investors to Mongolia's petroleum sector (Woolley and Odkhuu, 2014, p. 4). Future revisions to the Petroleum Law could help Mongolia reduce its dependence on petroleum imports.

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TABLE 1  
MONGOLIA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2009	2010	2011	2012	2013 <sup>c</sup>
Cement, hydraulic thousand metric tons	235	323	426	349 <sup>r</sup>	350
Coal, unspecified do.	13,164	25,246	30,940	31,139 <sup>r</sup>	26,001 <sup>3</sup>
Copper:					
Mine output, Cu content	129,800	124,985	121,590	121,660	186,655 <sup>3</sup>
Metal, refined	2,470	2,746	2,390	2,282	NA
Fluorspar:					
Acid grade thousand metric tons	115	141	116	157 <sup>r,3</sup>	76 <sup>3</sup>
Submetallurgical and other grade do.	344	259	232	484 <sup>r,3</sup>	150
Total do.	459	400	348	641 <sup>r</sup>	226
Gold, mine output, Au content kilograms	9,803	6,037	5,703	5,995	8,904 <sup>3</sup>
Iron ore:					
Gross weight thousand metric tons	1,380	3,203	5,678	7,561	6,011 <sup>3</sup>
Iron content do.	800	1,900	3,400	4,537	3,607
Lime, hydrated and quicklime do.	43	50	45	68	NA
Molybdenum, mine output, Mo content	2,140	2,198	1,960	1,904	1,819 <sup>3</sup>
Petroleum, crude thousand 42-gallon barrels	1,870	2,181	2,549	3,636	3,600
Salt, mine output	1,402	1,861	2,183	2,461	2,400
Silver, mine output, Ag content kilograms	29,321	28,710	28,254	27,982	42,931 <sup>3</sup>
Steel, crude	50,100	64,200	60,000	68,100	68,000
Stone, crushed thousand metric tons	123	101	94	233	240
Tungsten, mine output, W content	39	20	20	66 <sup>r</sup>	--
Zinc, mine output, Zn content	78,800 <sup>r</sup>	56,300 <sup>r</sup>	52,300 <sup>r</sup>	59,500 <sup>r</sup>	52,050 <sup>3</sup>

<sup>c</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>r</sup>Revised. do. Ditto.

NA Not available. --Zero.

<sup>1</sup>Table includes data available through December 16, 2014.

<sup>2</sup>In addition to the commodities listed, crude construction materials, such as gypsum and sand and gravel, and varieties of stone, such as limestone, are produced, but available information is inadequate to make reliable estimates of output.

<sup>3</sup>Reported figure.

TABLE 2  
MONGOLIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(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	Darhan, Darhan-Uul Aimag	500
Coal	Erdenes MGL LLC (Government, 75%)	Baganuur Mine, Tov Aimag	3,000
Do.	Erdenes MGL LLC (Government, 100%)	Shivee Ovoo Mine, Dornogovi and Govisumber Aimags, near Choir city	2,000
Do.	SouthGobi Resources Ltd. (Turquoise Hill Resources Ltd., 56%, and China Investment Corp. 16%)	Ovoot Tolgoi Mine, South Gobi region	4,600
Do.	Mongolian Mining Corp.	Ukhaa Khudag Mine, South Gobi region	8,600
Do.	do.	Baruun Naran Mine, South Gobi region	3,000
Do.	MAK Mongolyn Alt Group	Naryn Sukhait Mines, Gurvantes Soum, South Gobi region	3,000
Do.	Terra Energy LLC (Guilford Coal Ltd., 100%)	Baruun Noyon Uul (BNU) coking coal mine, South Gobi region	3,000

See footnotes at end of table.

TABLE 2—Continued  
MONGOLIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities <sup>1</sup>	Annual capacity <sup>e</sup>
Copper, Cu in concentrates		Samsung Corp., 51%, and Erdenet Mining Corp. (Mongolia-Russia joint venture), 49%	Erdenet Ovoo open pit mine and processing plant, Orkhon Aimag, 180 km west of Darkhan City	140
Do.		Turquoise Hill Resources Ltd., 66%, and Government, 34%	Oyu Tolgoi Mine, South Gobi region 80 km north of the China border	420
Do.		MAK Mongolyn Alt Corp, 100%	Tsagaan Suvarga Mine, South Gobi region 560 km southeast of Ulaanbaatar	70
Copper, Cu in cathodes		Erdenet Mining Corp. (Mongolia-Russia joint venture, 51%, and Strand Holdings Ltd., 49%)	Erdmin solvent extraction-electrowinning copper plant	3
Fluorspar		Mongolrostsvetmet LLC	Bor-Undur Mine and processing plant, Hentiy Aimag, near Ulaanbaatar; 2 underground and 3 open pit mines	300
Do.		do.	Urgen Mine, Dornogovi Aimag, 535 km from Ulaanbaatar	150
Gold	metric tons	Mongolrostsvetmet LLC (Mongolia-Russia joint venture)	Zaamar placer gold operation, Tov Aimag	2
Do.		Zinjin Mining Group Co. Ltd., 70%	Nari Tolgoi mine, Tov Aimag	NA
Do.		North Asia Resources Holdings Ltd.	Khar Yamaat placer mine, near Ulaanbaatar	NA
Do.		Mongolian Resource Corp. Ltd., 90%	Blue Eyes processing plant, Tov Aimag	NA
Do.		Turquoise Hill Resources Ltd., 66%, and Government, 34%	Oyu Tolgoi Mine, South Gobi Region	NA
Iron ore, Fe in concentrates		Lung Ming Mining Co. Ltd., 66.7%, and China Investment Corp., 33.3%	Eruu Gol Mine	NA
Lead		Shandong Xianglong Co. Ltd.	Tsav Mine, Dornod Aimag	NA
Limestone		MAK Mongolyn Alt Group, 100%	Near the Olon Ovoot station of the Trans-Mongolian Railway	NA
Molybdenum	metric tons	Erdenet Mining Corp. (Mongolia-Russia joint venture)	Erdenet Ovoo open pit mine and processing plant, Bulgan Aimag, 180 km east of Darkhan City	3,000
Do.		Turquoise Hill Resources Ltd., 66%, and Government, 34%	South Gobi region, 80 km north of the China border	NA
Silver		do.	do.	NA
Steel		Darkhan Metallurgy Plant (State owned joint stock company)	Metallurgy plant, Darkhan Aimag	100
Tungsten	metric tons	Samsung Corp., 51%, and Erdenet Mining Corp. (Mongolia-Russia joint venture), 49%	Erdenet Ovoo open pit mine and processing plant, Bulgan Aimag, 180 km west of Darkhan City	140
Zinc		Tsairt Minerals Co. Ltd. (China-Mongolia joint venture)	Sukhe Bator, Suhbaatar Aimag	70
Do.		China Nonferrous Metals Group, 51%, and Government, 49%	Tumurtiin Ovoo Mine, Sukhe Bator, 180 kilometers southwest of Choibalsan	NA

<sup>e</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.