



# 2009 Minerals Yearbook

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## AFGHANISTAN

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# THE MINERAL INDUSTRY OF AFGHANISTAN

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Afghanistan's economy grew slowly in 2009; the rate of growth in the gross domestic product was estimated to be about the same (3.4%) as in 2008. Agriculture remained the main economic activity. Afghanistan has deposits of barite, copper, gold, iron ore, and natural gas, as well as resources of such gemstones as emerald and ruby. The country also has resources of such industrial minerals as asbestos, celestite, clays, dolomite, fluorite, graphite, gypsum, halite, limestone, magnesite, marble, rare earths, sandstone, sulfur, and talc. The Government considered development of the country's mineral resources to be a priority for economic growth in Afghanistan, including development of its industrial mineral resources, such as gravel, sand, and limestone for cement, for use by the domestic construction industry. Investment in infrastructure and transportation projects for mining was a critical aspect of developing the mineral industry. Such factors as instability in certain areas of the country and the remote and rugged terrains were significant hindrances to the development of the country's mineral resources, however.

Transport infrastructure would enable Afghanistan to import goods from India and Pakistan more easily. Two railway lines were being planned: one from the northern border of Afghanistan to Torkham near Pakistan, and the other from Iran to northeastern Afghanistan. These planned railway lines would make the extraction and export of iron ore economically feasible (UN News, 2009). Construction of an additional 75-kilometer (km) single-track railway line to Mazar-i-Sharif from Hayratan near Uzbekistan was slated to proceed with a grant of \$165 million from the Asian Development Bank in September 2009. The Government would provide the remaining \$5 million of the \$170 million project, which was to be undertaken by Uzbek Railways and would include the design, procurement, construction, operation, and maintenance of the railway line. Completion of this line was scheduled for June 2011. Hayratan was the gateway for almost one-half of Afghanistan's imports through Termez, Uzbekistan (Railway Gazette, 2009). The Amu Darya River in landlocked Afghanistan forms part of the border with Turkmenistan, Uzbekistan, and Tajikistan. In 2007, the United States funded reconstruction of the Shirkan Bandar Bridge across the river, which opened a vital trade route between Afghanistan and Tajikistan.

## Production

Owing to the lack of mineral production data published by the Government, information about Afghanistan's mining activities was not readily available, but they appeared to be limited in scope. In 2009, the country's production of barite was estimated to be about 1,500 metric tons (t); cement, 50,000 t; chromite, 7,000 t; coal, 150,000 t; crude oil, 20,000 barrels; gypsum, 2,000 t; natural gas, 50 million cubic meters; and salt, 12,000 t. In the process of reconstruction and infrastructure development, output of construction minerals was estimated to have increased to meet the domestic requirements.

## Structure of the Mineral Industry

Privatization of Afghanistan's state-owned companies, which controlled many of the country's mineral resources, was not complete. Investment in the mining sector by private domestic companies and foreign investors was encouraged by the Government, which offered as the first tender the Aynak copper project. The Government also put forward iron ore and oil and gas tenders in 2009. The Ministry of Mines is involved in the research, exploration, development, exploitation, and processing of minerals and hydrocarbons. The Ministry also is responsible for protecting the ownership of, and regulating the transportation and marketing of mineral resources in accordance with the country's new laws. Regulations to clarify the country's environmental laws were scheduled for adoption in 2009. Mineral production facilities are listed in table 1.

## Commodity Review

### Metals

**Copper.**—Jiangxi Copper Co. Ltd. (JCL) and China Metallurgical Group Corp. (MCC) won a contract in 2008 worth \$2.5 billion to develop the Aynak copper deposit, which is located 30 km south-southeast of Kabul in Logar Province. The companies formed Aynak Minerals Co. Ltd. (in which MCC held a 75% interest and JCL held a 25% interest), to explore and exploit copper in the central and western mineralized zones of the deposit. Measured reserves were estimated to be 9 million metric tons (Mt) at an average grade of 1.84% copper. The total investment would be \$4.39 billion, which would comprise equity funding and loan financing of 30% and 70%, respectively. The companies were expected to pay \$200 million per year for 30 years as a royalty to the Government. Construction began in July 2009, and the mine would have a designed capacity of 320,000 metric tons per year (t/yr) of copper in concentrate. The project was scheduled to start production by the end of 2011. The first phase of output would reach 180,000 t/yr of copper in concentrate by the end of initial development. Copper concentrate would be provided to MCC's subsidiary Huludao Zinc Co. in China for processing; copper production was projected to be between 300,000 and 400,000 t/yr in 4 to 5 years. Huludao Zinc's copper smelter was expanding to 150,000 t/yr from 100,000 t/yr by late 2010 to accommodate the increased production of copper concentrate. Further expansion of the smelter's capacity was planned to reach 400,000 t/yr. Construction of a 17-km road to the Aynak project was inaugurated in 2009. Development of a rail link from Aynak to Kabul and a 400-megawatt (MW) coal-fired powerplant also were under consideration (Mining Technology, 2009).

**Iron Ore.**—The Government was offering mineral rights to the Hajigak iron ore deposit and the surrounding area through a tender process. Expressions of interest were required to be

submitted by the end of April 2009. The tender had drawn interest from such international mining companies as BHP Billiton Ltd. of Australia, Rio Tinto plc of the United Kingdom, and Vale S.A. of Brazil. The deposit is located 130 km west of Kabul in Bamyān Province. The iron-bearing formations were in a sequence of sedimentary and volcanic rocks of Proterozoic age. The primary ore contained magnetite and pyrite with minor amounts of chalcopyrite, and the oxidized ore consisted of hematite. The measured and indicated reserves were 111 Mt of iron ore. The ore had a high iron content of 62%, and the deposit was suitable for open pit mining. There were 16 ore bodies extending for 5 km and to depths of more than 500 meters. An iron ore mine, processing facilities, and transport infrastructure for iron ore and iron ore pellets were envisioned (Thomson Reuters, 2009).

### Industrial Minerals

**Gemstones.**—Afghanistan’s gemstones that were present in pegmatite deposits included aquamarine, garnet, kunzite, ruby, and tourmaline. Those in non-pegmatite deposits were emerald, lapis lazuli, sapphire, and spinel. The world’s leading producer of lapis lazuli was the Sary-Sang Mine in Badakhshan Province in the north of the country. Estimated production was 9,000 kilograms per year, and estimated reserves were 1,300 t (International Mining, 2009).

### Mineral Fuels

**Natural Gas and Petroleum.**—In April 2009, Afghanistan launched a licensing round to award exploration and production-sharing contracts for oil and gas for three blocks in the northwest of the country. The exploration and

production-sharing contracts would be evaluated according to royalties, additional work commitment, and technical competence. The three blocks were the 1,999-square-kilometer (km<sup>2</sup>) Jangalikalān Block, which has natural gas reserves of 11 billion cubic meters; the 1,861-km<sup>2</sup> Juma-Bashikurd Block, which has natural gas reserves of 33 billion cubic meters; and the 1,723-km<sup>2</sup> Kashkari Block, which includes the Angoat, the Aqdarya, and the Kashkari oilfields and contained recoverable reserves of 64.4 million barrels of oil equivalent. The blocks held hydrocarbon accumulations in Cretaceous and Jurassic formations that had been discovered in the 1970s. Eleven oil and gas companies expressed interest in the bidding process. The U.S. Geological Survey estimated that between 600 and 700 billion cubic meters of natural gas and 25 Mt of oil were found in four basins in northern Afghanistan (Oil & Gas Journal, 2009).

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TABLE 1  
AFGHANISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
<b>Aluminum:</b>			
Extrusion and powder coating	Qader Najib Ltd.	Kabul	NA
Manufacture	Salam Bilal Ltd.	Kandahar	360
Copper, in concentrate	Aynak Minerals Co. Ltd. (Jiangxi Copper Co. Ltd., 75%, and China Metallurgical Group Corp., 25%)	Aynak, Logar <sup>1</sup>	180,000
Lapis lazuli	Government owned	Sary-Sang, Badakhshan	9,000 kilograms
Steel, manufacture	Khalil Najeeb Steel Mills Ltd.	Jalalabad, Kabul, and Mazar-i-Sharif	36,000

<sup>c</sup>Estimated; estimated data are rounded to no more than three significant digits. NA Not available.

<sup>1</sup>The Aynak Mine is expected to start production in 2011.