



# 2013 Minerals Yearbook

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## AFGHANISTAN

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# THE MINERAL INDUSTRY OF AFGHANISTAN

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Afghanistan has the potential to develop its mineral extraction sector far beyond the sector's current limited scope of activity. Development of the mineral sector could provide an engine for self-sustaining economic growth for the country in the near future. Several French, German, and Soviet geologists assisted by Afghan counterparts conducted mapping and exploration activities, including limited drilling, from the 1960s through the 1990s. Detailed reports in French, German, and Russian, some of which have been translated into English and Dari, are available in the archives of the Afghan Geological Survey (AGS). The U.S. Geological Survey (USGS), in collaboration with the AGS, the U.S. Agency for International Development (from 2005 to 2010), and the U.S. Department of Defense Task Force for Business Stability and Operations (TFBSO) (from 2010 to 2014) compiled and analyzed French, German, and Soviet drilling and sampling data, geophysics data, and mapping data using current technologies. The analyses showed that the country most likely is endowed with rich unexploited mineral resources (U.S. Geological Survey, 2012, 2014).

Afghanistan has a wide range of mineral resources, including base and precious metals; construction minerals; nonmetallic minerals; oil and gas; precious and semiprecious stones; and rare-earth elements. Owing to security issues and a lack of infrastructure—including power, mining, and mineral-processing facilities, and roads—most of these resources remained undeveloped in 2013. Such mineral resources as chromite, coal, gypsum, lime, marble, natural gas, salt, and talc continued to be exploited through artisanal and small- to medium-scale mining. According to the Ministry of Mines and Petroleum (MOMP), some of those resources were being mined illegally and smuggled out of the country, which was affecting the country's economic growth; also, the unprofessional use of explosives by untrained miners was impacting the environment as well as the quality of the mineral commodities produced (Global Witness Ltd., 2014; Afghanistan.ru, 2013; Popal, 2014, p. 4, 6).

## Minerals in the National Economy

The real gross domestic product (GDP) increased by 4% in 2013 compared with an increase of 14.4% in 2012; the nominal GDP was \$20.72 billion in 2013. According to the Central Statistics Organization, mining revenue decreased by 11.6% to AFN1.37 million (US\$24,269)<sup>1</sup> in 2013 compared with AFN1.55 million (US\$27,457) in 2012. The output value of the industrial sector accounted for 20.5% of the GDP in 2013. The value of the construction sector increased by 70.8% in 2013 from that in 2012; much of this increase was the result of construction in Kabul City (Central Statistics Organization, 2013c, p. 168, 183; World Bank, The, 2014a; 2014b, p. 24).

<sup>1</sup>Where necessary, values have been converted from Afghan Afghani (AFN) to U.S. dollars (US\$) at an average rate of AFN56,250=US\$1.00 for 2013 and AFN52,040=US\$1.00 for 2012.

Funds received from international donors for development in Afghanistan were estimated to total \$3.9 billion in 2013 compared with \$5.1 billion in 2012. The donor countries were the United States (which contributed \$1.84 billion in 2013), Australia (\$190 million), Norway (\$130 million), Canada (\$94 million), Sweden (\$87 million), Denmark (\$65 million), Italy (\$42 million), Poland (\$7 million), and other countries (\$536 million); other donors included the World Bank (\$597 million), and the Asia Development Bank (\$280 million) (Central Statistics Organization, 2013d).

## Mineral Trade

Afghanistan imported 214,353 metric tons (t) of fertilizer in 2013, of which 95,426 t was imported from Pakistan; 59,157 t, from Iran; 43,376 t, from Uzbekistan; 14,284 t, from Kazakhstan; 1,218 t, from the United Arab Emirates (UAE); and 892 t, from Turkey. The country also imported 7.21 million metric tons (Mt) of cement, of which 3.7 Mt was imported from Pakistan; 3.4 Mt, from Iran; 16,309 t, from Turkey; 11,950 t, from China; 11,320 t, from the UAE; 2,156 t, from Uzbekistan; and 1,200 t, from others (Central Statistics Organization, 2013b).

Afghanistan exported 231,487 t of coal in 2013 (of which 231,477 t was exported to Pakistan and 10 t was exported to Iran) and 30,141 t of cement (of which 23,844 t was exported to Tajikistan and 6,297 t was exported to Pakistan). The country also exported 11,131 t of marble, of which 5,176 t was exported to Iran; 3,326 t, to Pakistan; 806 t, to China; 535 t, to the UAE; 430 t, to India; 374 t, to Turkmenistan; 278 t, to Turkey; 137 t, to Italy; and 69 t, to others (Central Statistics Organization, 2013a).

Afghanistan's imports from the United States in 2013 included iron and steel products valued at \$5.06 million; petroleum products valued at \$466,000; alumina and aluminum, \$175,000; chemical fertilizers, \$82,000; copper, \$27,000; nonferrous metals, \$19,000; and nonmetallic minerals, \$13,000. Exports to the United States from Afghanistan in 2013 included gemstones valued at \$316,000; stone, sand, and cement (combined) valued at \$29,000; other precious metals, \$6,000; chemicals and gem diamond, \$5,000 each; and iron and steel, advanced, \$4,000 (U.S. Census Bureau, 2014a, b).

## Government Policies and Programs

The MOMP is the main entity responsible for the administration, oversight, and regulation of the mineral sector, including mineral exploration and exploitation. The Ministry of Finance is the agency responsible for taxation and revenue collection. The Mining Revenue Management Policy ensures that the revenue generated from mining is allocated to designated sectors. The Mineral Cadaster Department accepts and processes applications for mineral rights, coordinates their

technical and environmental evaluation, processes renewals, and collects application and surface right fees. The Afghan National Environmental Protection Agency (NEPA) certifies mine operations according to the Environmental Law (Humayoon, 2013, p. 10; Popal, 2014, p. 5, 6).

The Mining Law of Afghanistan is composed of the Minerals Law (2005) and the Mining Regulations (2009). In 2011, amendments to the Minerals Law of 2005 were drafted by the MOMP, but the amendments were placed on hold by the Ministry of Justice and the Wolesi Jirga and have been being debated in Parliament for almost 2 years. The current Minerals Law states that all naturally occurring minerals are the property of the state, but it gives companies the right to bid for both exploration and exploitation licenses and to conduct mineral exploration and exploitation. The right to extract mineral commodities from sand and gravel and construction material quarries are obtained on a first come, first served basis. The Minerals Law states that the MOMP should comply with Extractive Industries Transparency Initiative (EITI) standards. The EITI is a global coalition of the Government, public and private companies, and civil society working together to improve transparency and the responsible management of revenues from natural resources, such as oil, gas, and nonfuel minerals. In February 2010, Afghanistan was recognized as an EITI-compliant country after it met all the requirements in the EITI standard (Lower House of the Parliament) (Popal, 2014, p. 5, 6; Zaheer, 2014).

The Inter-Ministerial Committee's responsibilities include ensuring the broad oversight of mining activities and informing various Government institutions on the status of resource development, assessments, authorizations, exemptions, and royalty rates of "medium to large" mining contracts (Humayoon, 2013, p. 2; Popal, 2014, p. 5, 6).

Fixed royalty rates are not included in the Mineral Law but are to be included in new mineral regulations. In 2013, almost all royalty rates on contracts issued by the MOMP were agreed to by the bidders. West Land General Trading L.L.C. (WLGT) of the UAE, for example, agreed to pay a 26% royalty rate, and Afghan Krystal Natural Resources Co. of Afghanistan agreed to pay a 20% royalty rate. The marble royalty rate is set at between 10% and 30%, and a royalty of 15% is charged on the value of lapis lazuli (Humayoon, 2013, p. 9, 18, 23).

## Production

Afghanistan's mineral production data are not readily available because the numerous artisanal and small- to medium-scale mining operations throughout Afghanistan are not well documented. The staff of the MOMP had limited access to the mines to verify reported data owing to the security situation. As a consequence, the Central Statistics Organization provided only partial output data for 2013 (Humayoon, 2013, p. 3; Kuo, C.S., 2013).

According to the Central Statistics Organization, Afghanistan's production of nitrogen increased by 52%; marble, by 50%; coal, by an estimated 20%; and cement, by an estimated 5% (Brown and others, 2012, p. 27, 30, 53, 93; Central Statistics Organization, 2013c, p. 175, 176, 178, 183).

## Structure of the Mineral Industry

On October 8, 2013, as part of the Afghan-Tajik Basin Phase I Tender, the MOMP awarded a hydrocarbon exploration and production-sharing contract (EPSC) for the Sanduqli Block (along with a supplemental exploration area) and the Mazar-i-Sharif Block in Balkh Province to Dragon Oil Ltd. (DGO) (a subsidiary of Dragon Oil plc of the UAE), 40%; TP Afghanistan Ltd. [a subsidiary of Türkiye Petrolleri A.O. (TPAO) of Turkey], 40%; and Ghazanfar Investment Ltd. (a subsidiary of the Ghazanfar Group of Afghanistan), 20%. The first 12.6% of the hydrocarbons produced from the contract area were to be allocated to the MOMP as a royalty, and the MOMP's overall profit share for these blocks would range from 50% to 60%; on the other hand, the MOMP had neither a participating interest nor any back-in rights. According to the terms of the EPSC, the contractor's assets may not be expropriated directly or indirectly, and the contractor's cost recovery is not limited to only a certain percentage of the available hydrocarbons. Corporate entities in Afghanistan are generally liable for a flat-rate corporate income tax of 20% that is applied to income and a business receipt tax that is applied to the gross revenue. Although foreign investors may take up to 100% control of projects, they are encouraged to partner with local qualified nationals (Hourelid, 2013; Ministry of Mines and Petroleum, 2013a). Table 2 is a list of major mineral facilities.

## Commodity Review

### Metals

**Chromium.**—On May 18, 2010, a mining contract was signed between the MOMP and Hewad Brothers Mining Co. (HBMC) for a chromite deposit in the Gadakhil area of the Kohisafi District in Parwan Province. As a part of the terms of the contract, the company was expected to construct a road from the chromite deposit to the main road and to establish a plant for chromite processing within Afghanistan. Also, the HBMC agreed to pay a 26% royalty to the Government (Ministry of Mines and Petroleum, [undated]).

**Copper.**—In 2007, the Aynak copper project, which was one of the large-scale projects in Afghanistan, was awarded to Jiangxi Copper Co. Ltd. (JCL) of China. JCL was the minor shareholder in the MCC–JCL Consortium, which was a joint venture between China Metallurgical Group Corp. (MCC) and JCL. The consortium established MCC–JCL Aynak Minerals Co. Ltd. (MCC–JCL) to oversee contractual commitments related to the Aynak copper project. Copper production at the project was delayed as a result of insurgent attacks, the need to excavate Soviet land mines, and the presence of an archaeological site in the area of Mes Aynak. The Mes Aynak site contains a Buddhist monastery complex that includes temples and hundreds of sculptures, as well as a possible Bronze Age site beneath the Buddhist ruins. During a 3-year period (2010 to 2012), there was a rush to rescue and salvage the most important artifacts. In January 2013, the MOMP extended the conservation work indefinitely, stating that archaeological efforts could be conducted side by side with development of the copper mine.

In addition, there were problems with forcing villagers to move, underpayment of workers, and the potential for contamination of the groundwater owing to improper disposal of chemical waste (Global Witness Ltd., 2012, p. 5; Kuo, Kendrick, 2013).

Another reason for delaying copper production was the lack of phosphate rock for the smelting operations. On April 8, 2008, an agreement signed between the Government of Afghanistan and MCC–JCL stated that, in order for MCC–JCL to proceed with funding, construction, and operation of a smelter for the Aynak project, the Government would need to provide access to limestone, phosphate, and quartz (silica) deposits. Phosphate is used to neutralize acid created during the smelting operation, and it forms a fertilizer byproduct. According to the 2008 agreement, the fertilizer produced by the Aynak copper project would be sold to the Government by MCC–JCL at cost only. If access to a phosphate source is not provided, however, then the Chinese investors wanted to renegotiate the terms of the contract. As of the end of 2013, a start date for mine production had not been determined (Ericsson and Larsson, 2013, p. 12; Ministry of Mines and Petroleum, 2013b, p. 15).

In December 2011, the MOMP started a tender process for four large copper-gold prospects. The first was the Zarkashan copper-gold prospect in Ghazni Province, which had two licensed exploration areas covering a total of 25,280 square kilometers (km<sup>2</sup>) (combined) with historical estimated inferred or possible gold resources with a grade of 7.1 grams per metric ton (g/t) gold [containing of 525 kilograms (kg) of gold] and “reconnaissance” resources with a grade of 6.9 g/t gold (containing of 2,192 kg of gold). The second was the Badakhshan gold prospect in Badakhshan Province, which is a quartz-vein deposit with four licensed exploration areas of 250 km<sup>2</sup> each. Of these four areas, the Veka Dur gold prospect has historical indicated or probable and inferred gold resources grading 4.1 g/t gold and containing of 960 kg of gold. The third copper-gold prospect was the Shaيدا porphyry copper prospect in Herat Province, which had an exploration area of 250 km<sup>2</sup> and historical estimated inferred and possible copper resources of 4.8 Mt at a grade of 1.0% copper. The fourth was the Balkhab copper prospect, which is a volcanogenic massive sulfide deposit with an exploration area of 210 km<sup>2</sup> in Sar-e Pul Province and 247 km<sup>2</sup> in Balkh Province and historical copper reserves estimated to be about 100 Mt. The Balkhab deposit includes areas of extensive azurite, bornite, disseminated chalcopyrite, galena, malachite, and pyrite mineralization with copper grades of 0.25 to 1.34 weight percent (Peters and others, 2011, p. 168; Rigby, 2011, p. 13, 16, 18; Ministry of Mines, 2013).

In December 2012, the joint venture of Sterling Mining Co. of Afghanistan and Belhasa International Corp. L.L.C. of the UAE was selected as the winning bidder for the Zarkashan copper-gold prospect. The Sterling/Belhasa joint venture proposed to award a subcontract to the related South African firms of DRA Mining (Pty) Ltd., DRA Mineral Projects (Pty) Ltd., and Minopex (Pty) Ltd. for technical work on the project, including exploration of the licensed area, development of the deposit, and mine management. The Turkish-Afghan Mining Co., which was a joint venture of Afghan Gold and Minerals (49%) and Eti Gümüş S.A. of Turkey (51%), was the winning

bidder for the Badakhshan gold prospect. The Afghan Mineral Group was the winning bidder for the Shaيدا porphyry copper prospect, and Afghan Gold and Minerals Co. of Afghanistan, which was owned by Afghan Krystal Natural Resources (51%) and Afghan Gold Holdings [Guernsey (United Kingdom)] (49%) was the winning bidder for exploration rights to the Balkhab copper prospect (Peters and others, 2011; Ministry of Mines and Petroleum, 2012a, b).

**Gold.**—WLGT had exploration and extraction licenses for the Nooraba and the Samti gold placer deposits in Takhar Province in 2008. The 10-year exploration license reportedly was canceled in 2013 after a decision by the Council of Ministers resulted in the inclusion of an amendment to the contract. According to a former director of WLGT, 10 to 13 kilograms per day (kg/d) of gold was extracted from the Nooraba Mine, although some sources showed lower levels of production (Ministry of Mines, 2008, p. 4, 5; Pajhwok Afghan News, 2014a; Zarlatoon, 2014, p. 15, 26).

Afghan Krystal Natural Resources was awarded a 2-year exploration license with the right to obtain a 10-year mining license for the Qara Zaghan gold project in 2010. Afghan Krystal Natural Resources was backed by foreign investors from the United States, Indonesia, Turkey, and the United Kingdom through a deal facilitated by JPMorgan Chase & Co. The company signed a contract in January 2011 to develop the Qara Zaghan gold mine, which is located near the village of Qara Zaghan in Baghlan Province, and planned to invest \$50 million in developing the mine. Central Asian Mining Services conducted a ground magnetic survey, performed soil sampling, and drilled 2,000 meters of core samples for analysis by Afghan Gold and Minerals Co. The results of the analyses were not publicly available (Ministry of Mines and Petroleum, 2011, p. 5; Alikuzai, 2013, p. 16; Central Asian Mining Services, 2014; Ere, 2014).

**Iron and Steel.**—Afghan Folad Steel Mill Co. Ltd., which was located in Herat Province, was one of the leading manufacturers of rolled steel in Afghanistan and the leading producer of round bar. Afghan Folad and its partner M.A. International (Indian Still Mill) of India employed between 100 and 200 people in Afghan Folad’s steel re-rolling mills. The production capacity of the mills was 29,000 metric tons per year (t/yr). Most of the workers were from Iran and Pakistan. Afghan Folad closed the factory in 2013 in protest against delays in the issuance of visas to foreign workers. According to the owner of the factory, the factory would remain closed until its foreign workers are issued visas (Ere, 2013; Stanizai, 2013; Wadsam, 2013c).

Haji-Gak, which is Afghanistan’s largest iron ore deposit, is located in Bamyan Province and extends into Parwan and Wardak Provinces. In 2011, Kilo Goldmines Ltd. of Canada (25%) and an Indian consortium led by Steel Authority of India Ltd. (SAIL) (75%) were awarded a mining contract for the Haji-Gak deposit. The historic resources (measured, indicated, inferred, and reconnaissance) for the entire deposit were estimated by Soviet and Afghan geologists to be 1.7 billion metric tons at an average grade of 61.3% iron, and the reserves in the near-surface oxide ore were estimated to be 85 Mt in the most thoroughly explored area. The Government was in the

final stage of negotiations with the Indian consortium to develop three blocks of the Haji-Gak iron ore deposit. The consortium had originally proposed to invest \$10.8 billion to develop the three blocks, which would include the development of three iron ore mines and the construction of a 6-million-metric-ton-per-year (Mt/yr)-capacity steel plant. Because of uncertainties regarding Afghanistan's mining laws, the consortium decreased the proposed capacity of the steel plant to 1.2 Mt/yr and reduced its proposed total investment to \$2 billion (Renaud and others, 2011, p. 451, 460; Sutphin and others, 2011, p. 570, 579; Das, A.K., 2014; Das, K.N., 2014).

### **Industrial Minerals**

**Cement.**—Afghanistan cement production was not competitive with imported cement production owing to the use of older and less efficient production technologies and the quality of the cement produced. All cement plants in Afghanistan were in need of modernization and equipment and facility upgrades, including upgraded power lines, as well as expanded employee training. Prerovske Strojirny of Czechoslovakia and PSP Engineering A.S. had been contracted to provide upgraded equipment and to do the necessary construction work. Because of security issues, however, the plants were abandoned, and equipment was left exposed, where it either rusted or was scavenged for use elsewhere in the country (Mossotti, 2011, p. 1243, 1250, 1251).

Sometime after March 2013, the MOMP planned to privatize the Jabal-e Saraj cement factory in Parwan Province, the Ghorl I and II cement plants within the Ghorl cement complex in Baghlan Province, and the Herat cement plant in Herat Province. Jabal-e Saraj, which was a one-kiln operation, had the potential to produce up to 100 metric tons per day (t/d) (or 36,000 t/yr) of clinker; however, it had not produced cement for some years. The Ghorl I cement plant had been in operation since the 1950s. It was a two-kiln operation with a design capacity of 1,400 t/d of cement and 1,200 t/d of clinker (or 500,000 t/yr and 440,000 t/yr, respectively). The Ghorl II plant was a two-kiln facility with a design capacity of 1,000 t/d (360,000 t/yr of clinker). The production capacities of the Ghorl I and Ghorl II plants were limited by the availability of powdered coal to produce thermal energy. The MOMP estimated that the combined capacity of the two plants was about 10% to 50% of the design capacity owing to the lack of powdered coal needed to fuel the plants. Afghan Investment Co. had proposed building a 4,000-t/d-capacity Ghorl III cement plant (which would be a greenfield plant) next to the Ghorl I and Ghorl II plants. At the time of a visit by the USGS and the TFBSO in 2010, the Ghorl III cement plant was still under consideration. In 2012, Peshgaman Sanat-i-Majad of Iran agreed to build a 1-Mt/yr-capacity plant in Herat Province. The contract reportedly was canceled, however, and a tender was issued in March to renovate the old, partially built Herat cement plant. Proposals were expected to be received by May 2014 (Mossotti, 2011, p. 1253, 1261, 1262, 1263; 2014, p. 41; Global Cement, 2013; CemNet.com, 2014a, b).

**Marble.**—Marble is the fastest developing industry in Afghanistan. The Association of Marble and Granite Producers of Afghanistan (AMGPA) reported 130 marble quarries, but

most of them were inactive owing to high royalty rates. Equity Capital Group (Equity Capital Mining Co.) was established in 2006 with a production capacity of 150,000 t/yr. Equity Capital Mining Co., which was the leading marble producer in Afghanistan, owned the Chest-i-Sharif mining quarry located 150 kilometers (km) east of Herat City. Most of the produced marble was exported to Pakistan, where it was cut into blocks and slabs, polished, and exported back to Afghanistan (AMS International Consulting, 2011; Mossotti, 2014, p. 85).

**Nitrogen.**—The 105,000-t/yr-capacity Kud Bergh fertilizer plant, which is located near Mazar-i-Sharif, produced at only about one-third of its design capacity because of the lack of spare parts, the shortage of natural gas, and poor infrastructure. In 2012, the Government of India and the Government of Afghanistan signed a memorandum of understanding (MOU) for investment in the fertilizer sector (Emerging Strategy, 2009, p. 3; Ministry of Mines, 2012).

**Talc.**—In June 2013, Amin Karimzai Ltd. of Afghanistan and HZM Marmi e Pietre Private (Pvt) Ltd. of Pakistan signed a joint-venture agreement for the production and distribution of talc in Afghanistan and Pakistan. Amin Karimzai's Ghunday talc mine production capacity was 400,000 t/yr of talc in the Kodi Khel area of Nangarhar Province, and HZM Marmi e Pietre's production capacity was 240,000 t/yr of talc in Afghanistan and Pakistan. The merger of these two companies would increase the production capacity to 640,000 t/yr of talc (Hughes, 2013).

### **Mineral Fuels**

**Coal.**—Most of the major coalfields are located in the north-central part of Afghanistan. The fields are divided into coal-bearing districts, including the Pulikhumri coal district in Baghlan Province, the Dara-i-Suf coal district in Samangan Province, the Sayghan-Eshpushta coal district to the southeast of the Dara-i-Suf district in southern Baghlan Province and eastern Bamyan Province, and other districts. Dara-i-Suf hosts 14 coal deposits and occurrences—Abkhorak, Darwaza, Lela, Qaramqol, Sare Asya, Shabbashak, Western Gramak, and other deposits; the Sayghan-Eshpushta district includes the Estoma, the Nalak, the Tala Barfak, and other deposits; and the Pulikhumri consists of the Dudkash, the Karkar, the Roeë Duab, the Western Dudkash, and other deposits. Access to all the coalfields was by road or trail only. North Coal Enterprise (NCE), which was a Government-run company, produced coal (Abdullah and Chmyriov, 2008, p. 64–69).

The Government planned to privatize Government-owned coal mines. In 2009, Mesqa Shraq Ltd. was awarded the contract for the Abkhorak coal mine in the north of Samangan Province. The company extracted 600,000 t/yr of coal. Owing to the Abkhorak mine collapse, the local villagers shut down the mine, blaming Government engineers for poor mine construction and a lack of safety precautions. According to NCE, the revenue from the Dara-i-Suf, the Roeë Duab, and Tala Barfak coal mines in Pulikhumri increased to AFN1.8 billion (US\$34 million) in 2013 from AFN1.5 billion (US\$28 million) in 2012. The Ahandara, the Dudkash, the Karkar, and the Khurdara coal mines were privatized by Afghan Coal LLC (ACC) in 2007. ACC decided in 2013 to rebuild and modernize the tunnel in the

Ahandara, the Dudkash, and the Karkar coal mines. The date for the reconstruction and modernization of the mines was not determined (Afghan Cement LLC, 2013; Wadsam, 2013a, 2014; Pajhwok, 2014b).

**Natural Gas and Petroleum.**—China National Petroleum Corp. planned to start commercial production of crude oil with an initial 5,000 barrels per day (bbl/d) in April. The output from the wells in the Amu-Darya Basin in northern Afghanistan (Faryab and Sar-e Pul Provinces) was expected to increase to 40,000 bbl/d in 2014 from 25,000 bbl/d in 2013. All crude oil would be exported initially through one of Afghanistan's northern neighboring countries. The cost of the project was estimated to be \$600 million (Hall, 2013).

In 2013, a 3,500-bbl/d oil refinery that was owned by a joint venture led by Kam International Oil of Afghanistan opened in Hairatan, which is located near the border with Uzbekistan. By yearend, the Kam refinery started an expansion project to increase the refinery's capacity to 540,000 bbl/d. The expansion was expected to be completed in 2 to 3 years. Also in Hairatan, Afghanistan's second crude oil refinery, which had a capacity of 6,000 bbl/d, began operations. The plants were owned by the Ghazanfar Group (Afghanistan Chamber of Commerce and Industries, 2013; Wadsam, 2013b; Ghazanfar Group, 2014).

In 2013, an MOU was signed between the MOMP and the U.S. Government regarding Afghanistan's natural gas industry. According to the MOU, by June 2014, the U.S. Government would do the following: (a) restore the existing 89-km Sheberghan-Mazar gas pipeline, which would help to increase the capacity of the Northern Fertilizer powerplant in Mazar-e-Sharif; (b) build a new, 94-km pipeline between Sheberghan and Mazar; and (c) build a gas refinery plant in Yateemtaq. An agreement regarding the Turkmenistan, Afghanistan, Pakistan, and India (TAPI) 1,680-km gas pipeline was signed by Turkmenistan, Afghanistan, Pakistan, and India. The pipeline was to become operational by 2018, and was to have the capacity to carry 90 million cubic meters per day of gas. Turkmenistan planned to sell 38 million cubic meters per day of gas to India and the same amount to Pakistan through the pipeline, and Afghanistan would receive the remaining 14 million cubic meters per day (Hindu, The, 2012).

## Outlook

The Government has intensified its effort to develop mineral resources by implementing changes in the Mineral Law in order to improve and strengthen Government transparency and accountability, and provide responsible security around mine sites. The Government is also actively working to attract foreign investment into the country's mineral industry. Foreign investment in infrastructure and transportation for mining is expected to be a key factor in the development of the mineral industry. Contracts for hydrocarbons have been awarded, and operations are expected to start production in 2014. Bidders were selected for several gold and copper prospects. The country is expected to offer more tenders of bids for energy resource development in the near future (United Nations Environment Programme, 2013, p. 40).

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TABLE 1  
AFGHANISTAN: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity <sup>3</sup>	2009	2010	2011	2012	2013
Cement, hydraulic	32,000 <sup>4</sup>	36,000 <sup>4</sup>	38,000	37,000	40,000
Chromium, chromite ore	7,000 <sup>r</sup>	6,000 <sup>r,4</sup>	6,000 <sup>r,4</sup>	6,000	6,000
Coal, bituminous	500,000 <sup>r,4</sup>	725,000 <sup>r,4</sup>	750,000	780,000	935,000
Fertilizer	--	--	272,000	250,000	242,000 <sup>4</sup>
Gas, natural:					
Gross <sup>4</sup> million cubic meters	142	142	142	161	160
Marketed do.	140	140	142	145	141 <sup>4</sup>
Gypsum	46,000 <sup>r,4</sup>	63,000 <sup>r,4</sup>	62,000	57,000 <sup>r</sup>	57,000
Lime	128,000 <sup>4</sup>	128,000	128,000	130,000	130,000
Marble	27,000 <sup>r,4</sup>	29,000 <sup>r,4</sup>	29,000 <sup>r</sup>	45,000 <sup>r</sup>	67,000 <sup>4</sup>
Nitrogen, N content of ammonia	22,000 <sup>4</sup>	27,000 <sup>4</sup>	27,000 <sup>r</sup>	50,000 <sup>r</sup>	76,000 <sup>4</sup>
Petroleum, condensate 42-gallon barrels	104 <sup>4</sup>	64,000 <sup>4</sup>	70,000	80,000	68,000 <sup>4</sup>
Salt, rock <sup>4</sup>	180,000 <sup>r</sup>	186,000 <sup>r</sup>	186,000 <sup>r</sup>	147,000 <sup>r</sup>	145,000
Steel, rebar, round bar	--	--	--	--	24,600

<sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Estimated data are rounded to no more than three significant digits.

<sup>2</sup>Table includes data available as of December 1, 2014.

<sup>3</sup>Aluminum, barite, gold, lapis-lazuli, sand and gravel, steel, and talc were produced by artisanal miners, but available information was not sufficient to make reliable estimates of output.

<sup>4</sup>Reported figure.

TABLE 2  
AFGHANISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>e</sup>
Aluminum:				
Extrusion and powder coating		Qader Najib Ltd.	Kabul	NA
Manufacture		Salam Bilal Ltd.	Kandahar Province	360
Do.		Khalil Najeeb Steel Mills Ltd.	Bagrami Industrial area, Kabul	36,000
Cement		Afghan Cement L.L.C. (subsidiary of Government-owned Afghan Investment Co.)	Ghori I plant, Pulikhumri, Baghlan Province	51,000
Do.		do.	Ghori II plant, Pulikhumri, Baghlan Province	365,000
Do.		Jabal-e Saraj	Jabal-e Saraj cement plant, Parwan Province <sup>1</sup>	37,000
Do.		Herat	Herat cement plant, Herat Province <sup>1</sup>	21,000
Chromite		Hewad Brothers Mining Co.	Gadakhil Area, Kohisafi District, Parwan Province	250
Coal		Afghan Coal L.L.C. (subsidiary of Government-owned Afghan Investment Co.)	Karkar and Dudkash Mines, Baghlan Province	164,000
Do.		Khushak Brothers Co. and North Coal Enterprise	Dara-i-Suf, Roe-e Duab, and Tala Barfak Mines, Samangan and Badakhshan Provinces	1,214,000
Do.		Khushak Brothers Co.	Sabzak Mine, Herat Province	15,000
Do.		NA	Ashpostah Mine, Bamyan Province	160,000
Do.		Meesaq Sharq Ltd.	Abkhorak Mine, Samangan Province	60,000
Construction material, aggregate	cubic meters	Hewadwal Co.	Hesa-i-Awal District, Kapisa Province	70,000
Copper, in concentrate		Aynak Minerals Company Ltd. (China Metallurgical Group Corp., 75%, and Jiangxi Copper Company Ltd., 25%)	Aynak Mine, <sup>2</sup> Logar Province	180,000
Fertilizer, urea		Kud Bergh Fertilizer Ltd.	Qala Jangi near Mazar-i-Sharif	105,000
Gold	kilograms	Afghan Krystal Natural Resources	Qara Zaghan Mine, Baghlan Province	NA
Do.	do.	West Land General Trading L.L.C.	Nooraba Mine (placer), Takhar Province	5,000
Gypsum		Massoud Aryaie Trading Co.	Baghlan Province	2,000
Do.		Samar Naweed Co.	Balkh Province	2,000
Lapiz-lazuli		Ljewardeen Mining Co.	Sar-e-Sang, Badakhshan Province	NA
Marble		Equity Capital Management	Herat Province	150,000
Do.		Mohammad Aziz (son of Mohammad Omar)	do.	28,000
Do.		Takht Rustam Stone Transportation Co.	Samangan Province	3,000
Natural gas	cubic meters per day	Afghan Gas Ltd. (Government owned)	Jawzjan	70,000
Do.	do.	do.	Sheberghan	14,000
Oil and gas		Dragon Oil plc, 40%; Türkiye Petrolleri A.O., 40%; Ghazanfar Group, 20%	Sanduqli and Mazar-i-Sharif blocks	NA
Petroleum, refined	thousand 42-gallon barrels	Kam International	Hairatan oil refinery 1, Hairatan Town, Balkh Province	1,200
Do.	do.	do.	Hairatan oil refinery 2, Hairatan Town, Balkh Province	2,100
Salt		Westco International FZE	Kalfagan Mine, Kalfagan area, Takhar Province	500,000
Do.		do.	Taqchakhana Salt Mine, Namak Aab District, Takhar Province	100,000
Do.		NA	Daulatabad Salt Mine, Faryab Province	100,000
Sand and gravel		Sahar Pairaze Construction Co.	Kabul Province	25,000
Do.		Meyad Mskan Construction Co.	do.	25,000
Do.		Abdul Rahim (son of Sad Uddin)	Herat Province	75,000
Do.		Najeebullha (son of Haji Meer Mohammad)	Baghlan Province	10,000
Steel, manufactured		Afghan Folad Steel Mill Corp. Ltd.	Herat Province	29,000 <sup>3</sup>
Do.		Sino-Afghan Steel Co. (owned by Watan Group)	Kabul	NA
Talc		Amin Karimzai Ltd. and HZM Marmi e Pietre Ltd.	Khogyani and Shinwari Districts, Nangarhar Province	640,000

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

<sup>1</sup>Design capacity.

<sup>2</sup>The start date for Anyak Mine production was not yet determined.

<sup>3</sup>Closed in 2013.