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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. The country has a wide range of mineral resources, including base and precious metals, construction materials, industrial minerals, crude petroleum, natural gas, precious and semiprecious stones, and rare-earth elements. Owing to security issues and a lack of infrastructure, including electricity, mining and mineral processing facilities, and roads, most of these resources remained undeveloped in 2014. Such mineral resources as chromite, coal, gypsum, lime, marble, natural gas, salt, and talc continued to be exploited through artisanal and small-scale mining. Development of the mineral sector could provide an engine for self-sustaining economic growth for the country in the near future; however, it would require considerable investment to develop infrastructure and to improve security (Afghanistan Geological Survey, 2014; Special Inspector General for Afghanistan Reconstruction, 2014b, p. 174; U.S. Geological Survey Project in Afghanistan, 2014a).

According to the Ministry of Mines and Petroleum (MOMP), mineral resources were being mined illegally and smuggled out of the country, which was affecting the country's economic growth. Also, the use of explosives by untrained miners adversely affected the environment as well as the quality of the mineral commodities produced (Global Witness Ltd., 2012, p. 9; Afghanistan.ru, 2013; Popal, 2014, p. 4, 6; Special Inspector General for Afghanistan Reconstruction, 2014a, p. 174).

Minerals in the National Economy

The real gross domestic product (GDP) increased by 1.7% in 2014 compared with an increase of 3.4% (revised) in 2013 owing to the prolonged gridlock and the political uncertainty of shared government power and concern about security; the nominal GDP was $20.84 billion in 2014. According to the Central Statistics Organization, mining revenue decreased by 16% to $22.3 million (AFN1.30 billion)[1] in 2014 compared with $27.6 million (AFN1.55 billion) in 2013, and accounted for 1% of the GDP in 2014. The value of industrial sector output accounted for 20.9% of the GDP in 2014. The value of the construction sector increased by 47.4% in 2014 from that of 2013; much of the increase was the result of construction in the city of Kabul (Central Statistics Organization, 2014a, p. 157–158, 171; Special Inspector General for Afghanistan Reconstruction, 2014a, p. 174, World Bank, The, 2014; Asian Development Bank, 2015, p. 167).

Afghanistan relied heavily on international assistance for basic expenses. Funds received from international donors for development in Afghanistan were estimated to total $4.0 billion in 2014 compared with $2.8 billion in 2013. The donor agencies and countries were the United States, which contributed $1.3 billion, Japan ($570 million), Germany ($346 million), the European Union ($261 million), the United Kingdom ($254 million), the World Bank ($205 million), Australia ($163 million), the Asia Development Bank ($114 million), Denmark and Sweden ($122 million each), Norway ($109 million), and Canada ($93 million) (Central Statistics Organization, 2015, p. 272).

Government Policies and Programs

The MOMP is the main entity responsible for mining policy and the oversight and regulation of the mining sector, including mineral exploration and exploitation. The Ministry of Finance is the agency responsible for taxation, revenue collection, negotiation of mining contracts, and regulation of extractive industries in Afghanistan. The MOMP has several subagencies, including the Afghanistan Geological Survey (AGS), the Afghanistan Petroleum Authority, and the Inter-Ministerial Committee. The AGS is responsible for providing information on geology and promoting interest in mineral resources. The Afghanistan Petroleum Authority consists of the Afghan Gas Enterprise, which is responsible for the production, processing, and transportation of natural gas, and the General Directorate of Oil and Gas Survey, which is responsible for the exploration and development of crude oil and natural gas. The Inter-Ministerial Committee's responsibilities include ensuring the broad oversight of mining activities and advising various Government institutions on the status of resource development, assessments, authorizations, exemptions, and royalty rates of "medium to large" mining contracts. The Mining Revenue Management Policy ensures that the revenue generated from mining is allocated to designated sectors. The MOMP Cadastre Directorate 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. 2, 10; Popal, 2014, p. 5, 6; Special Inspector General for Afghanistan Reconstruction, 2015, p. 3).

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. In August 2014, the amendments were approved by the former President of Afghanistan, and were passed by the Parliament in the fourth quarter of 2014. 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 rights to extract mineral commodities from sand and gravel and construction

[1]Where necessary, values have been converted from Afghan afghani (AFN) to U.S. dollars (US$) at an average rate of AFN58.24=US$1.00 for 2014 and AFN56.25=US$1.00 for 2013.

material quarries are obtained on a first-come-first-served basis. According to the new law, if investors find economically viable deposits, there is no guarantee that they will be granted exploitation licenses for the deposits. The Minerals Law states that the MOMP should comply with the Extractive Industries Transparency Initiative (EITI) standards. The EITI is a global coalition of 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 (Humayoon, 2013, p. 7; Popal, 2014, p. 5, 6; Special Inspector General for Afghanistan Reconstruction, 2014a, p. 175; Zaheer, 2014).

Fixed royalty rates were not included in the 2011 Minerals Law but were 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 United Arab Emirates (UAE), for example, agreed to pay a 26% royalty rate, and Afghan Krystal Natural Resources Co. agreed to pay a 20% royalty rate. The royalty rate for marble was between 10% and 30%, and the royalty rate for lapis lazuli was 15% (Humayoon, 2013, p. 9, 18, 23).

In 2012, the U.S. Agency for International Development (USAID) implemented a 4-year Assistance in Building Afghanistan by Developing Enterprises (ABADE) program. The objectives of the program are to work with the private sector in Afghanistan to increase the production and rate of employment at enterprises, to increase domestic and foreign investment in businesses, and to increase sales of products. Javed Waziri PVC and Aluminum Production Ltd., which is located in Pol-e-Charkhi Industrial Park, Sarak Naw in Kabul, was one of the companies included in the ABADE program (U.S. Agency for International Development, 2012; 2014a, p. 2–3).

Production

According to the Central Statistics Organization, the MOMP Cadastre Directorate, and the Afghan Gas Enterprise, Afghanistan's production of coal decreased by an estimated 75%; rock salt, by 72%; and nitrogen (N content of ammonia), by 21%. Production of marble increased by 103%; cement by 97%; chromium (chromite ore), by 93%; gold, by 70%; and gypsum, by an estimated 5% (table 1; Central Statistics Organization, 2014a, p. 163, 164, 166).

Structure of the Mineral Industry

Table 2 is a list of major mineral facilities operating in 2014.

Mineral Trade

Afghanistan's total value of trade in 2014 was $524 million compared with $424 million in 2013, of which exports totaled $515 million in 2014 compared with $415 million (revised) in 2013, and imports totaled $8.7 million in 2014 compared with $9.1 million in 2013. Afghanistan imported 33,056 metric tons (t) of fertilizer in 2014, of which 13,693 t was imported from Iran; 12,310 t, from Kazakhstan; 3,561 t, from Pakistan; 3,029 t, from Uzbekistan; 453 t, from China; and 10 t, from Tajikistan. The country also imported 669 million metric tons (Mt) of cement, of which 514 Mt was imported from Pakistan; 156 Mt, from Iran; 1,364 t, from China; and 66 t, from the UAE. In 2014, Afghanistan exported 100,000 t of coal to Pakistan. It also exported 9,687 t of marble, of which 4,707 t went to Pakistan; 2,618 t, to China; 1,739 t, to Iran; 453 t, to Hong Kong; and 170 t, to Italy (Central Statistics Organization, 2014a, b, d).

Afghanistan's exports to the United States were valued at $72.0 million in 2014 compared with $45.5 million in 2013. Of this amount, gemstones accounted for $1 million, and iron and steel accounted for about $12,000. In 2014, imports from the United States were valued at $792 million compared with about $1.4 billion in 2013; these included $1 million in iron and steel products, $368,000 in petroleum products, $117,000 in chemical fertilizers, $64,000 in aluminum and alumina, $32,000 in natural gas liquids, $21,000 in nonferrous metals, $17,000 in nonmetallic minerals, $15,000 in steelmaking materials, and $10,000 in copper (U.S. Census Bureau, 2014a, b).

Commodity Review

Metals

Chromium.—In 2014, production of chromite ore increased by 93% to 6,369 t from 3,309 t in 2013. Most of the chromite deposits occur in Logar, Paktia, and Parwan Provinces. In 2014, the Government signed five new chromite contracts with such companies as Hashimi Mining Co. for the Dadukhil and Dih Now of Puli Alam chromite areas in Logar Province; the Stana Baba Mining Company for the Baboos, Mughulkhil, and Sarkhnjak chromite areas in Logar Province; the Abdurahman Baba Metal Co. for the Lalander chromite area in Char Asiab District near Kabul; and the Afghan Active Mining Co. for a chromite occurrence in Kohi Safi District in Parwan Province. 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. The HBMC also agreed to pay a 26% royalty to the Government. As of 2014, there was no update on the status of the contract (table 1; Ministry of Mines and Petroleum, 2014c, d).

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 joint venture between China Metallurgical Group Corp. of China Ltd. (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 clear the area of 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 along with the 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 the improper disposal of chemical waste (Global Witness Ltd., 2012, p. 5; Kuo, C.S., 2013).

Another reason for delaying copper production was the lack of phosphate rock for the smelting operations. In April 2008, an agreement between the Government and the MCC–JCL stated that, in order for the 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 at cost. If access to a phosphate source was not available, the investors wanted to renegotiate the terms of the contract. As of the end of 2014, no mining was taking place at the Aynak site; however, archeological artifacts were being excavated and land mines were being cleared. In the fourth quarter of 2014, the site was closed owing to a presidential election and a strike by archeologists who had not been paid for 6 months. The Government and the MCC–JCL were continuing to renegotiate the contract in 2014, and the company had evacuated all technical personnel from the site owing to security concerns (Kuo, Kendrick, 2013; Ministry of Mines and Petroleum, 2013b, p. 15; Metallurgical Corp. of China Ltd., 2014, p. 19; Special Inspector General for Afghanistan Reconstruction, 2014b, p. 177).

In December 2011, the MOMP started a tender process for two copper-gold prospects. In 2014, all the contracts and bids were under review by the new National Unity Government of Afghanistan. The Shaida porphyry copper prospect in Herat Province, had an exploration area of 250 square kilometers (km^2) and historical estimated, inferred, and possible copper resources of 4.8 Mt at a grade of 1.0% copper. Afghan Gold and Minerals Co., 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. The Balkhab copper prospect is a volcanogenic massive sulfide deposit with an exploration area of 210 km^2 in Sar-e Pol Province and 247 km^2 in Balkh Province; it has historical copper resources 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%. As of 2014, the contracts for two of the prospects remained unsigned. The contracts were awaiting Cabinet approval, and they were expected to be reviewed by the MOMP for compliance with the new mining law (Rigby, 2011, p. 13, 16, 18; Ministry of Mines and Petroleum, 2012a, b; 2013a; Special Inspector General for Afghanistan Reconstruction, 2014a, p. 175–176).

Gold.—In 2014, about 3,000 people from various districts came to Takhar Province to search for gold in the Takhar River; approximately 730 kilograms (kg) of gold was sold locally in Afghanistan. West Land General Trading LLC (WLGT) had obtained exploration and extraction licenses for the Nooraba and the Samti gold deposits in Takhar Province in 2008, and in March 2013, WLGT renewed the licenses for the Nooraba and the Samti gold deposits (Ministry of Mines and Petroleum, 2008, p. 4, 5; Pajhwok Afghan News, 2014a, b; 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. of the United States. The company signed a contract in January 2011 to explore 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 (m) of core samples for analysis. In 2014, the feasibility report was submitted to MOMP. The feasibility studies showed that Qara Zaghan was not economically viable and the company decided to cancel its licenses (Ministry of Mines and Petroleum, 2011, p. 5; Alikuzai, 2013, p. 16; Central Asian Mining Services, 2014; Erek, 2014).

In December 2011, the MOMP started a tender process for two large copper-gold prospects. 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 in Ghazni Province. This prospect had two licensed exploration areas covering a total of 25,280 km^2 (combined) with historical estimated, inferred, or possible gold resources at a grade of 7.1 grams per metric ton (g/t) gold (containing 525 kg of gold) and "reconnaissance" resources at a grade of 6.9 g/t gold (containing about 2,200 kg of gold). The Sterling/Belhasa joint venture planned 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 Co. of Afghanistan (49%) and Eti Gümüş S.A. of Turkey (51%), was the winning bidder for the Badakhshan gold prospect. The Badakhshan gold prospect in Badakhshan Province is a quartz-vein deposit with four licensed exploration areas of 250 km^2 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 960 kg of gold. The Afghan Mineral Group was the winning bidder for the Shaida porphyry copper prospect (Peters and others, 2011, p. 168; Rigby, 2011, p. 13, 16, 18; Ministry of Mines and Petroleum, 2012a, b; 2013a; Special Inspector General for Afghanistan Reconstruction, 2014a, p. 175–176).

Iron and Steel.—Domestic iron scrap was used by most of the steel companies in Afghanistan to produce crude steel. In 2014, the production of crude steel was 9,009 t compared with 9,000 t in 2013. The production of cast iron was 24,000 t in 2014 compared with 24,580 t in 2013. The steel manufacturing companies in Afghanistan were Sino-Afghan Steel Co., which was operated by the Watan Group, and Maisam Steel Mill, which operated a steel plant in Pul-e-Charkhi Province, with a production capacity of 36,500 metric tons per year (t/yr). Maisam was a medium-sized company funded by the USAID's ABADE program; it used scrap to produce steel construction material and employed 200 workers (table 1; U.S. Agency for International Development, 2014a, b; Central Statistics Organization, 2014c, p. 163).

Haji-Gak, which is Afghanistan's largest iron ore deposit, is located in Bamyan Province and extends into Parwan and Maidan 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 oxidized 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 $1.5 billion. As of 2014, the negotiations continued for the Haji-Gak iron ore project, while companies were still waiting for approval of the mining law (Renaud and others, 2011, p. 451, 460; Sutphin and others, 2011, p. 570, 579; Das, A.K., 2014; Das, K.N., 2014; Special Inspector General for Afghanistan Reconstruction, 2014a, p. 163; p. 176).

Industrial Minerals

Cement.—Afghanistan's cement production was not competitive with imported cement owing to the use of older and less efficient production technologies. All cement plants were in need of modernization and equipment and facility upgrades, including ungraded power lines, as well as expanded employee training. Sometime after March 2013, the MOMP planned to privatize the Jabal-e Saraj cement factory in Parwan Province, the Ghori I and II cement plants within the Ghori 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 Ghori I cement plant had been in operation since the 1950s. It was a two-kiln operation with a design capacity to produce 400 t/d (or 144,000 t/yr) of clinker. The Ghori II plant was a two-kiln facility with a design capacity to produce 1,000 to 1,200 t/d (300,000 to 360,000 t/yr) of clinker. The production capacities of the Ghori I and Ghori 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 Ghori III cement plant (which would be a greenfield plant) next to the Ghori I and the Ghori II plants. At the time of a visit by the U.S. Geological Survey (USGS) and the Task Force for Business and Stability Operations (TFBSO) in 2010, the Ghori 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. In 2014, the MOMP initiated the Cement Production Facilities Tender (CPFT), which included three tender projects—Jabal-e Saraj, Herat, and Ghori III, however, the Ghori III project was withdrawn. The objectives of the CPFT were to mine the raw material for cement plants, construct and operate new cement production facilities, supply power to the cement plants, and pay royalties. The winning bidder for the Jabal-e Saraj plant was Lego Afghan Logistic Service and the winning bidder for the Herat plant had not been determined by yearend (Mossotti, 2011, p. 1241, 1250–1251, 1253, 1261–1263; 2014, p. 20–22; Global Cement, 2013; CemNet.com, 2014a, b; Marx Group, The, 2014).

Fluorite.—Amania Mining Co. was established in 2010 and was involved in exploration, development, mining, and processing of the Bakhud fluorite deposit in Kandahar Province, which covered an area of 50,057 km^2. Amania Mining began exploring the Bakhud fluorite deposit, validating all Soviet data, updating geologic maps, and collecting data in 2013. The deposit was divided into four blocks—northern, southern, eastern, and western. Exploration of the deposits was completed in 2014; the reserves for all four blocks were estimated at 8.8 Mt averaging at 47% CaF_2 and 4.1 Mt of fluorite. The fluorite was extracted from an open pit mine. The pilot metallurgical processing plant was designed in August 2014, and fully commissioned with a minimum capacity of 36,000 t/yr to a maximum capacity of 60,000 t/yr by December. In 2014, Amania Mining. produced 20,000 t of fluorspar (Amania Mining Co., 2014, p. 2, 4, 7, 16, 26, 32, 43; 2015).

Gemstones.—Gemstone mining in Afghanistan started 6,500 years ago and continues. In 2014, precious and semiprecious stones were produced in Afghanistan. The precious stones produced included emeralds, rubies, and sapphires; a total of 11,198 grams of precious stones were produced in 2014. The semiprecious gemstones produced include aquamarine, garnet, kunzite, lapis lazuli, and tourmaline, and a total of 4,700 t of gemstones were produced. Gemstone mines are found in four locations—Panjshir Valley (emeralds), Jegdalek (rubies and blue sapphires), Badakhshan (lapis lazuli and garnet), and Nuristan (aquamarine, beryl, kunzite, spodumene, and tourmaline). The Jegdalek sapphire and ruby mine is located 35 kilometers (km) west of the Sarobi District and 100 km southeast of Kabul City; part of the mine was state-owned and part was occupied by locals. The largest garnet mine is located in the Eshkashim District in Badakhshan Province. Lapis lazuli was extracted

from mines at Sar-e-Sang in the Kokcha Valley in northeastern Afghanistan. The Panjshir Valley emerald mines are located at elevations of 3,000 to 4,000 m in an area that is 16 km long and 3 km wide. Buzmal Mine was a small-scale mine in Panjshir Valley, which extends through the Kapisa and Parwan Provinces and northeast of the capital of Kabul. Emerald was produced at the Mukeni-Zara Kel and Ringe Mines in 2014 (table 1; Bowersox and others, 2000, p. 110, 113; British Geological Survey, 2014; Pajhwok Afghan News, 2014a, b).

Stone, Dimension.—Marble quarrying was developing quickly in Afghanistan. The Association of Marble and Granite Producers of Afghanistan (AMGPA) reported 130 marble quarries throughout Afghanistan, including in Badakhshan, Balkh, Faryab, Ghazni, Helmand, Kabul, Logar, Nangarhar, Parwan, Samangan, and Maidan Wardak Provinces; however, most of the quarries were inactive owing to high royalty rates. The Equity Capital Group (Equity Capital Mining Co.) was established in 2006 with a production capacity of 150,000 t/yr of marble. It was the leading marble producer in Afghanistan, and it owned the Chest-i-Sharif marble quarry, which was located 150 km east of Herat City. Most of the marble produced was exported to Pakistan, where it was cut into blocks and slabs, polished, and exported back to Afghanistan. In 2014, three new contracts for marble extraction were signed between the MOMP and such companies as Adil Drotheres Marble (for marble in Herat Province), Natural Stone Processing Co. (for marble in Maidan Wardak Province), and Ehsan Aziz Construction Co. (for onyx marble in Helmand Province) (AMS International Consulting, 2011; Ministry of Mines and Petroleum, 2014c; Mossotti, 2014, p. 44, 48).

Talc.—In June 2013, the production capacity of Amin Karimzai Ltd. 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. The production capacity of Amin Karimzai's Ghunday talc mine in the Kodi Khel area of Nangarhar Province was 400,000 t/yr of talc. HZM Marmi e Pietre had the capacity to produce 240,000 t/yr of talc in Afghanistan and Pakistan. The combined production capacity was 640,000 t/yr of talc (Hughes, 2013). As of 2014, there was no update on the project.

Mineral Fuels

Coal.—Nearly all the coal deposits in Afghanistan are deep and presently inaccessible. Most of the country's coal deposits were undeveloped owing to rugged terrain, a lack of roads and infrastructure, and a lack of security. The coal in Afghanistan is used to power cement and fertilizer plants, textile facilities, and food-processing plants. Most of the major coalfields are located in the north-central part of Afghanistan. Access to all coalfields was by road or trail only. North Coal Enterprise (NCE), which was a Government-owned company, produced coal (U.S. Geological Survey Project in Afghanistan, 2014b).

The Government planned to privatize Government-owned coal mines. In 2009, Mesq Sharq Ltd. was awarded the license for the Abkhorak coal mine in the northern part of Samangan Province. In 2013, the Abkhorak Mine collapsed and the local villagers shut down the mine, blaming Government engineers for poor mine construction and a lack of safety precautions. The Ahandara, the Dudkash, the Karkar, and the Khurdara coal mines were privatized by Afghan Coal LLC (ACC) in 2007. In 2013, ACC decided to rebuild and modernize the tunnels in the Ahandara, the Dudkash, and the Karkar coal mines; the date for the reconstruction and modernization of the mines was not specified. As of 2014, there was no update on plans for reconstruction and modernization of the coal mines (Afghan Cement LLC, 2013; Wadsam.com, 2013a; 2014).

Natural Gas and Petroleum.—Afghanistan was heavily dependent on imports of crude oil and natural gas from Iran, Pakistan, Russia, Turkmenistan, and Uzbekistan. The output of crude oil from the wells in the Amu-Darya Basin in northern Afghanistan (Faryab and Sar-e-Pol Provinces) was expected to increase to 40,000 barrels per day (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. In 2014, China National Petroleum Corp. and Watan Oil and Gas (CNPCI-W) halted drilling and exploration owing to budgeting disputes between the companies. In August and September 2014, the CNPCI–W produced 2,000 bbl/d (Hall, 2013; Thomson Reuters, 2014).

In April 2014, as part of the Afghan-Tajik Basin Phase II tender, the MOMP awarded a hydrocarbon exploration and production-sharing contract (EPSC) to Bakhtar Oil and Gas Co. LLC for the Ahmadabad-Balkh Block and the Mohammad Jan Dagar Block, which cover a combined area of 7,319 km^2 and are located in northern Afghanistan near the border with Turkmenistan and Mazar-e-Sharif City. In January 2014, the MOMP had announced a third oil and gas tender for exploration and development of the Totimaidan Block, which is located in western Jowzjan and eastern Faryab Provinces. The estimated reserves of the Block were 28 billion cubic meters (Ministry of Mines and Petroleum, 2014a, b).

In 2013, an oil refinery with the capacity to produce 1.28 million barrels per year (Mbbl/yr), which was owned and operated by a joint venture led by Kam International Oil, 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 197 Mbbl/yr. 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 plant was owned by the Ghazanfar Group. In 2014, more than 12,800 thousand barrels of oil obtained from the Amu Darya Basin were sent to Kam International for refining (Afghanistan Chamber of Commerce and Industries, 2013; Wadsam.com , 2013b; Ghazanfar Group, 2014; Pakistan Defence, 2014).

In 2013, a Memorandum of Understanding (MOU) was signed between the MOMP and the United States 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 production 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. TFBSO intended

to hire professionals to lead the operations and to train staff. An agreement regarding the Turkmenistan, Afghanistan, Pakistan, and India (TAPI) 1,680-km gas pipeline was signed by Afghanistan, India, Pakistan, and Turkmenistan. The pipeline was to become operational by 2018 and was to have the capacity to carry 90 million cubic meters per day of natural gas. Turkmenistan expected to sell 38 million cubic meters per day of natural gas to India and the same amount to Pakistan, and Afghanistan would receive the remaining 14 million cubic meters per day of natural gas. In 2014, the Asian Development Bank contracted with the Penspen Engineering Group of the United Kingdom to conduct a feasibility study for the TAPI natural gas pipeline. Penspen's feasibility study included the following: (1) a review of the proposed route, (2) a confirmation of the compressor station size and location, and (3) an estimate of the cost of project development and a schedule. The feasibility study was expected to take 6 months to complete (Hindu, The, 2012; Ministry of Mines and Petroleum, 2013a; Penspen, 2014; Press Trust of India, 2014; Special Inspector General for Afghanistan Reconstruction, 2014a, p. 181; U.S. Agency for International Development, 2015).

Outlook

The Government of Afghanistan has intensified its effort to develop mineral resources by implementing changes in the Mineral Law to improve and strengthen Government transparency and accountability and to provide reliable security at mine sites. The Government is also actively working to attract foreign investment for 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. Licenses for mining chromite and marble and for extracting hydrocarbons have been awarded and continued to be awarded in 2014. Bidders were selected for several copper and gold prospects. The country is expected to offer more tenders for bids for energy resource development in the near future (United Nations Environment Programme, 2013, p. 40).

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TABLE 1
AFGHANISTAN: PRODUCTION OF MINERAL COMMODITIES [1]

(Metric tons unless otherwise specified)

Commodity[2]		2010	2011	2012	2013	2014
METALS						
Gold, mine output	kilograms	NA	NA	NA	30	50 [e, 3]
Iron and steel, metal:						
Cast iron		--	--	--	24,580	24,000
Steel, crude		--	--	--	9,000	9,009
INDUSTRIAL MINERALS						
Aragonite		NA	NA	NA	NA	1,000
Cement, hydraulic		36,000	38,000	37,000	52,000 [r]	102,276
Chromite ore		6,000	6,000	6,000	3,309 [r]	6,369
Fluorspar		--	--	--	--	20,000
Gypsum		63,000	62,000	57,000	57,000	60,000 [e]
Lime		128,000	128,000	130,000	130,000	127,000
Marble		29,000	29,000	45,000	271,000 [r]	550,011
Nitrogen, N content of ammonia		27,000	27,000	50,000	76,000	60,000
Salt, rock		186,000	186,000	147,000	124,100 [r]	35,000
Talc[3]	kilograms	NA	NA	NA	NA	55
Tantalum	do.	NA	NA	NA	NA	7,283
Precious stones[3]	grams	NA	NA	NA	NA	11,198
Semiprecious stones	kilograms	NA	NA	NA	NA	4,745,055 [4]

See footnotes at end of table.

TABLE 1—Continued
AFGHANISTAN: PRODUCTION OF MINERAL COMMODITIES [1]

(Metric tons unless otherwise specified)

Commodity[2]		2010	2011	2012	2013	2014
MINERAL FUELS AND RELATED MATERIALS						
Coal, bituminous		725,000	750,000	780,000	936,000	233,000
Gas, natural:						
Gross	million cubic meters	142	142	161	155 r	160
Marketed	do.	140	142	145	141	140 e
Petroleum, condensate	42-gallon barrels	64,000	70,000	80,000	68,000	67,000

eEstimated data are rounded to no more than three significant digits. rRevised. do. Ditto. NA Not available. -- Zero.
[1]Table includes data available as of July 30, 2015.
[2]Aluminum, barite, and sand and gravel were produced by artisanal miners, but available information was not adequate to make reliable estimates of output.
[3]As reported by the Afghan Ministry of Mines and Petroleum Cadastre Directorate.
[4]Includes some partial-year data reported through September 9, 2014.

Sources: Central Statistics Office, Ministry of Mines and Petroleum Cadastre Directorate, and the Afghan Gas Enterprise.

TABLE 2
AFGHANISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity[e]
Aluminum, secondary:			
Extrusion and powder coating	Qader Najib Ltd.	Kabul	NA
Manufacture	Salam Bilal Ltd.	Kandahar Province	360
Do.	Javed Waziri PVC and Aluminium Production Ltd.	Pol-e-Charkhi, Kabul	NA
Do.	Khalil Najeeb Steel Mills Ltd.	Bagrami industrial area, Kabul	36,000
Cement	Afghan Cement L.L.C. (a subsidiary of Government-owned Afghan Investment Co.)	Ghori I , Pul-e-Khomri, Baghlan Province	144,000
Do.	do.	Ghori II, Pul-e-Khomri, Baghlan Province	360,000
Chromite	Hewad Brothers Mining Co.	Gadakhil Area, Kohisafi District, Parwan Province	250
Coal	NA	Ashpostah Mine, Bamyan Province	160,000
Do.	Meesaq Sharq Ltd.	Abkhorak Mine, Samangan Province	60,000
Do.	Khushak Brothers Co. and North Coal Enterprise	Dara-e-Suf, Roee Duab, and Tala Barfak Mines, Samangan and Badakhshan Provinces	1,214,000
Do.	Afghan Coal L.L.C. (a subsidiary of Government-owned Afghan Investment Co.)	Karkar and Dudkash Mines, Baghlan Province	164,000
Do.	Khushak Brothers Co.	Sabzak Mine, Herat Province	15,000
Copper, in concentrate	MCC-JCL Aynak Minerals Company Ltd. (China Metallurgical Group Corp., 75%, and Jiangxi Copper Company Ltd., 25%)	Aynak Mine,[1] Logar Province	180,000

See footnotes at end of table

TABLE 2—Continued
AFGHANISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity[e]
Fluorite		Amania Mining Co.	Bakhud fluorite mine in Kandahar Province	60,000
Gold	kilograms	West Land General Trading L.L.C.	Nooraba Mine, Takhar Province	4,740
Gypsum		Massoud Aryaie Trading Co.	Baghlan Province	2,000
Do.		Samar Naweed Co.	Balkh Province	2,000
Gemstones, lapiz lazuli		Ljewardeen Mining Co.	Sar-e-Sang, Badakhshan Province	NA
Natural gas	cubic meters	Afghan Gas Ltd. (Government-owned)	Jowzjan	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	42-gallon barrels	Kam International	Hairatan oil refinery, Hairatan Town, Balkh Province	186,000
Salt		NA	Daulatabad salt mine, Faryab Province	100,000
Do.		Westco International FZE	Kalfagan Mine, Kalfagan area, Takhar Province	500,000
Do.		do.	Taqchakhana Salt Mine, Namak Aab District, Takhar Province	100,000
Sand and gravel		Abdul Rahim (Son of Sad Uddin)	Herat Province	75,000
Do.		Sahar Pairaze Construction Co.	Kabul Province	25,000
Do.		Meyad Mskan Construction Co.	do.	25,000
Do.		Najeebullha Son of Haji Meer Mohammad	Baghlan Province	10,000
Steel, crude		Afghan Folad Steel Mill Corp. Ltd.	Herat Province	29,000
Do.		NA	Maisam steel mill, Pul-e-Charkhi, Kabul	36,500
Do.		Sino-Afghan Steel Co. (owned by Watan Group)	Kabul	NA
Stone, dimension, marble		Equity Capital Group	Herat Province	150,000
Do.		Mohammad Aziz (son of Mohammad Omar)	do.	28,000
Do.		Takht Rustam Stone Transportation Co.	Samangan Province	3,000
Talc		Amin Karimzai Ltd. and HZM Marmi e Pietre Ltd.	Khogyani and Shinwari Districts, Nangarhar Province	640,000

[e]Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.
[1]The start date for Aynak Mine production was not yet determined.