

# 2016 Minerals Yearbook

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## TURKMENISTAN

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# THE MINERAL INDUSTRY OF TURKMENISTAN

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Turkmenistan's most economically important mineral deposits were bromine-iodine brine, natural gas, and petroleum. Excluding United States production, which has been withheld to avoid disclosing proprietary data, Turkmenistan ranked third in the world in iodine production and seventh in bromine production in 2016 (Schnebele, 2018a, b). Turkmenistan had the world's fourth-ranked proven natural gas reserves (after Iran, Qatar, and Russia), which were estimated to be 17.5 trillion cubic meters (BP p.l.c., 2017, p. 26). The country's proven crude petroleum reserves were estimated to be 600 million barrels (BP p.l.c., 2017, p. 12). In 2016, the nonfuel minerals produced in Turkmenistan included ammonia, bentonite, cement, gypsum, lime, salt, and urea (table 1).

Turkmenistan's real gross domestic product (GDP) increased by 6.2% in 2016 compared with a 6.5% rate of growth in 2015 owing to the decline in hydrocarbon prices. Turkmenistan's real hydrocarbon GDP rate of growth was -4.8% in 2016 compared with 0.1% in 2015. The real nonhydrocarbon GDP rate of growth was 11.4% in 2016 compared with 9.4% in 2015. In 2016, the total foreign direct investment (FDI) inflow increased by 2% to \$4.5 billion from \$4.4 billion (revised) in 2015. The bulk of the FDI inflows were geared towards natural gas-related activities and infrastructure, such as the expansion of the Galkynysh natural gas field and the construction of an iron manufacturing plant by Daewoo International Corp. of the Republic of Korea (Asian Development Bank, 2016, p. 107; International Monetary Fund, 2017, p. 246; United Nations Conference on Trade and Development, 2017, p. 67, 88, 225).

## Production

Detailed production data and other information regarding mineral production for most mineral commodities in Turkmenistan, except natural gas and petroleum, were not available for a number of years. The State Committee of Turkmenistan on Statistics reported production rates of growth for most economic categories that it tracked, including those for construction materials, metals, mineral fertilizers, and mineral products. Production data in table 1 are based on past levels of production and on occasionally published data reported in the mass media. In 2016, cement production increased by an estimated 6%; crude petroleum, by an estimated 5%; and natural gas, by 4% (table 1; Safirova, 2013).

## Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

## Commodity Review

### Metals

**Iron and Steel.**—In 2016, Daewoo International Corp. began construction of an iron-manufacturing plant; the completion date

was not specified. The POSCO Group of the Republic of Korea was also planning to build an iron-manufacturing plant; it would have the capacity to produce 1 million metric tons per year (Mt/yr) of reinforced steel and pipe. POSCO was responsible for project construction, engineering, procurement, operation, and management. The cost of the project was estimated to be \$1 billion (POSCO Group, 2015; United Nations Conference on Trade and Development, 2017, p. 67).

### Industrial Minerals

**Bromine and Iodine.**—In 2016, the construction of a new iodine plant commenced in the village of Okarem in Balkan Welayaty. Iodine would be extracted from brine waters coproduced with oil and gas. The production capacity was expected to be 60 metric tons per year (t/yr) of iodine. The modernization program for the Balkanabad, Bereket, and Khazar iodine plants, and the Cheleken and Nebitdag bromine plants continued in 2016 and would continue until 2030 (Arzuw News, 2016; Hasanov, 2016).

**Nitrogen (Ammonia).**—In 2014, an agreement was signed among GAP İnşaat Yatırım ve Dış Ticaret A.Ş. of Turkey, Mitsubishi Corp. of Japan, and Turkmenhimiya State Concern for the construction of a large chemical plant in the city of Garabogaz, which is located in Balkan Welayaty near the Caspian Sea region. The plant was expected to start operations in June 2018 with a production capacity of 700,000 t/yr of ammonia and about 1.2 Mt/yr of urea. As of yearend 2016, there was no update on the project (AzerNews, 2013; Japan Times, The, 2014; Mitsubishi Corp., 2014; GAP İnşaat Yatırım ve Dış Ticaret A.Ş., 2015).

**Potash.**—In 2010, Turkmenhimiya signed an agreement with JSC Belgorkhimprom of Belarus for the construction of a new potash plant in eastern Lebap Welayaty. The plant's production capacity was expected to be 1.4 Mt/yr of potash and could be increased to 4 Mt/yr. The facility was expected to be fully commissioned in 2017. The potash plant would be operated by JSC Trest Shakhtospetsstroi Co. The project was constructed jointly by JSC Belgorkhimprom, JSC Belaruskali, and JSC Trest Shakhtospetsstroi Co. (Zolotoi Vek, 2012; Free Library, The, 2014; Belarus.by, 2015; Turkmenistan.ru, 2015).

### Mineral Fuels and Related Materials

**Natural Gas.**—In 2016, Turkmenistan remained a leading natural gas exporter among Caspian and Central Asian countries. Turkmenistan produced 66.8 billion cubic meters of natural gas, of which 38 billion cubic meters was exported by pipeline to China (73%), Iran (19%), Russia (7%), and Kazakhstan (1%) (BP p.l.c., 2017, p. 22, 28).

As of 2016, construction of the D pipeline was postponed owing to diplomatic and geopolitical issues. In 2011, China National Petroleum Corp. (CNPC) and state-owned Turkmengaz

had agreed to increase natural gas shipments to China to 65 billion cubic meters per year through the D pipeline by 2016. The D pipeline was expected to run from Turkmenistan through Uzbekistan, Tajikistan, and Kyrgyzstan to China (Energy Policy Group, The, 2017).

As of 2016, the TAPI natural gas pipeline project continued facing obstacles, including financing of sections of Afghanistan's and Pakistan's pipeline and security along the proposed route. The 1,680-kilometer natural gas pipeline was expected to start operating by 2018 with the capacity to carry 90 million cubic meters per day of natural gas (Vaid and Kar, 2016).

## Outlook

Turkmenistan's current and future economy is highly dependent on crude petroleum and natural gas exports; therefore, the country is actively searching for new routes to export natural gas. The TAPI pipeline is in progress; however, the country faced some issues that could prevent this project from being completed on schedule. In 2016, Turkmenistan continued to focus on the development of the nonhydrocarbon mineral sector. Some signs of the emphasis on the nonhydrocarbon sector is Turkmenistan's investment in chemical and construction material plants, modernization of the existing iodine and bromine plants, and the construction of a potash-processing plant; the investment is likely to result in production increases for these minerals during the next few years (International Monetary Fund, 2017).

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

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2012	2013	2014	2015	2016
<b>METALS</b>					
Iron and steel, products, rolled <sup>c</sup>	120,000	134,000	135,000	140,000	140,000
<b>INDUSTRIAL MINERALS</b>					
Bromine <sup>c</sup>	480	500	500	500	500
Cement, hydraulic thousand metric tons	2,370	2,650	2,900 <sup>c</sup>	3,300	3,500 <sup>c</sup>
Clay and shale, bentonite: <sup>c</sup>					
Powder	305	360	400	400	400
Other, unspecified	50,000	50,000	7,400	8,000	8,000
Gypsum <sup>c</sup>	105,000	105,000	107,000	110,000	110,000
Iodine <sup>c</sup>	480	500	500	500	500
Lime <sup>c</sup>	18,000	19,000	19,400	20,000	21,000
Nitrogen, N content:					
Ammonia	280,000	285,000	293,000	309,000 <sup>c</sup>	309,000 <sup>c</sup>
Urea	341,000	341,000	344,000	360,000 <sup>c</sup>	360,000 <sup>c</sup>
Salt <sup>c</sup>	220,000	220,000 <sup>r</sup>	91,700 <sup>r</sup>	100,000	100,000
Sodium compounds, sodium sulfate <sup>c</sup>	62,000	63,000	68,000	70,000	70,000
Sulfur, S content <sup>c</sup>	240,000	400,000	506,000	600,000	600,000
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Natural gas million cubic meters	62,300	62,300	67,000 <sup>r</sup>	69,600 <sup>r</sup>	66,800
Petroleum:					
Crude, including condensate thousand 42-gallon barrels	80,200	84,000	87,200	91,400	96,960
Refinery production do.	55,000	56,000	57,100	55,000	53,600

<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.

<sup>1</sup>Table includes data available through November 29, 2017. All data are reported unless otherwise noted.

<sup>2</sup>In addition to the commodities listed, a number of other mineral commodities were thought to have been produced, including bench gravel, coal, kaolin, and limestone for cement, but available information was inadequate to make reliable estimates of output.

TABLE 2  
TURKMENISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies, main facilities, or deposits <sup>2</sup>	Location or deposit names	Annual capacity <sup>c</sup>
Bromine	metric tons	Cheleken plant	Cheleken Peninsula	250
Do.	do.	Nebitdag plant	Balkanabad, Balkan Welayaty	260
Cement		JSC Baharlynskiy cement plant (state-owned Turkmcement)	Bezmein	1,000
Do.		Kelete cement plant (state-owned Turkmcement)	70 kilometers west of Ashgabat	1,250
Do.		Jebel cement plant (Polimek Insaat Taahhut ve San. Tic. A.Ş.)	Jebel, Balkan Welayat, Nebitdag region	1,000
Do.		Garlyk cement plant (Polimek Insaat Taahhut ve San. Tic. A.Ş.)	Lebap Welayaty, Turkmenabat region	1,400
Clay:				
Bentonite		Oglanly Mine	Oglanly region, Balkan Welayaty	100
Kaolin		Ashkhabad glass plant	Kyzylkainskoye deposit	80
Coal		do.	do.	NA
Gypsum		IA Turkmenmineral	Mukry, Tagorin deposits	300
Do.		Wastes from Gaurdak sulfur deposit	Gaurdak, Gora	400
Do.		Krasnovodsk Aylagy (anhydride) deposit	9 kilometers east of Turkmenbashi	160
Iodine	metric tons	Khazar chemical plant (SI Turkmenhimiya Holding)	Khazar, Balkan Welayaty	355
Do.	do.	Balkanabad iodine plant (SI Turkmenhimiya Holding)	Balkanabad, Balkan Welayaty	255
Do.		Bereket iodine plant (SI Turkmenhimiya Holding)	Gumdag, Balkan Welayaty	NA
Limestone for cement		Gaurdak	4 kilometers northeast of Gaurdak	NA
Natural gas	million cubic meters	Achakskoye, Dauletabad, Doviet-Denmez (Donmez), Gygyrlinskoye, Ioltan (South Yolotan-Osman), North and South Naipskiye, Shatlyk, and Yashlar deposits	Onshore in eastern and southwestern parts of the country and offshore in the Caspian Sea; Murgab basin; Dashoguzskiy	90,000
Do.	do.	China National Petroleum Corp. (CNPC)	Amu Darya basin	5,000
Do.	do.	Eni S.p.A.	Nebitdag Block	60
Nitrogen (ammonia)		Ammonia plant (Turkmenhimiya State Concern)	Mary City	420
Petroleum:				
Crude	thousand 42-gallon barrels	Barsa-Gelmesskoye, Burunskoye, Cheleken, Gograndagskoye, Ioltan (South Yolotan-Osman), Kamyshldzhinskoye, Korturtepinskoye, Kum Dag, Kuydzhikskoye, Okaremskoye, and Yashlar oilfields	Centered in Caspian plain in west Turkmenistan and in offshore oilfields to the west of the Cheleken Peninsula in the Caspian Sea	80,600
Do.	do.	Eni S.p.A.	Nebitdag Block	3,000
Do.	do.	Dragon Oil Plc	Cheleken basin	35,000
Refined	do.	Seidi oil refinery and Turkmenbashi complex of oil refineries (state owned)	Lebap Welayaty and Balkan Welayaty	78,000 <sup>3</sup>
Potash		JSC Trest Shakhtospetsstroi Co.	Garlyk processing plant	1,400
Salt:				
Rock		Gaurdak deposit	8 kilometers from Gaurdak	15
Do.		Khodzhaguymaskoye deposit	4 kilometers west of Gaurdak	NA
Do.		Kugitangskoye deposit	75 kilometers from Gaurdak	2
Do.		Uzun-Kudukskoye deposit	20 kilometers from Gaurdak	2
Brine		Kuulinskoye	40 kilometers north of Turkmenbashi	650
Iodized		Guvludyz Salt Factory	Balkan Welayaty	60
Sodium sulfate		Karabogazsulfate Association	Bekdash, Kara-Bogaz-Gol Lagoon (off the Caspian Sea)	100
Steel, rolled		Turkmen metallurgical plant	Near Ashgabat	160
Do.		IA Turkmenmineral	Gora deposit	340
Sulfur		China National Petroleum Corp., Petrofac Ltd., LG International Corp., Hyundai Engineering and Construction Corp. Ltd.	Three plants, Galkynysh	600
Urea		NA	Mary City	743

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

<sup>1</sup>Many location names have changed since the breakup of the Soviet Union. Many enterprises, however, are still named or commonly referred to based on the former location name, which accounts for discrepancies in the names of enterprises and that of locations.

<sup>2</sup>The majority of companies are Government owned.

<sup>3</sup>Capacity estimates are totals for all enterprises that produce that commodity.