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2020–2021 Minerals Yearbook

TURKMENISTAN [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

March 2025

U.S. Geological Survey, Reston, Virginia: 2025

The Mineral Industry of Turkmenistan

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Note: In this chapter, information for 2020 is followed by information for 2021.

In 2020, Turkmenistan's most economically important mineral deposits were bromine-iodine brine, natural gas, and petroleum. Excluding United States production, which has been withheld, Turkmenistan ranked third in the world in iodine production in 2020 and accounted for 2% of the world's iodine production (Schnebele, 2022). Turkmenistan had the world's fourth-ranked proven natural gas reserves (after Iran, Qatar, and Russia); its reserves were estimated to be 13.6 trillion cubic meters. The country's proven crude petroleum reserves were estimated to be 600 million barrels (BP p.l.c., 2021, p. 15, 34).

Turkmenistan's real gross domestic product (GDP) decreased by 3.4% in 2020 compared with a decrease of 7.7% in 2019 because of a decline in hydrocarbon output and exports related to restrictions put in place during the coronavirus 2019 (COVID-19) pandemic, which led to lower global prices and demand. The nominal GDP was $53.2 billion.[1] Foreign direct investment (FDI) inflow into Turkmenistan decreased by 45% to $1.2 billion in 2020 from $2.1 trillion in 2019 owing to COVID-19 pandemic restrictions. Also as a result of the COVID-19 pandemic, revenue from the export of hydrocarbons to China decreased and construction of a fourth pipeline for the Central Asia-China pipeline and commissioning of the Turkmenistan-Afghanistan-Pakistan-India pipeline were delayed (BP p.l.c., 2020, p. 43; 2021, p. 45; International Monetary Fund, 2021, p. 116; 2023; United Nations Conference on Trade and Development, 2021, p. 91, 251; Asian Development Bank, 2022 p. 188).

Detailed production data and other information regarding mineral production for most mineral commodities in Turkmenistan, except natural gas and petroleum, have not been available for a number of years. Production estimates in table 1 are based on past levels of production and on occasional published data reported by the mass media. In 2020, urea (nitrogen, N content) production increased by an estimated 70%; iodine, by an estimated 17%; and ammonia (nitrogen, N content), by an estimated 10%. Potash (K2O content) production decreased by an estimated 43%; salt, by an estimated 32%; and cement, by an estimated 21%. Data on mineral production are in table 1.

In 2020, Turkmenistan's exports decreased by 9.4% to $2.2 billion from 2.4 billion in 2019. Turkmenistan's imports decreased by 11.5% to $2.0 billion from $2.2 billion. The value of Turkmenistan's exports to the European Union decreased by 8.9% to $577 million,[2] of which hydrocarbon exports accounted for $22 million (3.8% of the total export value); the country's total imports from the European Union decreased by 33.4% to $285 million from $420 million. Export commodities included products of the chemical or related products. In 2020, Turkmenistan's main export partners were China (which received 73% of Turkmenistan's exports), Afghanistan (7%), and Uzbekistan (6%). Import commodities included mineral products and products of the chemical or allied industries. In 2020, the main import partners were Turkey (which supplied 35% of Turkmenistan's imports), the countries of the European Union (26%), China (18%), and Japan (5%) (European Commission, 2020, p. 7–8; World Trade Organization, 2023).

In 2020, imports from the United States to Turkmenistan were valued at about $32.91 million compared with $28.27 million in 2019; these included $903,000 in excavating machinery, $254,000 in iron and steel products, $849,000 in drilling and oilfield equipment, $226,000 in petroleum products, and $74,000 in finished metal shapes (U.S. Census Bureau, 2021).

Commodity Review

Industrial Minerals

Bromine and Iodine.—The new iodine plant located at the Chalja site, Bereket District, in Balkan Welayat began operation in 2019; the plant was owned by the Government-owned Himiya Senagat Economic Society. In the first half of 2020, the plant produced 127 metric tons (t) of iodine from the Chalja iodine- and bromine-rich groundwater deposit. The plant had a design capacity of 150 metric tons per year (t/yr) (Business Turkmenistan, 2020a).

In 2020, SI Turkmenhimiya Holding, in cooperation with the Tender Commission, extended the tender for the design and construction of the Balkanabat plant, located in Balkan Welayat; the plant was to produce iodine, bromine, and their derivatives. This plant's production capacity was expected to be 300 t/yr of iodine and 4,500 t/yr of bromine. The raw material for production was expected to be sourced from the Cheleken field located in Balkan Welayat. SI Turkmenhimiya Holding also extended a tender for two other bromine and iodine production plants located in Balkan Welayat. The production capacity of the first of these two plants was expected to be 240 t/yr of bromine and 2,400 t/yr of iodine, and the raw material was expected to be sourced from the Boyadag field. The production capacity of the second of these two plants was expected to be 200 t/yr of bromine and 2,000 t/yr of iodine, and the plant was to use raw material sourced from the Nebitdag-Monguklinsky field (Business Turkmenistan, 2020b, 2021).

Cement.—As of 2020, all cement plants in Turkmenistan were owned by TurkmenCement Production Association. During its first stage of operations, the Lebap cement plant

[1]Where necessary, values have been converted from Turkmen manat (TMT) to U.S. dollars (US$) at the annual average exchange rate of TMT3.49=US$1.00 for 2019, 2020, and 2021.

[2]Where necessary, values have been converted from euro area euros (EUR) to U.S. dollars (US$) at the annual average exchange rates of EUR0.893=US$1.00 for 2019, EUR0.877=$US1.00 for 2020, EUR0.846=$US1.00 for 2021.

in Koytendag, Lebap Welayat, produced 419,000 t of cement for the first 7 months of 2020, which equated to a rate of approximately 720,000 t/yr. In 2019, the Lebap cement plant produced 417,000 t for the same period, which equated to a rate of approximately 715,000 t/yr. The increase in 2020 was because the plant started adding porphyritic basalt to the clinker mix. In 2020, the Turkmen Enjam construction company began the construction of the second phase of the Lebap cement plant. After completion of the second phase, the production capacity of the plant was planned to be increased to 1 million metric tons per year (Mt/yr) (Global Cement, 2020a, b).

Potash.—Turkmenistan has three identified potash deposits—the Garlyk, the Karabil, and the Tubegatan. The total potash resources of the three deposits were estimated to be approximately 2.8 billion metric tons. Arbitration concerning the Garlyk potash ore and mining facility in Lebap Welayat was continuing. In 2010, SI Turkmenhimiya Holding had signed an agreement with JSC Belgorkhimprom of Belarus for the construction of the Garlyk potash ore and mining facility. The project was constructed jointly by Belarusian companies JSC Belgorkhimprom, JSC Belaruskali, and JSC Trest Shakhtospetsstroi Co., and the plant's production capacity was expected to be 1.4 Mt/yr of potash. Potash production commenced in 2017, but the plant produced only 19,000 t out of the expected 720,000 t in the first 8 months of 2018. In consequence, in 2018, SI Turkmenhimiya Holding and JSC Belgorkhimprom terminated the agreement that they had signed in 2010. In 2019, SI Turkmenhimiya Holding submitted a $911 million claim related to the operation of the Garlyk facility to the Arbitration Institute of the Stockholm Chamber of Commerce of Sweden against JSC Belgorkhimprom. In 2020, the $911 million claim was dismissed. In December 2020, JSC Belgorkhimprom brought a counter claim against SI Turkmenhimiya Holding in the amount of $418 million. The arbitration hearing was expected to be held in February 2022 (table 1; Eurasianet, 2018; Charger97, 2019; Turkmen News, 2022).

Sodium.—In the beginning of 2020, Karabogazcarbamid plant produced 383 t of sodium sulfate, which was 3.6 times higher than during the same period of the previous year. The plant was producing sodium sulfate for domestic use and for export. The plant also produced 766,500 t of urea. The designed capacity of the Karabogazcarbamid plant is 1.5 Mt/yr (SI Turkmenhimiya Holding, 2018; Aliyeva, 2020).

Mineral Fuels

Natural Gas.—In 2020, Turkmenistan produced 59.0 billion cubic meters of natural gas. Turkmenistan remained a leading natural gas exporter among the countries of central Asia. The country exported 27.2 billion cubic meters of natural gas by pipeline to China (86%), 3.8 billion cubic meters to Russia (12%), and 0.1 billion cubic meters to Kazakhstan (0.3%) (BP p.l.c., 2022, p. 45).

As of 2020, the Afghanistan portion of the Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline was expected to be delayed for 6 months pending approvals related to land acquisition. The 1,814-kilometer-long pipeline was expected to transport a total of 90 million cubic meters per day from the Galkyhysh field, of which 14 million cubic meters per day was expected to be transported to Afghanistan, and 38 million cubic meters per day each would be transported to Pakistan and India (Enerdata, 2020).

MINERAL INDUSTRY HIGHLIGHTS IN 2021

In 2021, Turkmenistan ranked third in the world in iodine production (not including United States production) and accounted for 2% of the world's iodine production (table 1; Schnebele, 2023). In 2021, Turkmenistan's real GDP increased by 4.5% (compared with a 3.4% decrease in 2020) owing to an increase in hydrocarbon output and exports. FDI inflow to Turkmenistan increased by 24% to $1.5 billion from $1.2 billion in 2020 (International Monetary Fund, 2021, p. 116; Asian Development Bank, 2022, p. 188; BP p.l.c., 2022, p. 37; United Nations Conference on Trade and Development, 2022, p. 212).

In 2021, natural gas production increased by 42%; urea (nitrogen, N content), by 16%; and cement, by 11%. Crude petroleum (including condensate) production decreased by 14% (table 1).

The value of Turkmenistan's exports to the European Union increased by 66% to $993 million in 2021 from $577 million in 2020. The value of imports from the European Union increased by 107% to $611 million in 2021 from $285 million in 2020. The country's total exports of hydrocarbon accounted for $11 million (1% of the total export value), and total imports of hydrocarbons were valued at $502 million (82% of the total import value from the European Union). Exports and imports also included commodities of crude materials (inedible, except fuels), mineral products, and products of the chemical or allied industries (European Commission, 2022, p. 5).

In 2021, imports from the United States to Turkmenistan were valued at about $79.0 million compared with $32.9 million in 2020; these included $11.6 million in drilling and oilfield equipment, $1.6 million in excavating machinery, $542,368 in iron and steel products, $341,366 in finished metal shapes, and $78,732 in petroleum products (U.S. Census Bureau, 2021).

Commodity Review

In 2021, the President of Turkmenistan approved SI Turkmenhimiya Holding's and the Tender Commission's call for tender proposals for the modernization of the existing Balkanabat iodine plant, as well as construction of additional new iodine plants at the Balkanabat complex in Balkan Welayat (Business Turkmenistan, 2020a, b; 2021; Orient News Agency, 2021).

In 2021, production of cement increased by 11% owing to an 8% year-on-year increase in the construction sector. In 2021, the construction company Turkmen Enjam ordered a new 3,000-metric-ton-per-day line for Lebap cement plant (Global Cement, 2020a, b; 2021a, b).

In 2021, Turkmenistan produced 83.8 billion cubic meters of natural gas. Turkmenistan remained a leading natural gas exporter among the countries of central Asia. The country exported 31.5 billion cubic meters of natural gas by pipeline to China (75%) and Russia (25%) (BP p.l.c., 2022, p. 37).

Construction of the fourth natural gas line (Line D) for transporting natural gas to China was postponed until 2022. Commissioning of the TAPI natural gas pipeline was delayed until 2023 (United Nations Conference on Trade and Development, 2021, p. 91).

Outlook

Turkmenistan's economy is highly dependent on crude petroleum and natural gas exports; therefore, the country is actively continuing to focus on the development of the nonhydrocarbon mineral sector through local investment and by attracting international investment. Some indications of this emphasis on the nonhydrocarbon sector are Turkmenistan's investment in the modernization of existing and construction of new iodine and bromine plants as well as the construction of cement plants. These investments are likely to result in production increases for these mineral commodities during the next few years.

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TABLE 1

TURKMENISTAN: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons, gross weight, unless otherwise specified)

Commodity[2]		2017	2018	2019	2020	2021
METALS						
Iron and steel, products, rolled		140,000 e	140,000 e	NA	NA	160,000
INDUSTRIAL MINERALS						
Bromine		NA	NA	NA	NA	NA
Cement, hydraulic[e]	thousand metric tons	3,600	2,700 r	2,400 r	1,900	2,100
Clay, bentonite:						
Powder[e]		420	450	500 r	500	510
Other, unspecified		8,400 e	9,000 e	10,000	10,000 e	10,200 e
Gypsum[e]		110,000	110,000	110,000	116,000	122,000
Iodine		544	540 e	600 e	700 e	700 e
Lime[e]		22,000	23,000	24,000	25,000	26,000
Nitrogen, N content:						
Ammonia		530,000 r, e	490,000 r, e	600,000 r, e	660,000	660,000 e
Urea		370,000 r, e	350,000 r, e	451,000 r, e	766,500	888,700
Potash, K_2O content		25,000 e	19,000 e	35,000 r	20,000 e	20,000 e
Salt		100,000 e	100,000 e	105,000 e	71,800	75,000 e
Sodium, compounds, sodium sulfate[e]		26,000	119,000 r	86,000 r	91,000	91,000
Sulfur, S content		200,000	914,000 r, e	660,000 r, e	700,000 e	700,000 e
MINERAL FUELS AND RELATED MATERIALS						
Natural gas	million cubic meters	58,700	61,500	63,200 r	59,000	83,770
Petroleum:						
Crude, including condensate	thousand 42-gallon barrels	86,800 r	82,600 r	79,800 r	75,600	65,100
Refinery	do.	43,800 r	41,000 r	42,700 r	41,300	41,000 e

[e]Estimated. [r]Revised. do. Ditto. NA Not available.

[1]Table includes data available through May 9, 2022. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits.

[2]In addition to the commodities listed, barite, bench gravel, coal, dolomite, epsomite, and kaolin may have been produced, but available information was inadequate to make reliable estimates of output.

TABLE 2
TURKMENISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2021[1]

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies, main facilities, or deposits[2]	Location or deposit names	Annual capacity[e]
Barite		Ak-Kaya deposit	4 kilometers from Ak-Kaya post	NA
Do.		Kumysh-Tash deposit	35 kilometers Archman station	NA
Do.		Tagdaly-Derg deposit	21 kilometers southeast of Kara-Kala village	NA
Bromine	metric tons	SI Turkmenhimiya Holding	Plant at Cheleken Peninsula	NA
Do.	do.	do.	Plant at Balkanabad, Balkan Welayat	NA
Cement		TurkmenCement Production Association (Government, 100%)	Jebel cement plant, Jebel, Balkanabat region, Balkan Welayat	1,100
Do.		do.	Lebap cement plant, Koytendag, Turkmenabat region, Lebap Welayat	720
Do.		do.	Kelete cement plant, 70 kilometers west of Ashgabat, Ahal Welayat	1,000
Clay, bentonite	metric tons	Oglanly Mine	Oglanly region, Balkan Welayat	500
Gypsum		IA Turkmenmineral	Tagorin deposits, Mukry, Lebap Welayat	NA
Do.		Krasnovodsk Aylagy (anhydride) deposit	9 kilometers east of Turkmenbashy	NA
Do.		Wastes from Gaurdak sulfur deposit	Gora Gaurdak Mine, Lebap Welayat	NA
Iodine	metric tons	Himiya Senagat Economic Society	Chalja site, Bereket, Balkan Welayat	250
Do.	do.	SI Turkmenhimiya Holding	Bereket plant, Gumdag, Balkan Welayat	150
Do.	do.	do.	Khazar chemical plant, Balkan Welayat	355
Limestone		Bakhcha deposit	5 kilometers south of Kolyata station, Balkan Welayat	NA
Do.		Gyaurs deposit	3 kilometers south of Gyaurs station, Balkan Welayat	NA
Do.		NA	2 kilometers from Ayribobo mountains	NA
Do.		Shadam deposit	3 kilometers west of Turkmenbashy	NA
Do.		Umgal deposit	North shore of Soimonovskoy bay	NA
Limestone for cement		Gaurdak deposit	Quarries 4 kilometers northeast of Gaurdak	NA
Natural gas	million cubic meters	China National Petroleum Corp. (CNPC)	Amu Darya basin	5,000
Do.	do.	Dauletabad, Doviet-Denmez (Donmez), Gygyrlinskoye, Ioltan (South Yolotan-Osman), North and South Naipskiye, Shatlyk, and Yashlar gasfields (SI Turkmengaz)	Onshore fields in eastern and southwestern parts of the country and offshore in the Caspian Sea; Murgab basin; Dashoguzskiy	90,000
Do.	do.	Eni S.p.A.	Nebitdag Block, Balkan Welayat	60
Nitrogen, N content:				
Ammonia		SI Turkmenhimiya Holdings	Ammonia plant at Mary City	660
Urea		do.	Garabogazcarbamid plant, Balkan Welayat	890
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 oil fields to the west of the Cheleken Peninsula in the Caspian Sea	81,000
Do.	do.	Dragon (Turkmenistan) Ltd. (Dragon Oil Plc, 100%)	Cheleken basin, eastern section of Caspian Sea	35,000
Do.	do.	Eni S.p.A.	Nebitdag Block, Balkan Welayat	3,000
Refined	do.	Turkmenbashi Complex of Oil Refineries (TCOR) (Government, 100%)	Refineries in Lebap and Balkan Welayats	78,000 [3]
Potash		SI Turkmenhimiya Holding	Garlyk processing plant, southeast of Turkmenistan	24

See footnotes at end of table.

TABLE 2—Continued
TURKMENISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2021[1]

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies, main facilities, or deposits[2]	Location or deposit names	Annual capacity[e]
Salt:				
Rock salt		Gaurdak deposit	8 kilometers from Gaurdak	15
Do.		Karikan	60 kilometers northwest of Kelifa city	NA
Do.		Khodja-i-Kon deposit	23 kilometers northwest of Garlyk	NA
Do.		Kugi-Tang deposit	44 kilometers north of Garlyk	2
Do.		Lyalim-Kan deposit	43 kilometers north of Garlyk	NA
Do.		Torangly deposit	20 kilometers southwest of Uzun-Su Balkan Welayat	NA
Do.		Uzun-Kuduk deposit	22 kilometers north of Garlyk	2
Salt brine		Baba-Khodja deposit	23 kilometers southwest of Neftedag Balkan Welayat	NA
Do.		Kurdolayn deposit	45 kilometers north of Esenguly	NA
Do.		Kuuli deposit	40 kilometers north of Turkmenbashi	NA
Do.		Malla-Kara deposit	Along the Uzboi channel	NA
Do.		Sandyk deposit	Southern part of Mikhailov gulf	NA
Do.		Sazykly deposit	On the shore of Balkhan gulf	NA
Do.		Sultan-Sanjar deposit	Left shore of Amu-Darya river	NA
Do.		Teke-Nemkzar deposit	Er-Oylan area, Badkhyz region	NA
Iodized salt		Guwlyduz Enterprise	Guwlyduz salt factory in Balkan Welayat	60
Sodium sulfate		Ak-Gez and Torangly deposits	Deposits at Uzun-Su station	NA
Do.		Garabogazsulfate Association	Bekdash, Kyzyl-Kup, Umachal deposits, Kara-Bogaz-Gol Lagoon (off the Caspian Sea)	100
Do.	metric tons	SI Turkmenhimiya Holding	Garabogazcarbamid plant, Balkan Welayat	400
Do.		NA	Deposit in mountains near Ashgabat	NA
Steel, rolled		Turkmen metallurgical plant	Plant near Ashgabat	160
Sulfur		Kurkutly deposit	70 kilometers northeast of mountains in Turkmenbashy	NA
Do.		Kyrk-Djul'ba deposit	Deposit in Central Karakum	NA
Do.		Turgai-Dak deposit	15 kilometers north of Bala-Ishem Balkan Welayat	NA
Do.		State Concern Turkmengaz (Government, 100%)	Three plants, Galkynysh, Mary Welayat	600
Sulfuric acid		SI Turkmenhimiya Holding	Turkmenabat, Lebap Welayat	500

[e]Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

[1]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 locations.

[2]The majority of companies are Government owned.

[3]Capacity estimates are totals for all enterprises that produce refined petroleum.