



2009 Minerals Yearbook

TURKMENISTAN [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF TURKMENISTAN

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Although Turkmenistan produces a wide range of industrial minerals, its major mineral resources are its oil and gas. The country is a leading regional natural gas producer; Turkmenistan has several of the world's largest gasfields, which include the Dauletabad-Donmez, which was brought into production in 1982, and the Shatlyk, which was brought into production in the early 1970s. Turkmenistan has two oil refining centers—the Turkmenbashi complex of oil refineries and the Seydi oil refinery.

The country's leading nonfuel mineral operations were the Arpaklenskiy barite-witherite enterprise, the Cheleken ozokerite (a naturally occurring odoriferous mineral wax) enterprise, the Gaurdak sulfur plant, the Karabogazsulfate association, the Kara-Kum sulfur plant, and the Oglanly bentonite mining enterprises. One of the leading enterprises that extracted chemical raw materials was the Karabogazsulfate association, which recovered salts from the Kara-Bogaz-Gol lagoon off the Caspian Sea. The association produced bischofite, Caspian Sea salt, epsomite, Glauber's salt, and sodium sulfate. In the western part of the country, iodine-bromine brines were extracted at the Boyadagskoye, the Cheleken, and the Nebitdag deposits and then processed at the Cheleken and the Nebitdag iodine-bromine plants.

The State Corporation Turkmengeologiya was founded in 1938, and has since engaged in systematic large-scale studies of the geologic structure of Turkmenistan. During its more than 70 years of existence, Turkmengeologiya has discovered more than 600 mineral deposits, including bentonite, celestine, cement raw materials, coal, iodine-bromine, kaolin, native paraffin, natural gas, petroleum, potash, sodium sulfate, sulfur, and table salt, and prepared them for development. Turkmengeologiya engages in exploration and maintains data about the geologic structure and mineral resources of Turkmenistan. It also conducts geologic studies in Turkmenistan's sector of the Caspian Sea. Since 1991, when Turkmenistan became an independent state, the country's geologists have continued to provide data on the country's mineral resources to support the development of new industrial enterprises and the expansion of existing enterprises (State Corporation Turkmengeologiya, The, 2010). As of 2009, more than 1,000 oil and gas structures and more than 150 fields had been discovered in Turkmenistan onshore and offshore, although only one-third of these structures and fields were under development (Interfax Russia & CIS Oil and Gas Weekly, 2009c).

Prospectors from Turkmengeologiya discovered a number of major deposits, which included the Oglanly bentonitic clay deposit; the Arik and Sakyrhmin celestine deposit; the Tuarkyr coal deposit; the Dauletabad-Donmez gas condensate field; the Garabil-Gurrukbil, the Garadzaovlak, the South Yolotan-Osman, the Yashlar, and the Zeagli-Darvaza gas and oil deposits; the Boyadag and the Nebitdag-Monzhuklin iodide-bromine brines; the Kyzylkainskoye kaolin deposit; the Karlyuk and the Karabil potassium salts deposits; and the Gaurdak sulfur deposit. The latest versions of geologic maps

of Turkmenistan were published on scales of 1:500,000 and 1:1,000,000. Turkmengeologiya employed 8,200 specialists, of which 1,500 were engineers and technicians. Twenty-five employees held doctorate and candidate of science degrees (State Corporation Turkmengeologiya, The, 2010).

Production

Production data and other information regarding mineral production for most mineral commodities except natural gas and oil have not been available for a number of years. Consequently, production estimates in table 1 generally reflect past levels of production. In 2009, for the first time in many years, data on natural gas and oil production do not appear to have been reported. Because Turkmenistan discontinued its exports of gas though Russia as of April 9, 2009, it is assumed that there was a commensurate precipitous decline in Turkmenistan's natural gas production.

Structure of the Mineral Industry

All mineral production enterprises were state owned and all deposits were being developed by enterprises subordinate to the state and its ministries. Based on a law passed in 1992, foreign firms were permitted to establish joint ventures only with state-owned companies. In 2007, the President of Turkmenistan stated that a new version of the Turkmenistan Constitution should be drafted and that the new version must bar the sale of the country's mineral resources to private interests. The new Constitution, he said, should clearly state that all natural and mineral resources of the country are part of the national wealth and may not become private property and that the right to sell or pledge these resources must remain with the Government. The Government, in turn, must ensure care for the environment, and must encourage the population to develop a pro-environment mentality and behavior. He also stated that the new Constitution should rule out the slightest possibility of discrimination in the hiring of Turkmenistan's citizens by foreign companies, and that citizens must be paid the same salary as foreign employees who do the same amount and type of work (Trend, 2008).

Commodity Review

Industrial Minerals

Bromine and Iodine.—Turkmenistan refloated tenders for two projects to develop bromine and iodine production facilities. Bidding would be for designing and constructing turnkey production facilities to produce 350 metric tons per year (t/yr) of iodine and 5,500 t/yr of bromine in the Hazar area and 300 t/yr of iodine and 2,800 t/yr of bromine in the Boyadag area (News Central Asia, 2009b).

Mineral Fuels

Natural Gas.—The country's natural gas output was estimated to have declined by about one-half in 2009 compared with that of 2008 owing to Turkmenistan discontinuing gas exports through Russia. On April 9, 2009, an explosion on the Central Asia-Center (CAC)-4 pipeline reduced the supply of Turkmenistan's gas to Russia by almost 90%. CAC-4 was one of five main trunk pipelines that constituted the CAC pipeline network. The explosion took place at the Ilyak-Deeryalyk section of the pipeline. Turkmenistan officials explained that the explosion happened because the Government was given insufficient notice by GazpromExport (the Gazprom subsidiary that handled the purchase of gas from Turkmenistan) of a sharp reduction in the volume of gas that it would buy (Interfax Russia & CIS Oil and Gas Weekly, 2009b, News Central Asia, 2009a). Some analysts have said, however, that they doubt that low pressure could have caused the blast and that pipelines do not explode from low pressure; for example, they said that in January 2009, when Russia fully cut its gas shipment to Ukraine, there was no resulting explosion (Reuters, 2009).

On December 22, 2009, Russia and Turkmenistan reached an agreement on the resumption of Turkmenistan's gas supplies at an annual rate of up to 30 billion cubic meters. On January 9, 2010, Turkmenistan restarted natural gas shipments to Russia (Interfax Russia & CIS Oil and Gas Weekly, 2010).

In December 2009, the Government of Turkmenistan commissioned the Turkmenistan-Uzbekistan-Kazakhstan-China pipeline, which would enable Turkmenistan to export up to 40 billion cubic meters per year of natural gas to China for the next 30 years. Turkmenistan also commissioned a second gas pipeline to Iran at the start of 2010; this pipeline would be capable of transporting up to 20 billion cubic meters per year of natural gas. Turkmenistan's first pipeline to Iran could transport up to 20 billion cubic meters per year of natural gas, but in 2009, only about 8 billion cubic meters was exported to Iran through this pipeline (Interfax Russia & CIS Oil and Gas Weekly, 2010).

Outlook

The chairman of Turkengaz's projections of almost doubling gas production to 120 billion cubic meters in 2010 and then more than tripling production to 240 billion cubic meters by 2030 would require the country to attract additional foreign investment. Turkmenistan stated that it is interested in broad international cooperation to implement large investment projects in Turkmenistan's sector of the Caspian Sea on a production-sharing-agreement basis. Such projects would involve not only gasfield and oilfield development, but also construction of gas transport facilities, rehabilitation of existing gas and oil wells, modernization of refining facilities, and the acquisition of updated equipment and technology (Interfax Russia & CIS Oil and Gas Weekly, 2008).

Turkmenistan planned to increase its gas exports, which would require developing new pipeline routes. The U.S. Assistant Secretary for South and Central Asian Affairs stated that the United States backed diversification of energy

markets and transit routes for Central Asian countries and that this diversification should not be at the expense of traditional trade ties but rather could potentially intensify these ties (Interfax Russia & CIS Oil and Gas Weekly, 2009d).

While attending the 64th session of the United Nations General Assembly in New York, the President of Turkmenistan and the U.S. Secretary of State described the energy sector as a priority area for cooperation between the two countries. The U.S. Secretary of State declared the U.S. Government's readiness to support and contribute to measures designed to diversify Turkmenistan's energy sources, which could include using the experience of U.S. companies in applying state-of-the-art technology (Interfax Russia & CIS Oil and Gas Weekly, 2009e).

While attending a business forum in New York City, the President of Turkmenistan invited American businesses to invest in local-level energy projects in Turkmenistan. Priorities for investment, the President stated, would be for the appraisal and development of hydrocarbon fields, massive development of Turkmenistan's sector of the Caspian sea, and the modernization of petroleum refineries. He stated that Turkmenistan has more than 1,000 prospective oil and gas fields, including the South Yolotan-Osman field, which an independent audit company had suggested was the world's fourth largest gasfield. The President said that Turkmenistan's sector of the Caspian Sea, could be divided into 32 blocks. Some of these blocks were already producing oil and gas under production-sharing agreements. He stated that he would welcome the participation of certain American energy companies (Interfax Russia & CIS Oil and Gas Weekly, 2009a).

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TABLE 1
TURKMENISTAN: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2005	2006	2007	2008	2009
INDUSTRIAL MINERALS					
Bentonite	50,000	50,000	50,000	50,000	50,000
Bentonite powder	250	250	250	250	250
Bischofite	100	100	100	100	100
Bromine kilograms	150,000	150,000	150,000	150,000	150,000
Cement	696,000 ^{r,4}	920,600 ^{r,4}	941,000 ^{r,4}	1,025,000 ^{r,4}	1,100,000 ⁴
Epsomite	NA	NA	NA	NA	NA
Ferrous bromide, 51% Br	85	85	85	85	85
Gypsum	100,000	100,000	100,000	100,000	100,000
Iodine	270,000	270,000	270,000	270,000	270,000
Lime	16,000	16,000	16,000	16,000	16,000
Nitrogen, N content of ammonia	220,000	250,000	270,000	270,000	270,000
Salt	215,000	215,000	215,000	215,000	215,000
Sodium sulfate	60,000	60,000	60,000	60,000	60,000
Sulfur	9,000	9,000	9,000	9,000	9,000
MINERAL FUELS AND RELATED MATERIALS					
Natural gas million cubic meters	60,420 ⁴	63,201 ⁴	72,300 ⁴	70,501 ⁴	38,000
Petroleum					
Crude	9,700,000 ⁴	8,950,000 ⁴	9,750,000 ⁴	9,678,000 ⁴	10,000,000
Refined	6,037,000 ⁴	6,500,000	7,000,000	7,300,000 ⁴	7,600,000

^rRevised. NA Not available.

¹Estimated data are rounded to no more than three significant digits.

²Table includes data available through July 13, 2010.

³In addition to the commodities listed, argillite, barite, clay, coal, dolomite, limestone, ozokerite, potash, silica sand, sand and gravel, and strontium (celestite) may be produced, but available information is inadequate to estimate output.

⁴Reported figure.

TABLE 2
TURKMENISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2009^{1,2}

(Metric tons unless otherwise specified)

Commodity		Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity
Ammonia	thousand metric tons	Maryzoat Association	Mary region	400,000
Argillite	cubic meters	Keramzit plant	Yagmanskoye deposit	200,000
Barite-witherite		Arpaklenskiy mining enterprise	Arpaklen deposit	10,000
Do.		Kumytash deposit and other deposits	NA	NA
Bench gravel and loam:				
Bench gravel		Bezmeinskiy deposit	Near Asgabast	1,200,000
Loam		do.	do.	12,000
Bischofite, epsomite, Caspian Sea salt, Glauber's salt		Karabogazsulfate Association	Kara-Bogaz-Gol Lagoon, off the Caspian Sea	NA
Bromine		Cheleken plant	Celeken region	4,740
Do.		Nebitdag plant	Balkanabat region	2,370
Cement		Bakharlinskiy cement plant	South of Kelyata train station	1,000,000
Do.		Bezmeinskiy cement plant	Kelyata	1,400,000
Clays:				
Bentonite		Oglanly Mine	Oglanly region	100,000
Kaolin		Ashkhabad glass plant	Kyzylkainskoye deposit	80,000 ^e
Do.		Tuarkyrskoye deposit	250 kilometers southeast of Turkmenbasy	NA
Dolomite		Ashkhabad glass plant	Kelyatinskoye deposit	NA
Gypsum		IA Turkmenmineral	Mukry, Tagorin deposits	NA
Do.		Wastes from Gaurdak sulfur deposit	Gaurdak, Gora	NA
Do.		Krasnovodsk Aylagy (anhydride) deposit	9 kilometers east of Turkmenbasy	NA
Iodine		Cheleken plant	Celeken region	NA
Do.		Nebitdag plant	Balkanabat region	NA
Limestone				
Do.		Gaurdak	4 kilometers northeast of Gowurdak	NA
Do.		Kara-Dzhumalaks koye	60 kilometers from Gowurdak	NA
Limestone, for facing materials		Charshanginskoye, Gaurdaks koye, Geok-Tepinskoye, Kaylyu, Krasnovodsk Aylagy (tuff and granite), and Tyuzmergenskoye deposits	NA	NA
Do.	cubic meters	Tagarinskoye deposit	8 kilometers from Gowurdak	1,000 ^e
Limestone, for filling stone	do.	Aeroport deposit	21 kilometers northeast of Turkmenbasy	2,000
Do.	do.	Bekdashskoye deposit	200 kilometers north of Turkmenbasy	5,000
Do.	do.	Dostlukskoye deposit	230 kilometers southeast of Turkmenbasy	2,000
Do.	do.	Mukrinskoye deposit	60 kilometers southwest of Gowurdak	25,000
Natural gas	million cubic meters	Achaks koye, Dauletabad-Donmez, Gygyrlinskoye, Yolotan (South Yolotan-Osman), North and South Naipskiye, Shatlyk, and Yashlar deposits	Onshore in eastern and southwestern parts of country and offshore in Caspian Sea; Amu-Dar'ya and Murgab Basins; Dashoguzskiy, Lebapskiy, Maryyskiy deposits	90,000 ^{e,3}
Ozokerite		Cheleken mining enterprise	Celeken region	NA
Petroleum:				
Crude	thousand metric tons	Barsa-Gelmesskoye, Burunskoye, Cheleken, Gograndagskoye, Ioltan (South Yolotan-Osman), Kamyshldzhinskoye, Korturtepinskoye, Kum Dag, Kuydzhikskoye, Okaremskoye, and Yashlar deposits	Centered in Caspian plain in west Turkmenistan and in offshore oilfields to the west of Cheleken Peninsula in Caspian Sea	11,000 ^{e,3}
Refined	do.	Seydi oil refinery	Turkmenabat region	5,000
Do.	do.	Turkmenbashi complex of oil refineries	Turkmenbasy	6,000
Potash (sylvinite, carnallite)		Karabil'skoye deposit	17 kilometers south of Gowurdak	NA
Quartz sand		Annauskoye, Babadurmazskoye, Bakhardenskoye, and Kelyatinskoye deposits	NA	NA

See footnotes at end of table.

TABLE 2—Continued
 TURKMENISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2009^{1,2}

(Metric tons unless otherwise specified)

Commodity		Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity
Rock salt		Gaurdak deposit	8 kilometers from Gowurdak	15,000 ^e
Do.		Khodzaguymaskoye deposit	4 kilometers west of Gowurdak	NA
Do.		Kugitangskoye deposit	75 kilometers from Gowurdak	2,000 ^e
Do.		Uzun-Kudukskoye deposit	20 kilometers from Gowurdak	2,000 ^e
Salt		Kuulinskoye deposit	40 kilometers north of Turkmenbasy	650,000 ^e
Sand and gravel	cubic meters	Dushaksoye deposit	NA	1,150,000
Do.	do.	Kala-I-Morskoye deposit	NA	925,000
Do.	do.	Kernayskoye deposit	NA	36,000
Do.	do.	Kubatayskoye deposit	NA	740,000
Do.	do.	Ufrinskoye deposit	NA	900,000
Sodium sulfate		Karabogazsulfate Association	Bekdash, Kara-Bogaz-Gol Lagoon (off Caspian Sea)	400,000
Strontium (celesite)		Shakhtaminskoye deposit	Near Gowurdak	NA
Sulfur		Darvaza, Segli-Kar, and Kara-Kum sulfur plants	Kara-kum deposit (mining ceased 1962)	NA
Do.		Gaurdak plant	Gaurdak deposit (mining ceased 1997)	500,000 ^e
Do.		IA Turkmenmineral	Gora deposit	340,000
Do.		Kugitangskoye deposit	75 kilometers from Gowurdag	NA

^eEstimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

¹Many location names have changed since the breakup of the Soviet Union. Many enterprises and deposits, 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.

²Data are not adequate to determine if production took place.

³Capacity estimates are totals for all enterprises that produce that commodity.