



2011 Minerals Yearbook

TURKMENISTAN

THE MINERAL INDUSTRY OF TURKMENISTAN

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Turkmenistan has a wide variety of mineral deposits, but the most important from the economic perspective are its oil and gas resources. Turkmenistan's natural gas reserves are among the largest in the world and were estimated by different sources to be from 7 to 25 trillion cubic meters. Until recently, however, the country faced significant difficulties in bringing its mineral resources to the world markets. Turkmenistan's gasfields—several of which are among the world's largest—are located in the Amu Darya basin in the southeast, the Murgab basin in the east, and the South Caspian basin in the west. Recent discoveries at the South Yolotan and Osman gasfields in the eastern part of the country, which were later combined and renamed Galkynysh, are likely to add significantly to the current proven reserves. Turkmenistan's oil reserves as of January 2012 were estimated to be 600 million barrels (Mbbbl) according to Oil and Gas Journal. Most of Turkmenistan's oilfields are located in the west of the country in onshore areas near the Caspian Sea (U.S. Central Intelligence Agency, 2012; U.S. Department of State, 2012; U.S. Energy Information Administration, 2012).

Among the nonfuel minerals produced in Turkmenistan are bentonite, bischofite, bromine, epsomite, gypsum, iodine, kaolin, lime, quartz sands, salt, sodium sulfate, and sulfur. In February 2011, the President of Turkmenistan issued an order to speed up prospecting for and developing rare and rare-earth metals deposits, especially in Lebap Welayaty. The President requested that the Government quickly prepare a program to discover and mine mineral resources, with an emphasis on rare-earth minerals. It was emphasized that those minerals can be either used in domestic production or exported, with the goal of turning Turkmenistan into a technologically developed country (Polpred.com, 2011).

Production

Detailed 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. The State Committee on Statistics of Turkmenistan reported only production growth rates for most of the economic categories that it tracks, including those for construction materials, metallurgy, mineral fertilizers, and mineral products. Production estimates in table 1 reflect past levels of production.

Minerals in the National Economy

Turkmenistan's gross domestic product (GDP) in 2011 was estimated to be \$27.6 billion; in 2011, real GDP increased by an estimated 14.7%, which made Turkmenistan the second fastest growing economy in the world; in 2010, real GDP increased by 9.2%. According to estimates by the U.S. Central Intelligence Agency, industrial production contributed 24.5% of Turkmenistan's GDP (State Committee on Statistics of

Turkmenistan, 2012; U.S. Central Intelligence Agency, 2012; U.S. Energy Information Administration, 2012).

The country's exports in 2011 amounted to an estimated \$14.8 billion, whereas the imports were valued at \$9.6 billion. The major export commodities of Turkmenistan were cotton, crude oil, natural gas, petrochemicals, and textiles. The main export partner of Turkmenistan was China, which received 59.2% of the country's exports in terms of value. It was followed by Turkey (5.0%), Italy (4.7%), and the United Arab Emirates (4.3%). Turkmenistan's main imported commodities were chemicals, foodstuffs, and machinery and equipment. Turkmenistan's major import partner was Turkey, which supplied 21% of all Turkmen imports, in terms of value. It was followed by Russia (14.0%), China (11.1%), the United Arab Emirates (7.9%), and Germany (5.8%) (U.S. Central Intelligence Agency, 2012).

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Iron and Steel.—In May 2009, the country opened the first metallurgical plant in the country. The plant was located in the area of Ashgabat and was built primarily to meet the needs of the construction industry. The construction of the plant was conducted by a consortium of Turkish companies and cost the country \$64.5 million. The total capacity of the plant was 160,000 metric tons per year (t/yr), of which about 135,000 t/yr was expected to be produced from ferrous metals scrap, and the rest would be made from the imported ingots. The plant would produce rolled steel and rebar, as well as angle brackets and channel bars. The plant was expected to produce enough products to satisfy about 50% of domestic demand. Between the opening and November 2010, the plant produced 42,700 metric tons (t) of rolled steel, 30,200 t of rebar, 12,000 t of channel bars, and 570 t of angle brackets. No information about the 2011 production volume and about the crude steel production volume at the plant was available (Dialogstroy.ru, 2009).

Industrial Minerals

Cement.—In the past several years, Turkmenistan was increasing its cement production capabilities. The first cement plant was built in 2005; it was designed by Kawasaki Co. of Japan and built in the village of Kelyata with the capacity to produce 1 million metric ton per year (Mt/yr) of cement. The second plant, which was located in the city of Bakharly, produced three types of cement—portland cement for constructing buildings of particularly high stability; portland

cement specifically formulated for use in gas and oil industries; and sulfate-resistant portland cement used for construction of underground and hydro-technical buildings and basements in aggressive environments. The total capacity of the Bakharly plant was also 1 Mt/yr. The city of Bakharly has a large resource base of clay, lime, and quartz sand; gypsum was shipped from Lebap Welayaty. The third cement plant in the village of Jebel in Balkan Welayaty was opened in October 2011. The Jebel plant cost 180 million euros (\$240.6 million) to build and also had the capacity to produce 1 Mt/yr of cement. The Jebel cement plant was expected to supply cement for construction of the national tourist zone called Avaza, as well as for the North-South railroad (which runs from Kazakhstan through Turkmenistan to Iran), and for residential construction. All three plants were built by Turkish construction companies. One more cement plant with an annual capacity of 1 Mt/yr was under construction in the village of Garlyk in Lebap Welayaty; it would be located in close proximity to a future kaolin plant (BusinessCem.ru, 2011a, b; Easttime.ru, 2011b).

Potash.—In January 2010, the state enterprise OAO Belgorkhimprom of Belarus and the Turkmenkhimia concern, which was owned by the Government of Turkmenistan, signed a contract according to which the Belarusian company would build Turkmenistan's first mining and beneficiation complex (GOK), called the Garlyk GOK, within a 5-year period. The Garlyk GOK, which would be located in Turkmenistan's Lebap Welayaty, would produce potash fertilizers and have a production capacity of 1.4 Mt/yr. The majority of construction on the ground was scheduled to take place in 2012 and 2013, and the total cost of the project would be \$1.2 billion. The Koca Group, which was a construction company based in Turkey, was building the shafts for the mine, and the Belarusian mine construction company OAO Trest Shakhtospetsstroy was also participating in the mine construction. Gomel Plant of Wooden Construction of Belarus was working on building arches for the ore storage area. Most technological equipment for the future mine and beneficiation plant was shipped from Belarus and other countries. In addition to the construction work, Belarus was helping Turkmenistan train specialists who would work at the mine and the beneficiation plant. A total of 194 students from Turkmenistan were studying at two Belarusian institutions of higher education and were expected to graduate by the time the construction of the mine is complete (Minerjob.ru, 2009; Regnum.ru, 2012).

Mineral Fuels

Natural Gas.—In 2011, Turkmenistan produced 66.2 billion cubic meters of natural gas, about 80% of which was exported. Historically, most of the exported Turkmen gas was shipped to Russia, where it was either used or shipped on to Europe. The export routes for carrying Turkmen gas were the two CAC pipelines, which connected Turkmenistan with Russia and other countries of the former Soviet Union. In November 2010, Turkmenistan's Ministry of Oil, Gas, and Mineral Resources announced that the country's new energy strategy was to increase gas production to 230 billion cubic meters per year by 2030, of which 180 billion cubic meters would be exported

(Reuters.com, 2010). The Government realized that the key means to achieving this goal was to diversify its export routes for its natural gas resources.

In addition to the two CAC pipelines and the Korpezh-Kurt Kui pipeline, which linked Turkmenistan and Iran, Turkmenistan was constructing several new pipelines with the goal of bypassing transit through Russia. A second pipeline connecting Turkmenistan to Iran (the Dauletabad-Khangiran pipeline) was initiated in the beginning of 2010; when the second phase of construction is completed, the \$550 million pipeline was to have a capacity of 12 billion cubic meters per year. The Central Asia-China Pipeline (CACP) connects Turkmenistan's eastern fields through Uzbekistan to western China. The pipeline began operations at the end of 2009 and had an initial capacity of 30 billion cubic meters per year; the pipeline's capacity was expected to increase to about 60 billion cubic meters per year by 2015. The construction of the East-West pipeline was initiated in May 2010. The pipeline would connect Turkmenistan's southeastern gasfields to the Caspian Sea and serve as a potential transit link to Europe using routes along the Caspian Sea. The pipeline's capacity was expected to be 30 billion cubic meters, and the construction was planned to be completed by 2015. The Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline was a trans-Afghanistan pipeline intended to reach markets in Pakistan and India. The pipeline's proposed capacity was 35 billion cubic meters per year, and it would be more than 1,500 kilometers long. The four countries (Turkmenistan, Afghanistan, Pakistan, and India) signed an inter-Governmental agreement in December 2010 and continued discussing the details of the project throughout 2011. The Trans-Caspian Gas pipeline (TCGP) was proposed to connect Turkmenbashi City, Turkmenistan, and Baku, Azerbaijan. The pipeline would bypass both Russia and Iran and would connect to the proposed Nabucco pipeline between Turkey and Austria. The TCGP was proposed to have a capacity of 30 billion cubic meters per year and would run across the floor of the Caspian Sea at an estimated cost of \$5 billion; however, the disputes concerning Caspian seabed jurisdiction could significantly undermine the project's viability (U.S. Energy Information Administration, 2012).

Petroleum.—In 2011, Turkmenistan produced about 9.88 million metric tons (Mt) of petroleum, which was an increase of 8.6% compared with that of 2010. The majority of oil produced in Turkmenistan was extracted by foreign companies working in the country under production-sharing agreements. According to such contracts, the profits were split between the company and the Government of Turkmenistan (usually at 50-50 shares). The companies involved were from Canada, China, Germany, Italy, Malaysia, Russia, the United Arab Emirates (UAE), and the United Kingdom. The leading companies working in the Turkmen Caspian Sea were Petronas of Malaysia and Dragon Oil Ltd. of the UAE (Nefteryok.info, 2012).

Dragon Oil was planning to invest \$500 million in oil production during the course of 2011. Dragon Oil was working at the Cheleken sector in the eastern part of the Caspian Sea. As of the beginning of 2011, proven resources of the Dragon Oil sector of Cheleken was 639 Mbbbl (88 Mt) of oil and 3 trillion cubic feet (85 Mt) of natural gas. In 2012, Turkmenistan was planning to reach 11 Mt of crude oil production (Easttime.ru, 2011a).

Outlook

For the next few years, Turkmenistan is expected to continue an aggressive expansion of its gas pipelines to the east (China) and to the south (Pakistan and India). Expansion to the west in the general direction of Europe is more problematic because of conflicts of interest related to both the TCGP and the Nabucco pipeline projects. In addition, in the past several years, Turkmenistan started to develop its nonfuel mineral resources, predominantly its industrial minerals related to construction, and one can expect those developments to continue in the near future.

Although it is impossible to predict whether the Government of Turkmenistan will be able to reach gas production of 230 billion cubic meters by 2030, it is clear that the country has sufficient gas reserves to achieve this goal. What remains to be seen, however, is whether the country will be able to use the proceeds to benefit the rest of the country's economy and improve the living standards for its residents.

References Cited

- BusinessCem.ru, 2011a, "Na zapade Turkmenistana postroen krupneyshiy v strane tsementnyi zavod" [The largest cement plant is built in Western Turkmenistan]: BusinessCem.ru, October 21. (Accessed December 26, 2012, at <http://businesscem.ru/rus/news/1259.html>.)
- BusinessCem.ru, 2011b, "Turkmentsement" uvelichil proizvodstvo syr`ya na 10.8%" [Turkmentsement increased production of raw materials by 10.8%]: BusinessCem.ru, June 2. (Accessed December 26, 2012, at <http://businesscem.ru/rus/news/1141.html>.)
- Dialogstroy.ru, 2009, Pervyi v Turkmenii vveden v stroy [Turkmenistan's first metallurgical plant started operations]: Dialogstroy.ru, May 15. (Accessed December 26, 2012, at <http://www.dialogstroy.ru/news/?lang=rus&id=759>.)
- Easttime.ru, 2011a, Dragon Oil namerena investirovat' \$500 mln v dobychu v Turkmenii [Dragon Oil intends to invest \$500 million into production in Turkmenistan]: Easttime.ru, June 29. (Accessed December 26, 2012, at <http://easttime.ru/news/1/2/3319.html>.)
- Easttime.ru, 2011b, V Turkmenii postroili tsementnyi zavod za 180 mln evro [Turkmenia has built a cement plant for €180 million]: Easttime.ru, October 12. (Accessed December 26, 2012, at <http://easttime.ru/news/1/2/3473.html>.)
- Minerjob.ru, 2009, Belorusskoe OAO 'Belgorkhimprom' postroit pervyi v Turkmenistane gornoobagatitel'nyi kompleks [Belarusian OAO Belgorkhimprom will build the first in Turkmenistan mining and beneficiation complex]: Minerjob.ru, May 8. (Accessed December 26, 2012, at <http://www.minerjob.ru/viewnew.php?id=15446>.)
- Nefterynok.info, 2012, V 2012 godu 65% dobychi nefiti Turkmenistana pridetsya na dolyu Kaspiyskikh mestorozhdeniy [In 2012, 65% of Turkmen oil production will be from Caspian deposits]: Nefterynok.info, December 10. (Accessed December 26, 2012, at http://www.nefterynok.info/news.phtml?news_id=8524.)
- Polpred.com, 2011, [Untitled]: Polpred.com, February 5. (Accessed December 26, 2012, at http://polpred.com/?ns=1&ns_id=287429&cnt=160§or=5.)
- Regnum.ru, 2012, Belorussia reshaet problem stroitel'stva GOK v Turkmenii [Belarus is solving problems of building a mining and beneficiation complex in Turkmenistan]: Regnum.ru, December 20. (Accessed December 26, 2012, at <http://www.regnum.ru/news/economy/1607113.html>.)
- Reuters.com, 2010, Factbox—Turkmenistan's energy growth plans: Thomson Reuters, November 26. (Accessed December 26, 2012, at <http://www.reuters.com/article/2010/11/26/energy-turkmenistan-idUKLDE6AP0C720101126>.)
- State Committee on Statistics of Turkmenistan, 2012, Osnovnye social'no-ekonomicheskie pokazateli [Main socio-economic indicators]: State Committee on Statistics of Turkmenistan. (Accessed December 26, 2012, via <http://www.stat.gov.tm/>.)
- U.S. Central Intelligence Agency, 2012, Turkmenistan, *in* The world factbook: U.S. Central Intelligence Agency. (Accessed December 26, 2012, at <https://www.cia.gov/library/publications/the-world-factbook/geos/tx.html>.)
- U.S. Department of State, 2012, Turkmenistan: U.S. Department of State background note, January 23. (Accessed December 26, 2012, at <http://www.state.gov/r/pa/ei/bgn/35884.htm>.)
- U.S. Energy Information Administration, 2012, Turkmenistan: U.S. Energy Information Administration country analysis brief, January. (Accessed December 26, 2012, at <http://www.eia.gov/countries/cab.cfm?fips=TX>.)

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

(Metric tons unless otherwise specified)

Commodity ³	2007	2008	2009	2010	2011
METALS					
Rolled steel	--	--	10,000	40,000	50,000
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 ⁴	941,000	1,025,000	1,100,000	1,140,000	1,500,000
Epsomite	NA	NA	NA	NA	NA
Ferrous bromide, 74% 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	270,000	270,000	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 ⁴ million cubic meters	72,300	70,501	38,000	44,270	66,200
Petroleum:					
Crude:					
In gravimetric units	9,750,000 ⁴	9,678,000 ⁴	8,850,000	9,097,800 ⁴	9,882,300 ⁴
In volumetric units 42-gallon barrels	70,900,000	70,400,000	64,300,000	66,100,000	71,800,000
Refinery products:					
In gravimetric units	7,000,000	7,300,000 ⁴	7,600,000	7,752,000 ⁴	7,900,000
In volumetric units 42-gallon barrels	56,300,000	58,700,000	61,100,000	62,322,000 ⁴	63,200,000

NA Not available. -- Zero.

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

²Table includes data available through December 26, 2012.

³In addition to the commodities listed, barite, bench gravel, coal, dolomite, and kaolin are thought to be produced, but available information are inadequate to make reliable estimates of output.

⁴Reported figure.

TABLE 2
TURKMENISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(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 Welayaty	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 Asgabat	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	Cheleken region	4,740
Do.		Nebitdag plant	Nebitdag region	2,370
Cement		Bakharlinskiy cement plant	Bakharly	1,000,000
Do.		Kelyata cement plant	Kelyata	1,000,000
Do.		Jebel cement plant	Jebel	1,000,000
Clays:				
Bentonite		Oglanly Mine	Oglanly region	100,000
Kaolin		Ashkhabad glass plant	Kyzylkainskoye deposit	80,000 ^e
Do.		Tuarkyrskoye deposit	250 kilometers southeast of Turkmenbashi	NA
Coal		do.	do.	NA
Dolomite		Ashkhabad glass plant	Kelyatinskoye deposit	6,000 ^e
Gypsum		IA Turkmenmineral	Mukry, Tagorin deposits	300,000
Do.		Wastes from Gaurdak sulfur deposit	Gaurdak, Gora	400,000
Do.		Krasnovodsk Aylagy (anhydride) deposit	9 kilometers east of Turkmenbashi	160,000
Iodine		Cheleken plant	Cheleken region	355
Do.		Nebitdag plant	Nebitdag region	255 ^e
Limestone		Deposits: Gaurdak	4 kilometers northeast of Gaurdak	NA
		Kara-Dzhumalakskeye	60 kilometers from Gaurdak	
Limestone, for facing materials		Charshanginskoye, Gaurdakskeye, Geok-Tepinskoye, Kaylyu, Krasnovodsk Aylagy (tuff and granite), and Tyuzmergenskoye deposits	NA	NA
Do.	cubic meters	Tagarinskoye deposit	8 kilometers from Gaurdak	1,000 ^e
Limestone, for filling stone	do.	Aeroport deposit	21 kilometers northeast of Turkmenbashi	2,000
Do.	do.	Bekdashskoye deposit	200 kilometers north of Turkmenbashi	5,000
Do.	do.	Dostluksoye deposit	230 kilometers southeast of Turkmenbashi	2,000
Do.	do.	Mukrinskoye deposit	60 kilometers southwest of Gaurdak	25,000
Natural gas	million cubic meters	Achakskeye, Dauletabad, Dovieta-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; Amu-Dar'ya and Murgab basins; Dashoguzskiy, Lebapskiy, Maryyskiy deposits	90,000 ^{e,2}
Ozokerite		Cheleken mining enterprise	Cheleken region	NA

See footnotes at end of table.

TABLE 2—Continued
 TURKMENISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Metric tons unless otherwise specified)

Commodity		Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity
Petroleum:				
Crude	thousand metric tons	Barsa-Gelmesskoye, Burunskoye, Cheleken, Gograndagskoye, Ioltan (South Yolotan-Osman), Kamyshldzhinskoye, Korturtepinskoye, Kum Dag, Kuydzhijskoye, Okaremskoye, and Yashlar deposits	Centered in Caspian plain in west Turkmenistan and in offshore oilfields to the west of the Cheleken Peninsula in the Caspian Sea	11,000 ^{e, 2}
Refined	do.	Refineries: Seydi oil refinery Turkmenbashi complex of oil refineries	Lebap Welayaty Turkmenbashi	12,000 ²
Potash (sylvinite, carnallite)		Karlyuk deposit (experimental mine closed in 1998)	25 kilometers from Gaurdak	NA
Do.		Karabil'skoye deposit	17 kilometers south of Gaurdak	NA
Quartz sand		Annauskoye, Babadurmazskoye, Bakhardenskoye, and Kelyatinskoye deposits	NA	NA
Rock salt		Gaurdak deposit	8 kilometers from Gaurdak	15,000 ^e
Do.		Khodzhaguymaskoye deposit	4 kilometers west of Gaurdak	NA
Do.		Kugitangskoye deposit	75 kilometers from Gaurdak	2,000 ^e
Do.		Uzun-Kudukskoye deposit	20 kilometers from Gaurdak	2,000 ^e
Salt		Kuulinskoye	40 kilometers north of Turkmenbashi	650,000 ^e
Sand and gravel	cubic meters	Dushakoye 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 the Caspian Sea)	400,000
Steel, rolled		Turkmen metallurgical plant	Near Ashgabat	160,000
Strontium (celesite)		Arikskoye deposit (mining ceased in 1992)	Near Gaurdak	NA
Do.		Shakhtaminskoye deposit	do.	NA
Sulfur		Darvaza, Segli-Kar, and Kara-Kum sulfur plants	Kara-kum deposit (mining ceased in 1962)	NA
Do.		Gaurdak plant	Gaurdak deposit (mining ceased in 1997)	500,000 ^e
Do.		IA Turkmenmineral	Gora deposit	340,000
Do.		Kugitangskoye deposit	75 kilometers from Gaurdak	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, 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.

²Capacity estimates are totals for all enterprises that produce that commodity.