



# 2009 Minerals Yearbook

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AZERBAIJAN [ADVANCE RELEASE]

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# THE MINERAL INDUSTRY OF AZERBAIJAN

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Azerbaijan produced a range of metals and industrial minerals, including such metals as alumina, aluminum, iron ore, and steel. Its major importance as a world mineral producer, however, was based on its oil extracting industry. The country had been a significant oil producer for more than a century, but the focus since independence in 1991 was on developing offshore resources in the Caspian Sea. Oilfield and gasfield development was concentrated in two projects—the Azeri-Chirag-Guneshli (ACG) offshore oilfield complex and the Shah-Deniz offshore gas condensate field (State Oil Company of Azerbaijan Republic, 2008).

## Minerals in the National Economy

In 2009, the mining and quarrying sector accounted for 44.8% of the gross domestic product (GDP) compared with 52.7% in 2008. In 2009, as in 2008, almost all the output in the mining and quarrying sector was derived from the production of oil and natural gas. The production of refined petroleum products accounted for 2.2% of the GDP compared with 2.7% in 2008. In 2009, the production of other mineral products combined accounted for less than 1% of the GDP (State Statistical Committee of the Republic of Azerbaijan, 2010a). In 2009, of the 188,600 people employed in the industrial sector, 37,700 were employed in mineral extraction, 14,000 were employed in metallurgy and producing fabricated metal products, 9,100 were employed in producing nonmetallic metal products, and 5,900 were employed in producing refined petroleum products. Employment in each of these industrial activities was less than that of 2008 (State Statistical Committee of the Republic of Azerbaijan, 2010b).

## Production

In 2009, oil production in Azerbaijan increased by 12.7% compared with that of 2008 to more than 50.4 million metric tons (Mt). Natural gas production, however, remained at about the 2008 level. Production fell significantly in most other mineral producing sectors. Data on mineral production are in table 1.

## Structure of the Mineral Industry

State Oil Company of Azerbaijan Republic (SOCAR) was state-owned. It was responsible for producing oil and natural gas in Azerbaijan and for operating the country's two refineries and running the country's pipeline system. The Ministry of Industry and Energy, however, handled exports as well as exploration and production agreements with foreign companies. SOCAR had been a party to all international consortia developing oil and gas projects in Azerbaijan. On its own, SOCAR produced less than 20% of Azerbaijan's total oil output; the remainder was produced by the Azerbaijan International Operating Co. (AIOC). AIOC was a consortium of 10 petroleum companies that had

signed extraction contracts with the Government of Azerbaijan. AIOC was led by BP p.l.c., which was the leading foreign investor and had been active in Azerbaijan since 1992. AIOC had made significant direct investments in the development of the ACG fields, as well as the construction of the Baku-Tbilisi-Ceyhan (BTC) pipeline (U.S. Energy Information Administration, 2010).

Many AIOC members were also involved in the consortium for the development of the Shah-Deniz gasfield. BP and Statoil ASA were the operators of the Shah-Deniz gasfield development project and held the largest shares (25% each) in the Shah-Deniz consortium. Other shareholders included OAO LUKOIL Co., Oil Industries' Engineering and Construction (OIEC) of Iran, SOCAR, and Total S.A. of France, each of which had a 10% stake, and Türkiye Petrolleri A.O. (TPAO) of Turkey, which had a 9% stake (U.S. Energy Information Administration, 2010).

Azerigaz Production Union, which was a subsidiary of SOCAR, was responsible for natural gas processing, transport, distribution, and storage, mainly in the domestic market. Azneft Production Union (another SOCAR subsidiary) was responsible for exploration, development, and production from the older onshore and offshore natural gasfields owned directly by SOCAR (U.S. Energy Information Administration, 2010).

## Commodity Review

### Metals

**Aluminum.**—Aluminum production in 2009 was estimated to have decreased significantly. Azerbaijan reportedly exported 13,441 metric tons (t) of aluminum, which was a 76% decrease in exports compared with that of 2008 (News.Az, 2010). In 2007, the first and second electrolysis shops were commissioned at OJSC Azerbaijan Aluminum's (Azeraluminum's, or Azeral's) Sumgait aluminum smelter, which increased Sumgait's aluminum production capacity to 60,000 metric tons per year (t/yr). Azeraluminum's alumina production enterprise, which was based in the city of Ganca (Gəncə), had increased its alumina production capacity from 87,000 t in 2001 to 423,600 t in 2006. In 2009, however, Azeraluminum shut down its alumina production enterprise because of a global lack of demand for aluminum products (News.Az, 2010; ABC.AZ, 2011).

In March 2008, the President of Azerbaijan participated in an official ceremony for laying the foundation for the Ganca Integrated Steel Complex of Dashkesan Filizsaflashdirma JSC and the DET.AL aluminum smelter, which was to be constructed in the city of Ganca. The DET.AL aluminum smelter would have a production capacity of 100,000 t/yr. The construction of the new aluminum smelter would be carried out by China's Sichuan Machinery & Equipment Import & Export Co. Ltd., and the engineering would be carried out by Guiyang Aluminum & Magnesium Engineering & Research Institute (GAMI) of China.

Azerbaijan's aluminum production capacity would be increased to 160,000 t/yr from 60,000 t/yr, which would enhance the country's aluminum export potential (Noble Group, 2008).

**Copper, Gold, and Silver.**—In May, Anglo Asian Mining plc began producing gold at the Gedabek gold and copper mine, which is located about 55 kilometers (km) from the city of Ganca. Anglo Asian was controlled by R. V. Investment Group Services, and the Azerbaijan Government owned a 49% stake. Azerbaijan expected to increase its gold production by more than sixfold compared with that of 2009 to 7 t/yr by 2014, based mainly on increased production at Gedabek (Antidze, 2011). Anglo Asian also planned to begin producing copper and silver from ore from the mine beginning in 2010 (Anglo Asian Mining plc, 2011).

**Iron and Steel.**—The Ganca Integrated Steel Complex, which was under construction, would handle the whole steel production cycle from the processing of iron ore to production of the final product and would consist of a concentrator, a beneficiation plant, a direct-reduced iron plant, a pellet plant, and a steel melting shop. This complex would be constructed by EKON A.S. of Turkey based on technologies developed by Italy's Danieli & C. SpA and the Techint Group. The steelmaking plant would have the capacity to produce 1 million metric tons per year (Mt/yr) of steel billet. The investment period for the project was to be between 2008 and 2011. The steel produced at the steel melt shop would create domestic production capacity for producing high-quality steel pipes for the oil industry, as well as construction materials, rebar, and other metal products (Noble Group, 2008).

### **Mineral Fuels**

**Natural Gas.**—In 2009, natural gas production remained at about its 2008 level. According to the Oil and Gas Journal, Azerbaijan has proven natural gas reserves of approximately 30 trillion cubic feet (about 850 billion cubic meters) as of January 2010 (U.S. Energy Information Administration, 2010). According to Azerbaijan's Minister of Industry and Energy, Azerbaijan's has confirmed natural gas reserves of up to 3.5 trillion cubic meters (Interfax Russia & CIS Oil and Gas Weekly, 2010).

In 2009, Azerbaijan consumed about 64% of the natural gas it produced and exported the remainder. Almost all Azerbaijan's natural gas was produced from offshore fields, which included fields in the ACG complex and the Shah-Deniz offshore field. The Guneshli field, which was part of the ACG oil and gas fields system, provided associated gas to the Azerigaz system for domestic use. The country's leading offshore natural gas field was the Shah-Deniz natural gas condensate field, which was under development by the Shah-Deniz consortium. Increases in Azerbaijan's natural gas production were expected to come from increased production of associated gas from the ACG field system from which natural gas production was expected to increase by 30% by 2013, and from continuing development of the Shah-Deniz field, which was the world's largest natural gas discovery since 1978. According to BP, which was the project's technical operator, Shah-Deniz was estimated to have potential reserves of approximately 35 trillion cubic feet

(about 990 billion cubic meters) of natural gas (U.S. Energy Information Administration, 2010). According to Azerbaijan's Minister of Industry and Energy, proved reserves at the Shah-Deniz gas condensate field are 1.2 trillion cubic meters (Interfax Russia & CIS Oil and Gas Weekly, 2009, 2010).

Shah-Deniz is located offshore in the Caspian Sea approximately 60 miles southeast of Baki. Azerbaijan began exporting natural gas during the spring of 2007 owing to increased output from Shah-Deniz. The field produced 110 billion cubic feet (about 3.1 billion cubic meters) in 2008 and increased output to approximately 250 billion cubic feet (about 7.1 billion cubic meters) in 2009. Phase 1 output was expected to peak in 2010 at 304 billion cubic feet (about 8.6 billion cubic meters) (U.S. Energy Information Administration, 2010).

Phase 2 was expected to have a peak capacity of 700 billion cubic feet (about 20 billion cubic meters). The lack of a transit agreement between Turkey and Azerbaijan had delayed completion of phase 2, which was projected for 2016. A number of utilities in Western Europe were seeking to secure supplies for the proposed Nabucco pipeline, which, if completed, would transport natural gas from the Caspian Sea to Europe by way of Turkey. Phase 2 of Shah-Deniz was expected to be a major source of natural gas for the Nabucco pipeline. In addition, the Italy-Turkey-Greece pipeline (ITGI) and the proposed Trans-Adriatic pipeline (TAP) were expected to transport gas from the Shah-Deniz field to Europe (U.S. Energy Information Administration, 2010).

Before the startup of the Shah-Deniz natural gas field, Azerbaijan had been importing natural gas from Russia. In 2009, Azerbaijan exported natural gas mainly by way of the South Caucasus pipeline (SCP) but had also used other pipelines to export gas to Russia and Iran. In exchange, Iran was supplying natural gas to Azerbaijan's Naxcivan exclave, which was physically separated from Azerbaijan by Armenia (U.S. Energy Information Administration, 2010).

**Oil.**—In 2009, oil production in Azerbaijan increased by 12.7% compared with that of 2008, and oil production was expected to continue to increase in 2010. The increase in oil output was somewhat lower in 2009 than was expected owing to a prolonged partial shutdown at the ACG project early in 2009 as a result of a gas leak. The ACG fields located 62 miles (99.78 km) east of Baki in the Caspian Sea were Azerbaijan's leading oil producers. Peak production from ACG was expected to reach 1.1 million barrels per day (about 55 Mt/yr) in 2010 (U.S. Energy Information Administration, 2010).

In Azerbaijan, a number of offshore exploration projects resulted in dry holes, which either contained no hydrocarbons or the oil discovered was deemed to be noncommercial (not economic to extract). Also, exploration was further dampened by boundary disputes regarding sectoral demarcation of the Caspian Sea (U.S. Energy Information Administration, 2010).

Onshore production was relatively small compared with offshore production. In 2009, Azerbaijan had some nine onshore oil production-sharing agreements at various fields, which accounted for only a fraction of total oil production (U.S. Energy Information Administration, 2010).

According to the U.S. Energy Information Administration, Azerbaijan exported an estimated 876,000 barrels per day

(about 43.5 Mt) in 2009, which was a 16% increase compared with that of 2008. Most of Azerbaijan's oil was exported by pipeline, but small amounts were shipped by truck and railway. Azerbaijan had three major export pipelines. The majority of oil exports passed through the BTC pipeline system, which runs 1,110 miles (about 1,790 km) from the ACG fields in the Caspian Sea through Georgia to the Mediterranean Port of Ceyhan, Turkey. From there the oil was shipped by tanker mainly to European markets. The BTC pipeline was also used to export oil from Kazakhstan. The Baku-Novorossiysk pipeline is 830 miles (about 1,300 km) long and extends to Novorossiysk, Russia, on the Black Sea. The Baku-Supsa pipeline runs 520 miles (about 840 km) from Baki to Supsa, Georgia, on the Black Sea (U.S. Energy Information Administration, 2010).

## Outlook

Azerbaijan has been a major focus of foreign investment in the Caspian region in its oil and gas sectors and is emerging as one of the Caspian region's most important exporters of oil and natural gas. Supplies of natural gas and oil from Azerbaijan are expected to increase in the future. Continued disputes with Armenia over the Nagorno-Karabakh region, as well as issues with Armenia concerning Azerbaijan's access to the Naxcivan exclave, however, continue to provide some political risk for investors. Also, conflicting claims between Azerbaijan and Iran concerning maritime and seabed boundaries of the Caspian Sea provide continuing uncertainty. Iran is insisting on an even one-fifth allocation among the Caspian Sea's five littoral states and is challenging Azerbaijan's hydrocarbon exploration in disputed waters. Furthermore, bilateral talks continue with Turkmenistan on dividing the seabed, and the countries are contesting ownership of oilfields in the middle of the Caspian Sea. Offshore exploration for oil and gas could receive renewed interest and additional foreign investment if the littoral states reach an agreement on the legal status and borders in the Caspian Sea (U.S. Energy Information Administration, 2010).

The construction of a new steel complex and aluminum smelter is expected to increase the role of the nonoil sector in the country's economy as the implementation of both projects

will create new opportunities for the development of the metallurgical sector. They are expected to create jobs, enhance the export potential of the country, and add to tax payments (Noble Group, 2008). Reserves of gallium in aluminum raw materials give the country the potential to produce gallium.

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

(Metric tons unless otherwise specified)

Commodity	2005	2006	2007	2008	2009	
<b>METALS</b>						
Alumina	314,765 <sup>f</sup>	362,665 <sup>f</sup>	184,483	164,879	40,000	
Aluminum, primary and secondary	31,762	31,852	39,241	61,607	30,000 <sup>e</sup>	
Iron ore, marketable:						
Gross weight	7,300	11,300	17,600	28,100	--	
Fe content <sup>e</sup>	3,650	5,650	8,800	8,600	--	
Steel:						
Crude	286,117	54,309	273,393	100,000 <sup>f,e</sup>	50,000 <sup>e</sup>	
Pipes	1,257	14,108	25,706	28,196	6,900	
<b>INDUSTRIAL MINERALS</b>						
Bentonite	53,700 <sup>f</sup>	40,644	50,459	40,700 <sup>f</sup>	7,000	
Bromine <sup>e</sup>	2,000	2,000	2,000	3,500	3,500	
Caustic soda	30,000	30,509	18,013	20,635	7,000	
Cement	1,537,900	1,622,000	1,690,800 <sup>f</sup>	1,594,900 <sup>f</sup>	1,283,400	
Gypsum	28,242	35,034	22,037	38,375	45,630	
Iodine <sup>e</sup>	300 <sup>f</sup>	300 <sup>f</sup>	300 <sup>f</sup>	300	300	
Lime, construction	684	1,318	15,294	27,175	4,342	
Limestone	1,256,443	1,416,039	1,413,031	1,363,978	1,000,000 <sup>e</sup>	
Salt	11,202	12,029	7,127 <sup>f</sup>	7,527 <sup>f</sup>	5,466	
Sand, construction	662,410	986,700	702,100	1,247,200	801,100	
Sulfuric acid	18,800	19,700	24,800	39,400	12,100	
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Natural gas	thousand cubic meters	5,820,056	6,820,065	10,832,100	16,336,500	16,325,000
Petroleum:						
Crude		22,484,308	33,049,128	43,336,197	44,720,275	50,416,000
Refinery products		7,655,900	7,788,800	8,088,500	6,885,300	6,000,000 <sup>e</sup>

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>f</sup>Revised. -- Zero.

<sup>1</sup>Table includes data available through January 31, 2011.

TABLE 2  
AZERBAIJAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2009<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits	Locations or deposit names	Annual capacity <sup>6</sup>
Alumina	Gyandzha refinery	Ganca	450,000
Aluminum	OJSC Azerbaijan Aluminum [Azeraluminum (Azeral)] Sumgait smelter	Sumqayit	60,000
Alunite ore	Zaglik alunite mining directorate	Zaylik, Dashcasan region	600,000
Cement	Plants: Karadagly Tauz	Locations: Qaradagli Tavuzcay region	2,000,000 <sup>3</sup>
Clays, bentonite	Dash-Salakhinskoye deposit	do.	100,000
Copper ore	Karadagskiy complex	Samkir region	30,000
Iodine and bromine	Baku, Karadagly, and Novaneftechala plants	Process oil well brines at plants in Baki, Qaradagli, and Neftcala	NA
Iron ore, marketable	Dashkasan mining directorate	Daskasan region	50,000
Natural gas, processing	Karadagly plant	Qaradagli region	NA
Petroleum and natural gas:			
Crude petroleum and gas condensate	Azerbaijan International Operating Co., (AIOC) in conjunction with BP p.l.c., Chevron Corp., State Oil Company of Azerbaijan Republic (SOCAR), Inpex Corp., Statoil ASA, Exxon Mobil Corp., Türkiye Petrolleri A.O. (TPAO), Itochu Corp., Devon Energy Corp., and Delta Hess (joint venture of Delta Oil and Hess Corp.)	Azeri-Chirag-Guneshli (ACG) offshore oilfields in the Caspian Sea	55,000,000
Natural gas	billion cubic meters International consortium consisting of BP p.l.c., Statoil ASA, OAO LUKOIL Co., Oil Industries' Engineering and Consulting (OIEC), State Oil Company of Azerbaijan Republic (SOCAR), and Türkiye Petrolleri A.O. (TPAO)	Shah-Deniz gas condensate field	7.1
Petroleum, refined	Azernefteyag refinery	Baki	12,000,000 <sup>4</sup>
Do.	Heydar Aliev Baku refinery	do.	8,000,000 <sup>4</sup>
Rock salt	Hehram and Pusyan deposits	Naxcivan region	2,500,000
Steel:			
Crude	Baku Steel Works	Baki	400,000
Pipe, tubes	Azerboru JSC	Sumqayit	400,000

<sup>6</sup>Estimated. Do., do. Ditto. NA Not available.

<sup>1</sup>Table includes data available through January 31, 2011.

<sup>2</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>3</sup>Capacity estimates are totals for all enterprises that produce cement.

<sup>4</sup>Capacity for crude petroleum distillation.