

< Countries

Azerbaijan



Last Updated: August 1, 2014 (Notes)

full report

Overview

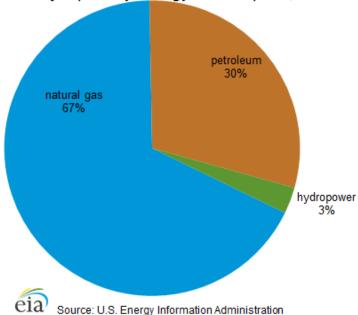
Azerbaijan, wholly located within the South Caspian Sea basin, is among the oldest oil producers in the world. Oil and natural gas production and export are central to Azerbaijan's economic growth. The country is one of the Caspian region's most important strategic export routes to the West.

Azerbaijan, one of the oldest oil producing countries in the world, is an important oil and natural gas supplier in the Caspian Sea region, particularly for European markets. Although traditionally it has been a prolific oil producer, Azerbaijan's importance as a natural gas supplier will grow in the future as field development and export infrastructure expand. The conflicting claims over the maritime and seabed boundaries of the Caspian Sea between Azerbaijan and Iran continue to cause uncertainty, with Iran challenging Azerbaijan's hydrocarbon exploration in offshore areas claimed by both sides.

Natural gas accounted for about 67% of Azerbaijan's total domestic energy consumption in 2012. Oil accounted for 30% of total energy use, and hydropower contributed a marginal amount. Overall, Azerbaijan is a net energy exporter. The country swaps small volumes of natural gas with Iran—the Nakhchivan exclave receives all of its natural gas from Iran, because it is not connected to Azerbaijan's pipeline network.

Oil and gas production and exports are central to Azerbaijan's economy. The country's economy is heavily dependent on its energy exports, with more than 90% of total exports accounted for by oil and gas exports, according to data from the International Monetary Fund.

Azerbaijan primary energy consumption, 2012





Petroleum and other liquids

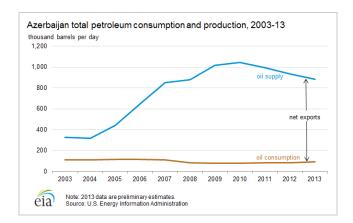
Unexpected production problems at its largest fields caused total output to fall to below 1.0 million bbl/d in 2011, and total production continued to decline through mid-2013.

Azerbaijan's proven crude oil reserves were estimated at 7 billion barrels in January 2014, according to the *Oil* & *Gas Journal* (OGJ). In 2013, Azerbaijan produced 881,000 barrels per day (bbl/d) of petroleum and other liquids, and consumed about 85,000 bbl/d.

Azerbaijan is one of the world's oldest producing countries and has played a significant role

in the development of today's oil industry. The world's first paraffin factory was opened there in 1823, and the world's first oil field was drilled in 1846. Azerbaijan was the site of the first offshore oil field—the Neft Dashlary—in the shallow water of the Caspian Sea, which was completed in 1951 and still produces oil today.

The country's largest hydrocarbon basins are located offshore in the Caspian Sea, particularly the Azeri Chirag Guneshli (ACG) field, which accounted for almost 75% of Azerbaijan's total oil output in 2013. Similar to its share of total production, ACG also holds over 70% of Azerbaijan's total reserves, with about 5 billion barrels located in this field.



Sector organization

Although the State Oil Company of Azerbaijan Republic (SOCAR) is involved in all segments of the oil sector, it produces only about 20% of Azerbaijan's total oil output, with the remainder produced by international oil companies.

Almost immediately following its independence in 1991 from the Soviet Union, Azerbaijan allowed foreign participation in its oil sector, and it has signed the most production-sharing agreements among all former Soviet Union countries. In general, hydrocarbons are produced under production-sharing agreements, with the share of profits dependent on the internal rate of return achieved by the project.

SOCAR produces about 20% of the country's oil output. The company is responsible for exploration and production of oil and natural gas in Azerbaijan, operating the country's two refineries, running the country's pipeline system, and managing the country's oil and natural gas imports and exports. Although the Ministry of Industry and Energy handles exports as well as exploration and production agreements with foreign companies, SOCAR participates in all of the international consortia developing oil and gas projects in Azerbaijan.

The remaining 80% of Azerbaijan's output comes from the ACG oil fields by the BP-operated Azerbaijan International Operating Company (AIOC) and at the BP-operated Shah Deniz field (which produces oil condensate). AIOC is a consortium of 10 petroleum companies that have signed extraction contracts with Azerbaijan. The AIOC is led by BP and includes Chevron, Inpex, Statoil, Turkiye Petrolleri, ExxonMobil, SOCAR, ITOCHU, and Hess. BP and a number of other AIOC consortium members have made significant direct investments in the development of the ACG field, with some AIOC member companies also investing in the construction of the Baku-Tbilisi-Ceyhan (BTC) pipeline. BP is the largest foreign investor and has been involved in Azerbaijan since 1992.

Much of Azerbaijan's oil is marketed by the Socar's Geneva-based subsidiary Socar Trading, which has been operating since 2008. As the largest shareholder in ACG, BP is also a regular marketer of Azerbaijan's crude oil.

The industry is regulated by the Ministry of Industry and Energy, which was established in

April 2001. The ministry formulates state energy policy and regulates SOCAR. In addition, it is tasked with attracting foreign investment, setting tariffs, and conducting negotiations on pipelines and production-sharing agreements.

Azerbaijan established the State Oil Fund of the Republic of Azerbaijan (SOFAZ) in 1999 to manage currency and assets from oil and gas activities. The fund had about \$36 billion in managed assets at the end of 2013, according to its annual report.

Exploration and production

New projects, including the Chirag Oil Project, may boost Azerbaijan's production as ACG failed to meet ambitious output expectations.

Oil production in Azerbaijan increased from 315,000 bbl/d in 2002 to 1.0 million bbl/d in 2010. However, production declined since then, falling to 932,000 bbl/d in 2012 and 881,300 bbl/d in 2013. EIA projects Azerbaijan's production will decline to about 852,000 bbl/d in 2014.

Azerbaijan's main producing field, the ACG field, covers 167 square miles and is located 62 miles east of Baku in the Caspian Sea. Operators expected peak production to reach 1 million bbl/d, but production at this field so far failed to reach this target. Production problems have affected ACG output in the past couple years, with unexpected production declines occurring because of technical problems.

BP's Chirag Oil Project (COP), authorized by the government in 2010, planned to increase oil production and recovery from the ACG field through a new offshore facility at the West Chirag platform. COP began producing oil in January 2014 and produced an average of 66,000 bbl/d in 2014, according to BP. The platform has a capacity of 183,000 bbl/d.

In addition to the ACG output, the BP-operated Shah Deniz field produces a small but stable volume of 50,000 bbl/d of condensate, and SOCAR produces some condensate from the shallow-water Guneshli field.

Azerbaijan produces three grades of crude oil—the SOCAR-produced barrels, Azeri BTC, and Azeri Light. The SOCAR-produced crude oil is mainly refined domestically, with only a small fraction available for exports as domestic demand has grown. However, the small volumes of this crude oil that are slated for exports are shipped via the northern export pipeline to Russia's Black Sea port of Novorossiysk. The SOCAR-produced crude oil is blended in Russia and marketed as Urals blend because of its poor quality.

The country's main export crude oil streams are Azeri BTC and Azeri Light. These two grades are fairly similar and are mainly sold to European and Asian markets.

Azeri BTC blend, named for the Baku-Tbilisi-Ceyhan (BTC) pipeline through which it is exported, is made up of mostly Azeri Light from the ACG field as well as the Shah Deniz condensate, which has been blended into the crude stream since 2007. In addition, volumes of Turkmenistan's Cheleken crude are added to make up the blend.

Azeri BTC is a medium-light, sweet blend (36.6° API gravity, 0.16% sulfur), and although its quality has varied over the past few years, it continues to be prized for its high middle-distillate yield. After the crude oil is transported via the BTC pipeline, it is loaded onto tankers at the Turkish port Ceyhan on the Mediterranean Sea and shipped to markets across Europe.

Azeri Light comes from the BP-operated ACG field. It is a medium-light, sweet crude oil (35° API gravity, 0.14% sulfur), very similar in quality to Nigeria's Bonny Light. Most Azeri Light volumes are shipped via the Western Route Export Pipeline, which runs between

Sangachal oil terminal and Supsa. In addition, volumes of Azeri Light are transported by rail from Sangachal to the Black Sea port of Batumi.

Exports

The completion of the BTC pipeline transformed Azerbaijan's oil industry, unlocking the country's oil sector potential by providing an outlet to world markets for crude oil. The country is mainly a crude oil and condensate exporter, but it also exports small volumes of petroleum products.

Azerbaijan exported an estimated 738,000 bbl/d of crude oil in 2013, according the Azerbaijan's State Statistical Committee. Azerbaijan's crude oil exports peaked in 2010 when they averaged about 908,000 bbl/d, but exports have fallen every year since then as production declined.

Azerbaijan is mainly a crude oil and condensate exporter, although the country exports small volumes of refined petroleum products to its neighbors, including diesel, gasoline, and jet fuel. The majority of the refined product exports go to Russia and Georgia, according to Eastern Bloc Energy.

Azerbaijan has three export pipelines, and most (about 80%) of its oil is exported via the BTC, with small amounts shipped by truck and rail. The country's oil industry was transformed with the construction of the BTC, which began operations in 2006. BTC allowed for exports of lighter and sweeter crude than Russia's Urals blend from the region, but it also provided transportation capacity out of the Caspian that did not rely on using the congested Turkish straits or crossing Russian territory.

The BTC pipeline system runs 1,100 miles from the Sangachal terminal near Baku, through Azerbaijan, Georgia, and Turkey, to the Mediterranean port of Ceyhan. From there the oil is shipped by tanker to global markets. The BP-operated pipeline, which began exporting in July 2006, has a capacity of 1.0 million bbl/d. According to IHS Energy, BTC has never operated above 790.000 bbl/d, which it reached in 2009.

Most of the oil transported via the BTC is sourced at the ACG field, but volumes of the Shah Deniz condensate and the Cheleken crude from Turkmenistan also flow through the pipeline. The BTC pipeline is also used to export small volumes of Kazakh oil, which travels by tanker across the Caspian Sea to the Sangachal Terminal, near Baku.

In May 2014, Russia's LUOIL began shipping small volumes of oil (5,000 bbl/d) from its offshore Yuri Korchagin field in the Caspian Sea through BTC. According to IHS Energy, LUKOIL considered increasing shipments up to 30,000 bbl/d in 2015.

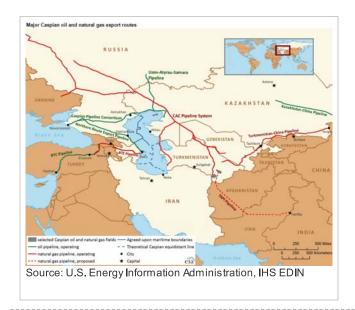
The Baku-Novorossiysk, or Northern Route Export Pipeline (NREP), is 830 miles long with a capacity of 100,000 bbl/d and has been operating since 1996. The pipeline runs from the Sangachal Terminal to Novorossiysk, Russia on the Black Sea. SOCAR operates the Azerbaijani section, and Russia's Transneft operates the Russian section, which has at times complicated the operation of the pipeline as there is an ongoing dispute between SOCAR and Transneft concerning transportation tariffs.

Companies have proposed increasing the capacity on the pipeline to between 180,000 and 300,000 bbl/d, a key transportation addition as production grows in the Caspian in the future. In May 2013, the Russian government ended the contract for Azerbaijan oil shipments through the NREP because Azerbaijan was delivering well below contracted annual volumes. In February 2014, SOCAR and Transneft renegotiated and signed a deal to transport 20,000 bbl/d through NREP with a reduced transit tariff.

SOCAR and Russian state-owned company Rosneft signed a joint venture agreement for crude swaps and to potentially carry Rosneft oil south to Baku by reversing the flow of the

Baku-Makhachkala pipeline. The agreement would have an equal amount of Azeri Light oil go through BTC to Rosneft's refineries in Germany and Italy.

Most of the Azeri Light volumes are transported via the Baku-Supsa pipeline (or Western Route Export Pipeline), which has an estimated capacity of 145,000 bbl/d and runs approximately 520 miles from Baku to Supsa, Georgia on the Black Sea. From there, the crude is shipped via tankers through the Turkish straits to European markets. AIOC owns and operates the pipeline on behalf of SOCAR. The pipeline has been operating since 1999.



Refining sector

Azerbaijan had a crude oil refining capacity of 399,000 bbl/d as of January 2014, according to the OGJ. Azerbaijan's crude oil is refined domestically at two refineries: the Baku refinery, with a capacity of 239,000 bbl/d, and the New Baku refinery, with a capacity of 160,000 bbl/d.

According to the 2013 energy review by the Organization for Security and Cooperation in Europe (OSCE), both refineries must modernize to bring output of the processing units up to European Union-quality standards. The government estimated this project would cost between \$600 million and \$700 million, including new equipment and modern pollution control.

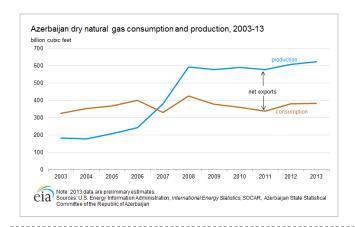
Natural gas

With the startup of the Shah Deniz natural gas and condensate field in late 2006, Azerbaijan became a natural gas net exporter.

According to the OGJ, Azerbaijan's proven natural gas reserves were roughly 35 trillion cubic feet (Tcf) as of January 2014. The vast majority of these reserves are associated with the Shah Deniz field. Discoveries of the Absheron and Umid formations between 2010-11 added a further 15 Tcf of resources estimated in place. These discoveries are not yet considered reserves because it is not clear how much of this natural gas is technically feasible to extract.

Although historically an oil producer, Azerbaijan's importance as a gas producer and exporter is growing. Most of the natural gas production comes from the Shah Deniz field, although some volumes of natural gas are produced alongside oil in the ACG field.

In 2012, Azerbaijan produced 607 billion cubic feet (Bcf) of dry natural gas and consumed 379 Bcf. Preliminary 2013 estimates from the State Statistical Committee show slight increases in both consumption and production. Natural gas plays a central role domestically, and it likely will gain importance in the future, particularly in the electric power sector where it now accounts for over 80% of the country's power generation. Azerbaijan likely will see an increase in domestic consumption of natural gas as it continues to replace Soviet-era oil-fired power plants with new combined-cycle natural gas turbines.



Sector organization

Azerigaz, a SOCAR subsidiary, is responsible for natural gas processing, transport, distribution, and storage, mainly in the domestic market. Azneft, another SOCAR subsidiary, is responsible for exploration, development, and production from the older onshore and offshore natural gas fields owned directly by SOCAR.

AIOC is the largest foreign joint venture in association with SOCAR. It is involved in the development of the ACG oil and gas fields and the Shah Denizgas field. BP operates the Shah Denizgas field and is the largest shareholder in the Shah Deniz consortium with a 35.8% share.

Exploration and production

The Shah Deniz field, discovered in 1999, is one of the world's largest natural gas and condensate fields. Shah Deniz Full Field Development is expected to have peak capacity of 565 Bcf (in addition to the 315 Bcf in Phase I), making it one of the largest gas development projects anywhere in the world.

Almost all of Azerbaijan's natural gas is produced in two offshore fields—the ACG complex and Shah Deniz. The Shah Deniz natural gas and condensate field started producing in late 2006, making Azerbaijan a net gas exporter. The ACG field provides associated gas to the Azerigaz system for domestic use via an undersea gas pipeline to Sangachal Terminal at Baku. The Sangachal Terminal, located south of Baku, is one of the world's largest integrated oil and gas processing terminals. It receives, stores, and processes both crude oil and natural gas from the ACG fields and from Shah Deniz, then ships these hydrocarbons through the South Caucasus Pipeline (SCP) for export.

The Shah Deniz field, discovered in 1999, is one of the world's largest gas and condensate fields. According to BP, the operator of the development, it has approximately 40 Tcf of natural gas in place. It is located on the deep water shelf of the Caspian Sea, in water depths of up to 1,600 feet. According to BP, the field produced about 346 million cubic feet per day of natural gas and about 53,740 bbl/d of condensate in 2013.

Shah Deniz Stage I development includes a fixed offshore platform, two subsea pipelines to bring the hydrocarbons ashore, and a new onshore gas-processing terminal adjacent to

the existing oil terminal at Sangachal, near Baku. According to BP, since the start of Shah Deniz production in late 2006 until the end of 2013, Shah Deniz produced about 1.7 Tcf of natural gas and 100 million barrels of condensate.

Shah Deniz Stage 2, or Full Field Development (FFD), will have peak capacity of 565 Bcf (in addition to the 315 Bcf in Phase I) according to BP, making it one of the largest gas development projects in the world. Operators expect it to start producing in 2017 and supply European markets with natural gas in 2019. The development of Shah Deniz FFD is currently in the front-end engineering and design (FEED) phase. Transportation of Shah Deniz gas from the Caspian Sea to Europe will require enhancement of the existing pipelines and development of new infrastructure.

Natural gas exports

The discovery and development of the Shah Deniz gas field along with the commissioning of the South Caucasus Pipeline (SCP) has transformed Azerbaijan's natural gas sector, allowing the country to become a natural gas net exporter.

Azerbaijan became a net exporter of natural gas in 2007, previously importing natural gas from Russia. In 2013, Azerbaijan exported about 240 Bcf, mainly shipping it via the South Caucasus Pipeline. Volumes of natural gas are also exported to Russia via the Gazi-Magomed-Mozdok pipeline. A small volume of natural gas is shipped to Iran via the Baku-Astara pipeline. In exchange, Iran ships natural gas to Nakhchivan, Azerbaijan's exclave situated between Iran and Turkey. The exclave is wholly dependent on natural gas supplied by Iran.

Most of Azerbaijan's natural gas is destined for Turkey, but the country supplies a small volume to Greece via the Turkey-Greece interconnector. Under a previous arrangement, Turkey was re-exporting Azerbaijani natural gas to Greece, but a new agreement allows Azerbaijan to directly export volumes to the European Union. The Shah Deniz FFD will result in increased exports to the European Union once the needed infrastructure is completed.

South Caucasus Pipeline (SCP)

The main conduit for Azerbaijan's natural gas exports is the SCP, also known as the Baku-Tbilisi-Erzurum (BTE) pipeline, which runs parallel to the BTC oil pipeline for 429 miles, before landing in Erzurum, Turkey. The 42-inch pipeline began exporting in 2007, and it has the capacity to transport about 300 Bcf of natural gas. The government plans to add a new parallel pipeline to the existing line across Azerbaijan and Georgia, as well as two new compressor stations in Georgia. Once upgraded, the pipeline's capacity will increase to more than 700 Bcf. At the Georgia-Turkey border, the pipeline will link to TANAP and TAP.

Gazi-Magomed-Mozdok Pipeline

This 150-mile pipeline transports natural gas from Azerbaijan to Russia under an agreement signed by SOCAR and Gazprom in 2009. Prior to 2007, this pipeline transported natural gas from Russia to Azerbaijan, but the agreement allowed the pipeline flow to be reversed, making Azerbaijan an exporter of natural gas to Russia. Gas exports to Russia began in 2010 at approximately 35 Bcf per year.

Baku-Astara Pipeline

As a result of tensions with Armenia, Azerbaijan began a swap deal with Iran that provides natural gas to Azerbaijan's geographically separate Nakhchivan exclave in late 2006. Azerbaijan ships natural gas into Iran via the Baku-Astara Pipeline, and Iran then delivers the gas via the Salmas-Nakhchivan pipeline. Iran receives a 15% commission on transit fees.

TANAP and **TAP**

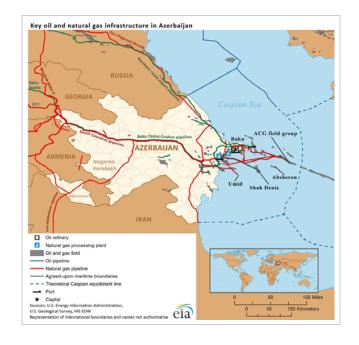
The Trans Anatolian Natural Gas Pipeline (TANAP) will transport the Shah Deniz natural gas through Turkey. This 56-inch pipeline will run from the Georgia-Turkey border to the Turkey-

Greece border. The Trans Adriatic Pipeline (TAP) will link to TANAP and transport Azerbaijan's natural gas exports through Greece and Albania to Italy. BP announced in June 2013 that the Shah Deniz consortium selected TAP to deliver approximately 35 Bcf of natural gas to the European Union.

Azerbaijan's power plants

			Estimated	Transit route (origin-	Major source	
Content	Pipeline	Status	capacity	destination)	fields	Owner
Oil						
	Baku-Tbilisi- Ceyhan (BTC)	Operating	1,000,000 bbl/d	Kazakhstan- Azerbaijan- Georgia-Turkey	ACG, Shah Deniz, Tengiz	BTC Pipeline Co.
	Baku- Novorossiysk (Northern Route Export Pipeline)	Operating	100,000 bbl/d (proposed 180,000-300,000 bbl/d)	Azerbaijan- Russia	Sangachal	Transneft
	Baku-Supsa (Western Route Export Pipeline)	Operating	145,000 bbl/d	Azerbaijan- Georgia-Turkey	ACG	AIOC
Natural gas						
	Baku-Tbilisi- Erzurum (BTE, South Caucasus Pipeline)	Operating	280 Bcf (proposed 700 Bcf)	Azerbaijan- Georgia-Turkey	Shah Deniz	BP, Statoil, SOCAR, LUKOil, Total, Naftiran Intertrade, TPAO
	Gazi-Magomed- Mozdok Pipeline	Operating	450 Bcf	Azerbaijan- Russia	Shah Deniz	SOCAR, Gazprom
	Iran-Nakhchivan Pipeline (Salmas- Nakhchivan)	Operating	15-65 Bcf	Iran-Azerbaijan (Nakhchivan)	n/a	National Iranian Oil Co (NIOC)
	Trans-Anatolian gas pipeline (TANAP)	Proposed	570 Bcf initial stage	Azerbaijan- Georgia-Turkey	Shah Deniz Phase II	SOCAR, BOTAŞ, TPAO

Sources: U.S. Energy Information Administration, Transneft, BP, IHS Edin, Oil and Gas Journal



Electricity

Electricity consumption in Azerbaijan grew considerably between 2000 and 2006, but it has fallen since then. Total electric power consumption may rise as the country's economy expands in the near future.

Azerbaijan's electricity consumption grew between 2000 and 2006, reaching a peak of almost 20 billion kilowatthours (kWh) in 2006 as electrification rates increased and the economy expanded. However, total electric power consumption fell thereafter to 13.5 in 2009 before gradually rising to 15 billion kWh in 2012.

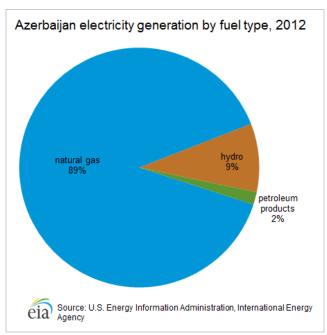
Azerbaijan has total installed generating capacity of approximately 6 gigawatts. The country's 13 operating fossil fuel power plants (nearly all fueled by natural gas) accounted for 91% of total power generation in 2012, up from 86% in 2011 as hydropower generated less electricity and natural gas generated more. The eight hydropower plants and a very small amount of wind capacity account for the remainder of the country's installed generating capacity.

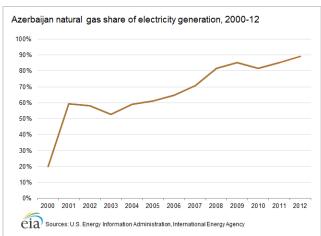
The Nakhichevan exclave is dependent on power imports from Iran. It faces significant challenges as a result of ongoing tensions between Armenia and Azerbaijan and the general disrepair of the regional natural gas infrastructure.

Azerbaijan's power plants

In		
Plant	(megawatts)	Туре
Azerbaijan TPP	2400	Oil-fired, steam
Ali Bayramli	1050	Hydro
Shirvan	900	Gas-fired, turbine
Sumgait	525	Oil-fired, steam
Mingachevir	418	Gas-fired, turbine
Shimal	400	Combined heat and power
Shamkir	380	Hydro
Sangachal	300	Gas-fired
Yenikend	150	Hydro
Baku TPC	106	Gas-fired
Baku PP	105	Gas-fired
Shahdagh	105	Multi-fuel
Astara	87	Gas-fired
Khachmaz	87	Gas-fired
Nakhchivan PP	87	Hydro
Shaki	87	Gas-fired, combined cycle
Nakhchivan GTES	64	Gas-fired, combined cycle
Tartar	50	Gas-fired, combined cycle
Araz	22	Hydro
Bilav	22	Hydro
Varvara	16	Hydro
Vaykhir	5	Hydro
TOTAL	7,366	·

Source: Azerenerji, IHS Global Insight





Sector organization

Azerenerji is Azerbaijan's state power utility, and it is responsible for generation, transmission, and distribution of electric power. Azerbaijan's electric power sector is in need of modernization, and there is a considerable effort underway to renovate and modernize the sector. This effort includes reconstructing aging power plants and upgrading the transmission grid. Plans are underway to convert fuel oil-fired power plants to combined-cycle natural gas plants to make more oil available for export.

There is no competition in Azerbaijan's power sector, as Azerenerji owns all of the country's power plants. Electricity prices are regulated, and power generators are required to supply their power to the central dispatch system for transmission and distribution.

The government has adopted the State Program for the Development of Fuel and Energy Sector (2005-2015), which identifies development targets for various sectors of the economy to meet electric power and other energy needs.

Fossil fuel generation

Most electricity generation in the country comes from combined cycle gas turbines fueled by natural gas. Power plants use heavy oil during peak demand times for electricity.

Renewables

Hydropower is the most important renewable energy source in the country and is second to natural gas in electricity generation.

There is a lot of potential to develop wind energy, particularly in the southeast area around the Caspian coast, but wind farms compete with developing tourism areas.

Azerbaijan joined the International Renewable Energy Agency (IRENA) in 2009 and created the State Agency on Alternative and Renewable Energy Sources (SAARES) to prepare the national strategy on alternative sources of energy.

Notes

- Data presented in the text are the most recent available as of August 1, 2014.
- Data are EIA estimates unless otherwise noted.

Sources

- Azerenerji
- Bloomberg
- BP
- Caspian Center for Energy and Environment
- CIA World Factbook
- Deutsche Bank
- Eastern Bloc Research
- Energy Intelligence
- The Financial Times
- IHS Energy
- IHS EDIN
- International Energy Agency
- · Oil and Gas Journal
- OSCE Energy Charter Secretariat
- Reuters
- SOCAR
- State Statistical Committee of the Republic of Azerbaijan
- Statoil
- U.S. Energy Information Administration