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COUNTRY ANALYSIS BRIEFS

Turkey

Last Updated: October 2006

Background

Turkey's strategic location makes it a natural "energy bridge" between major oil and natural gas producing areas in the Middle East and Caspian Sea regions and consumer markets in Europe.

Turkey experienced a strong economic recovery after a financial and currency crisis in 2001 that led to severe economic contraction. During 2005, Turkey's real gross domestic product (GDP) grew by 7.4 percent, down somewhat from the 2004 rate of 8.9 percent. For 2006, real GDP growth is forecast to ease to 4.6 percent, reflecting a number of factors that have slowed Turkish economic growth. These include depreciation of the Turkish new lira, a decline in Turkey's stock market, rising inflation, and the country's growing current account deficit.

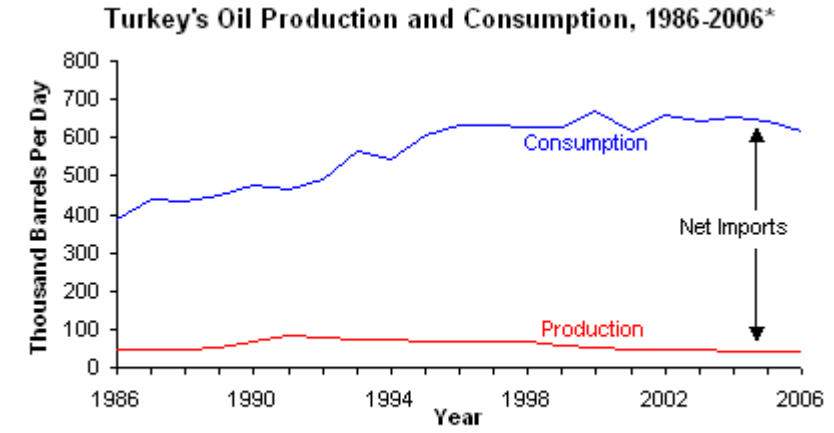
On October 3, 2005, the European Union (EU) began the formal accession framework for Turkey to become a full member of the EU, although this process is likely to take some time. Turkey will be required to undergo further economic reform and liberalization in order to meet EU membership requirements (for more information on Turkey's accession framework with the EU, see the EU enlargement page).

Turkey lacks significant domestic energy resources. However, its location makes the country an important energy transit country, with the Bosporus Straits, through which Caspian oil passes en route to European markets; the Baku-Tbilisi-Ceyhan (BTC) Pipeline, the first transnational pipeline that transports Caspian oil without crossing Russian soil; and Turkey's port of Ceyhan, which is the primary terminal through which Iraq's northern oil exports pass (for more information, please see the Caspian Sea Brief, the Bosporus Oil Transport Chokepoint Brief, and the Iraq Country Analysis Brief). In addition, Turkey's relatively large population and growing economy have made the country a significant regional energy consumer in its own right.

Oil

Although Turkey is not a major oil producer, its emerging role as an important oil transit country make it increasingly important to world oil markets.

According to *Oil and Gas Journal (OGJ)*, Turkey had 300 million barrels of proven oil reserves as of January 2006. During the first nine months of 2006, Turkey produced an estimated 43,000 barrels per day (bbl/d) of oil, of which 99 percent was crude oil. Turkey's oil production has declined by half since 1991, when production peaked at 85,300 bbl/d. EIA forecasts that Turkey will consume 618,000 bbl/d of oil in 2006, down about 4 percent from 2005 figures. In general, Turkish oil demand has fluctuated in recent years along with the country's economic performance.



Source: EIA *International Petroleum Monthly*; *Short-Term Energy Outlook*

*2006 is Jan-Sep only

Sector Organization

Turkey's oil sector is mixed, comprised of various state-owned, private, and foreign companies. Oil exploration and production activities are dominated by the state-owned Turkish Petroleum Corporation (TPAO), which accounts for roughly 70 percent of Turkey's domestic oil output. The principal government body charged with monitoring the oil sector is the Ministry of Energy and Natural Resources (ETKB), which is the key decision-making body that approves new projects along with the State Planning Organization (DPT).

The downstream oil refining and storage sector is dominated by former state-owned enterprise Tupras, which controls 85 percent of Turkey's domestic refining activities. In September 2005, the Koc-Shell Joint Venture Group purchased a 51 percent stake in Tupras for $4.14 billion. After purchasing the shares, the Koc-Shell consortium formed Enerji Yatirimlan SA to take delivery of the transferred shares. In the oil transport sector, Botas owns and operates virtually the entire pipeline network in Turkey.

In December 2003, a petroleum market reform bill was passed by Turkey's parliament. The Petroleum Market Law aims to remove state controls on the hydrocarbon sector, liberalize pricing of oil and oil products, end restrictions on vertical integration, and integrate pipeline, refining, and distribution functions. Also, as a result of this law, price ceilings and import quotas on petroleum products were lifted in early 2005.

Exploration and Production

The majority of Turkey's oil reserves are located in southeastern part of the country and in the Thrace region in the northwest. The oil fields in the southeastern Hakkari Basin, Turkey's main oil producing region, are mature and output has declined over the last decade. Furthermore, production costs for oil reserves in the Hakkari Basin are considered higher than average international levels. International oil majors Royal Dutch Shell and ExxonMobil are the largest foreign oil producers in Turkey.

Recent oil exploration activities have focused on Turkey's offshore regions, where the country holds oil prospects in the Black, Mediterranean, and Aegean Seas. Although some reports suggest the Aegean Sea could hold sizeable oil reserves, potential oil reserves in the region have not been explored due to conflicting Greek claims over the area. During 2005, TPAO and its international partners drilled the country's first exploration wells in the Black Sea. The TPAO-Torreador-Stratic joint venture oversees the Western Black Sea Exploration and Development Project, while the TPAO-BP-Chevron joint venture runs the Eastern Black Sea Offshore Project (for more information, visit the exploration and production section of the TPAO website).

Overseas

In concert with the recent trend of national oil companies (NOC) looking overseas to secure oil interests, TPAO has also acquired exploration and production assets abroad through its subsidiary, the Turkish Petroleum Overseas Company (TPOC). One of the company's most significant overseas oil production assets is the Azeri-Chirag-Guneshli (ACG) Project in Azerbaijan, which holds 5.4 billion barrels of proven oil reserves. TPAO has a 6.75 percent

interest in the ACG Project, which produced an average 350,000 bbl/d of oil at the end of 2005. TPAO is also part of the Alov Exploration Project in the Azeri part of the Caspian Sea, which holds an estimated 5 billion barrels of recoverable oil reserves and sizeable natural gas reserves. The first exploration well in the Alov project is expected to be drilled in 2006 (for more information on exploration and production activities in the Caspian Sea, see the Caspian Sea Regional Brief).

During 2005, TPAO signed a Production Sharing Contract (PSC) for Block 147 in Libya. TPAO has also operated Blocks 188 and 189 in Libya since 2000. In November 2005, TPAO signed a Memorandum of Understanding (MOU) with the state-owned Syrian Petroleum Company to jointly conduct exploration and production activities in Syria.

Pipelines

The Baku-Tbilisi-Ceyhan Pipeline, which bypasses the Bosporus Straits oil transit chokepoint, is the first of numerous planned or proposed Bosporus bypass pipelines to be constructed.

Turkey, which lies between the energy-rich countries of the Caspian Sea and Persian Gulf regions and net energy importing countries in continental Europe, is increasingly important for oil transit. Turkey has established or considered a number of pipeline projects that would transport oil into Turkey without relying on the crowded Bosporus Straits.

Baku-Tbilisi-Ceyhan Pipeline

At the forefront of this effort is the Baku-Tbilisi-Ceyhan (BTC) Pipeline, the first direct pipeline to deliver crude oil from the Caspian Sea to the Mediterranean without crossing Russian soil or passing through the Bosporus or Turkish Straits. The 1,100-mile pipeline cost nearly $4 billion to build, and is operated by a BP-led consortium of 11 national and international oil companies (for more information, see BP's BTC Pipeline website). In May 2005, Azerbaijan began test filling the Azeri section of the pipeline, and on July 13, 2006, the first tanker at the Turkish port of Ceyhan was filled with oil from BTC (for more information, see the Azerbaijan Country Analysis Brief). The line is estimated to have a peak capacity of more than one million bbl/d, and Turkey is expected to earn between $140 and $200 million per year in transit and operating fees from the project.

The construction of the BTC Pipeline was carried out by an integrated project team that simultaneously led the construction of the Southern Caucasus Pipeline (SPC), which will transport natural gas parallel to the BTC for most of its route before connecting to the Turkish gas pipeline network near the town of Horasan. The BTC Pipeline passes a considerable distance through rugged terrain, reaching an elevation of more than 9,000 feet when traversing the Caucasus Mountains. Security was a key factor considered in the design of the BTC Pipeline, with the entire length of the line buried to help protect against possible sabotage.

Kirkuk-Ceyhan Pipeline

Turkey's port of Ceyhan is also the destination for oil exports from northern Iraq in the Kirkuk-Ceyhan oil pipeline. The 600-mile dual pipeline consists of two parallel lines that have a maximum throughput of around 1.6 Mmbbl/d. However, Kirkuk-Ceyhan has been a major target for sabotage since June 2003, and is only open sporadically. Most recently, on July 9, 2006 both lines were closed down after being severely damaged in a sabotage attack. On July 31, 2006, just as Kirkuk-Ceyhan was set to reopen after repairs, another attack ruptured the pipeline and delayed the restarting of the export line (for more information, see the Oil Section of the Iraq Country Analysis Brief).

Bosporus Bypass Options

The 17-mile long Bosporus Straits, only a half mile wide at its narrowest point, is one of the

world's busiest shipping lanes. The straits are also increasingly an important oil transit point, with oil tankers bringing shipments from the Black Sea to the Mediterranean for export. The Turkish government has raised concerns that increased oil tanker traffic through the narrow and twisting Bosporus heightens the risk of an oil spill. Exports through the Bosporus have grown substantially since the breakup of the former Soviet Union. One project that will increase oil transit through the Bosporus is the Russian-backed Northern Route Export Pipeline, a 990-mile pipeline that transports oil from Kazakhstan's Caspian Sea area oil deposits to the Russian Black Sea port of Novorossiysk. The pipeline, built by the Caspian Pipeline Consortium (CPC), is expected to deliver up to 650,000 bbl/d of oil by year-end 2006. After reaching Novorossiysk, oil for export is then loaded onto tankers and shipped through the Bosporus onto world markets.

To ease increasing oil traffic through the Bosporus Straits, a number of Bosporus bypass options are under consideration in southeastern Europe and Turkey itself (for more information, see the Southeastern Europe Regional Analysis Brief). The BTC Pipeline is the first of several bypass projects under consideration over the last decade to have materialized.

Another project currently under consideration is the Samsun-Ceyhan bypass, which would transport oil from Turkey's Black Sea port of Samsun to Ceyhan on the Mediterranean coast. Turkey's Council of Ministers gave initial approval to the construction of the planned 350-mile, one million bbl/d line in May 2006. The project is being developed by a 50-50 joint venture between Italy's Eni and Turkey's Calik Energy, called the Trans-Anadolu Pipeline Company (TAPPCO), which as of September 2006 holds the only Turkish government license to develop a Bosporus bypass project. Eni holds an 18.5 percent interest in the Kashagan oil field in the Kazakh section of the Caspian Sea, which would likely be a primary source for the Samsun-Ceyhan pipeline.

Several other possible Bosporus bypass options are being examined, some of which do not involve Turkey. One proposal that has received significant attention is a pipeline that would pump crude oil from Bulgaria's Black Sea port of Bourgas to Greece's Mediterranean port of Alexandropoulos, known as the Bapline project (for more information, see the Southeastern Europe Regional Analysis Brief). Other possible bypass routes across the Balkans have also been explored (see the Balkans Regional Analysis Brief).

Downstream

According to *OGJ*, Turkey had a total refining capacity of 714,275 bbl/d as of January 2006 at 6 facilities. Tupras is the leading refiner in Turkey, which operates three large refining complexes at Aliaga near Izmir (226,440 bbl/d capacity), Izmit (251,600 bbl/d), and Kirikkale (113,220 bbl/d) as well as a smaller facility at Batman (22,015 bbl/d). The largest privately-owned refinery in Turkey is run by Anadolu Tasfiyehanesi AS (Atas), which is owned by ExxonMobil (51 percent), Shell (27 percent), BP (17 percent), and Marmara Petrol (5 percent) and has a capacity of 95,000 bbl/d.

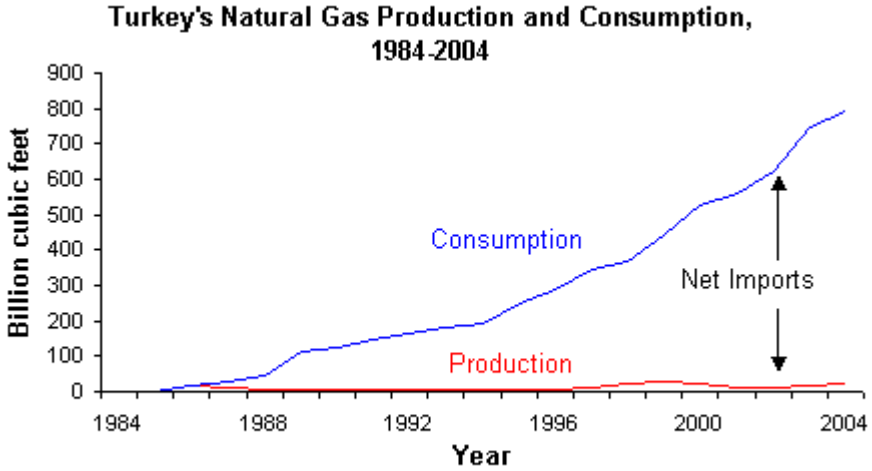
Several companies are considering new refinery projects in Turkey, reflecting the country's emerging status as a regional energy hub. As of mid-September 2006, Turkish government energy regulators have only received one formal application for a new refinery. A joint venture of Calik Energy and Indian Oil Company (IOC) has proposed the construction of a 300,000-bbl/d refining and petrochemical complex at Ceyhan, at a reported cost of $4.5 billion. Also in Ceyhan, Petrol Ofisi AS (POAS) has proposed the building of a $2 billion, 200,000-bbl/d facility. Russia's Lukoil is currently drafting a feasibility study for a possible plant along Turkey's Black Sea coast. Although the plans are tentative, media reports suggest that the site would be either Samsun or Zonguldak, and have a capacity between 160,000 and 200,000 bbl/d. Tupras has not announced plans to build any new refining facilities, but has long studied the possibility of expanding existing plants.

The once state-owned POAS is the leading player in the distribution, marketing, and storage of refined petroleum products in Turkey. In July 2000, the company was privatized, with an initial 51 percent of the shares purchased by Doğan Holding (today Doğan holds a 52.7 percent interest). In March 2006, Austria-based OMV purchased a 34 percent stake in POAS. Although POAS is the leading petroleum products distributor and retailer in Turkey, several other companies also have a sizeable market share, including BP, ExxonMobil, Shell, Total, and Turkish company Opet.

Natural Gas

Consumption of natural gas has increased substantially over the last several years in Turkey.

OGJ reported that Turkey had 300 billion cubic feet (Bcf) of proven natural gas reserves as of January 2006. Although Turkey does not have sizeable reserves, it is an important natural gas transit country. Turkey is also a growing consumer of natural gas in its own right, with consumption having increased significantly over the last decade. In 2004, Turkey consumed 793 Bcf of natural gas, up 51 percent since 2000, while only producing 24 Bcf of natural gas.



Source: EIA International Energy Annual

Sector Organization

Prior to 2001, Turkey's natural gas market and infrastructure were almost entirely dominated by state-owned Botas. In May 2001, Turkey enacted a new Natural Gas Market Law with the intent to liberalize the natural gas sector, encourage foreign investment in energy infrastructure, and harmonize its energy policy with that of the EU. Among other things, the law will abolish the Botas monopoly, separating the company into units for natural gas import, transport, storage, and distribution by 2009. At that point, the various components (except for transport) are to be privatized. However, this process has proceeded slowly, and many expect the 2009 deadline to be pushed back. Turkey's Energy Market Regulatory Authority (EMRA) is responsible for

implementing the Natural Gas Market Law, and also now sets natural gas prices in Turkey.

Exploration and Production

Historically, much of Turkey's natural gas production occurred at sites where crude oil was also produced. Over the last decade, however, several non-associated natural gas fields have been discovered. The largest non-associated natural gas find is Marmara Kuzey, an offshore field that came onstream in 1997 located in the Thrace-Gallipoli Basin of the Sea of Marmara. Turkey's small natural gas production is carried out primarily by state-owned TPAO, which accounts for roughly 63 percent of the domestic output.

TPAO has partnered with several international oil and natural gas firms for ongoing exploration and production activities. TPAO's priority for the last few years has been for exploration at offshore natural gas basins. In March 2002, Amity Oil announced a natural gas discovery at the Gocerler-3 well in the Thrace-Gallipoli Basin, and has since announced several other discoveries in the region. During 2006, the company averaged 50 million cubic feet per day (Mmcf/d) of natural gas output, although production sometimes rose to 70 Mmcf/d. In September 2004, TPAO said that it had found a viable gas deposit at the Ayazli-1 and Ayazli-2 wells off the western Black Sea coast. Since then, a joint venture of TPAO (51 percent), Toreador (37 percent), and Stratic (12 percent) has conducted extensive exploratory drilling and seismic testing in the region. Estimates from Toreador have put recoverable natural gas reserves in the Western Black Sea Project at 1.4 trillion cubic feet (Tcf). The project is expected to begin commercial natural gas production by the end of 2006, with initial flows of 60 to 70 million cubic feet per day (Mmcf/d). The success of this project, which might eventually contribute significantly to Turkey's domestic natural gas production, has encouraged other offshore exploration projects in the Black Sea. The TPAO-Toreador-Stratic consortium has announced several new natural gas finds in the South Akcakoca Sub-basin (SASB) during 2006, including at the Bayhanli-1 and Akkaya-3 wells. In the Eastern Black Sea, TPAO has partnered with BP and Chevron where ongoing testing occurs at several wells.

Pipelines

Domestic System

Turkey's growing natural gas demand has led Botas to substantially increase the country's natural gas transport infrastructure (for a map of Botas' natural gas pipeline system, click here). Turkey's domestic pipeline network has also grown alongside the country's growing international pipeline connections.

To help meet increasing domestic demand for natural gas, Turkey has established multiple international pipeline connections.

Natural Gas Imports

Turkey has several international pipeline links that bring natural gas to Turkey for domestic consumption, but that might also build upon Turkey's emerging role as an energy transit country. Prior to Turkey's severe economic problems and price deregulation moves in 2001, Turkish natural gas demand had been projected to increase very rapidly in coming years, with the prime consumers expected to be natural gas-fired electric power plants and industrial users. In the aftermath of that crisis, however, Botas revised its natural gas demand growth projections down sharply, from about 1.6 Tcf in 2005 to under 0.9 Tcf in that year, a 45 percent decrease. This sharp downward revision in Turkey's projected natural gas demand means that Turkey has signed contracts for far more natural gas than it is expected to consume. To date, Turkey has signed deals for around 1.8 Tcf per year of natural gas imports in 2010, more than 25 percent above the Botas forecast for Turkish natural gas consumption (1.4 Tcf) in that year.

Blue Stream Pipeline

The Blue Stream natural gas pipeline transports Russian natural gas to Turkey via a 750-mile pipeline, 246 miles of which extends underneath the Black Sea. The project was carried out by Russia's Gazprom, Italy's Eni, and Botas at an estimated cost of $3.2 billion. The line reaches the Turkish port of Sumsun and extends to Ankara. At its lowest point, the pipeline reaches underwater depths of 7,050 feet, which posed significant technical challenges and contributed to the project's relatively high cost. Construction of the line was completed in December 2002, with an initial schedule of delivering 71 Bcf of natural gas in 2003. However, in March 2003, Turkey halted deliveries through Blue Stream, invoking a clause in the contract allowing either party to stop deliveries for six months. Turkish authorities cited weak domestic demand, and declared their intentions of renegotiating the price and volumes of natural gas imports from Russia through the line. After Russia filed suit in Stockholm's International Arbitration court, the two sides came to an agreement in November 2003 and the supply of natural gas to Turkey resumed in December 2003. Blue Stream's formal inauguration took place in November 2005 at a metering station in Samsun, Turkey.

The Blue Stream pipeline has a capacity to pump 565 Bcf per year of natural gas to Turkey, although this level is not scheduled to be reached until 2010. For 2006, Turkey has contracted to purchase 283 Bcf of Russian natural gas via Blue Stream, with import levels rising by 71 Bcf every year until the line reaches maximum capacity. Turkey already receives additional piped natural gas imports from Russia via a Western overland route that transports natural gas to Turkey, passing through Moldova, Ukraine, Romania, and Bulgaria (commonly referred to as the Trans-Balkan Pipeline). This line has a capacity to deliver 494 Bcf per year of natural gas to Turkey. For 2006, Turkey has contracted to import about 850 Bcf of natural gas from Russia, representing 67 percent of total Turkish natural gas imports. On this account, several Turkish energy analysts have criticized the Blue Stream project for significantly increasing Turkey's dependence on Russia for natural gas, and thereby crowding out other planned or proposed pipeline projects that would diversify the country's energy sources.

Iran-Turkey Pipeline

In January 2002, Iran and Turkey officially inaugurated a natural gas pipeline link between the two countries, following several years of delays. The line runs approximately 750 miles from Tabriz in Iran to Ankara, the Turkish capital. The pipeline has a maximum capacity to pump 495 Bcf per year of natural gas, although since the project began, annual levels have generally been within the 100 to 150 Bcf range. There have been several supply disruptions on the Tabriz-Ankara line. On January 19, 2006, Iran reduced natural gas flows through the line to 423 Mmcf/d, citing "technical problems" caused by cold weather at the Tabriz natural gas field. At that time, the line should have been exporting 955 Mmcf/d of natural gas to Turkey. When natural gas flows through the pipeline had not returned to normal in February, Turkey began purchasing additional natural gas from Russia through the Blue Stream pipeline.

In August 2006, the Iran-Turkey link was damaged in a sabotage attack by members of the separatist Kurdistan Workers' Party (PKK), which is designated a foreign terrorist organization by the U.S. Department of State. Turkish government officials reported that the line was quickly repaired, and natural gas flows returned to normal within days. Turkey has increased security along the pipeline to help ward off further supply disruptions.

Status of Natural Gas Pipeline Projects in Turkey

Project	Status	Length (miles)	Max. Capacity (Bcf/y)
Blue Stream	In operation	750	565
Iran-Turkey Pipeline	In operation	750	495
South Caucasus Pipeline	Under construction	430	700
Turkey-Greece Interconnector	Under construction	186	407
Nabucco	Proposed	2,050	460 – 1,100
Egypt-Turkey Pipeline	Proposed	NA	NA
Trans-Caspian Pipeline	Cancelled	1,050	565

Planned or Proposed Pipelines

On account of various supply interruptions and disputes over Turkish natural gas pipeline links with Russia and Iran, Turkey has looked to other natural gas-rich countries in the region to diversify its import sources. However, serious questions remain over whether or not Turkey is able to absorb the large natural gas imports it has contracted to buy. A number of natural gas import projects are either under construction or in various stages of planning.

South Caucasus Pipeline

Turkey has signed an agreement to import natural gas from Azerbaijan's large Shah Deniz field. The line is variously known as the South Caucasus Pipeline (SCP) or Baku-Tbilisi-Erzurum (BTE), and will run parallel to the crude oil BTC pipeline for most of its route before connecting to the Turkish pipeline network near Horasan. Construction on the $1.3 billion project began in late 2004, and the pipeline is scheduled to be completed during the first quarter of 2007. The line is initially expected to carry 233 Bcf per year of natural gas to the Turkish market, and can be increased to 700 Bcf with future additions of compressor stations. BP and Norway's Statoil each hold a 25.5 percent stake in the project and serve as co-operators, with the State Oil Company of Azerbaijan Republic (SOCAR), Russia's Lukoil, Turkey's TPAO, France's Total, and Iran's NICO holding around 10 percent each.

Turkey-Greece Interconnector

In July 2005, Turkey and Greece began construction on a 186-mile pipeline connecting the two countries. Greece has established a natural gas purchase agreement with Azerbaijan, and Azeri natural gas from the SCP pipeline will be pumped from Bursa in Turkey to Komitini in Greece. The pipeline is expected to be complete by the end of 2006, although the project's start-up date is tied to the start of commercial operations on the SCP. Eventually, the Turkey-Greece Interconnector will be linked to the planned pipeline connecting Greece and Italy (the Greece-Italy Interconnector). As of October 2006, the Greece-Italy segment has been agreed upon, but financing for the project has yet to be secured. Current plans call for a $1.3-billion, 500-mile pipeline from northern Greece to southeastern Italy (for more information, see the Italy Country Analysis Brief). The Turkey-Greece Interconnector is expected to pump an initial 28 Bcf per year beginning in late 2006, eventually transporting up to 407 Bcf per year by 2012 (see the Greece Country Analysis Brief).

Other Possible Projects

In May 1999, Turkey's Botas signed an agreement to build a 1,050-mile natural gas pipeline from Turkmenistan that would travel underneath the Caspian Sea, across Azerbaijan and Georgia, and on to Turkey. The so-called "Trans-Caspian Pipeline" project has been effectively killed, owing to the discovery of the Shah Deniz natural gas field in Azerbaijan. There is still a possibility that Turkmen natural gas might reach Turkey through the South Caucasus Pipeline.

Turkey and Egypt have long discussed the possibility of Egyptian natural gas exports to Turkey. Most recently, in May 2006, energy ministers from Turkey, Egypt, Jordan, Lebanon, and Syria discussed the possible expansion of the "Trans-Arab Pipeline" to Cyprus and Turkey, and possibly onward to Western Europe. To date, no specific project has been agreed upon.

Another possible project that seeks to deliver natural gas across Turkey to European markets is the "Nabucco" project, which would which would transport natural gas from the Caspian, Central Asia, and possibly the Middle East to Austria. In June 2006, energy ministers from the five countries backing the project (Turkey, Austria, Bulgaria, Hungary, and Romania) and EU Energy Commissioner Andris Piebalgs signed a joint declaration to accelerate commercial, regulatory, and legal work to build the pipeline. While there is no final agreement on the project, plans are for $5.8-billion, 2,050-mile pipeline that would reportedly transport an initial 280 to 460 Bcf per year of natural gas in 2011, rising as high as 1,100 Bcf per year by 2020.

Under the "take-or-pay" provisions of natural gas supply contracts with countries like Iran and Russia, Turkey theoretically could be forced to pay cash penalties of up to $1 billion per year if it fails to purchase contracted gas. In this context, Turkish energy officials have discussed the possibility of storing surplus natural gas in underwater depots beneath the Sea of Marmara or under the Salt Lake (Tuz Golu) in central Anatolia.

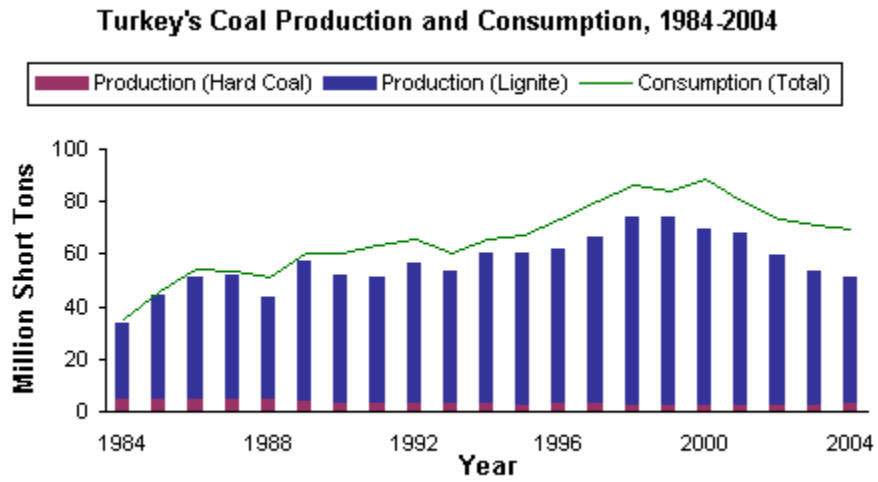
Liquefied Natural Gas

Turkey imports liquefied natural gas (LNG) from Algeria and Nigeria at its only LNG import terminal at Marmara Ereglisi, near Istanbul. The LNG terminal and regasification plant are owned by Botas, and have been in operation since 1989. During 2004, Turkey imported 110 Bcf of LNG from Algeria and 36 Bcf from Nigeria. Botas has considered building as many as three additional LNG facilities in Turkey. One proposal is for a 212-Bcf/y LNG import terminal near Izmir for the import of LNG from Egypt. However, LNG plans have been stalled while other natural gas import pipeline projects are considered. The glut of dry natural gas that Turkey has contracted to buy could make LNG import facilities financially unattractive. One option that Turkey has also considered is for the construction of an LNG liquefaction plant and export terminal at Ceyhan for the export of Russian natural gas from the Blue Stream Pipeline. This is one option to turn Turkey into a transit center, and possibly an attractive project to manage potential oversupply of natural gas to the Turkish market in the years ahead.

Coal

The majority of Turkey's coal production is for electricity generation.

In 2004, Turkey had total recoverable coal reserves of 4,614 million short tons (Mmst), of which only 306 Mmst, or less than 7 percent, was "hard coal" (anthracite and bituminous). The remainder, around 4,308 Mmst, consists of lignite and subbituminous coal reserves. In 2004, Turkey produced 51 Mmst of total coal, of which 94 percent was lignite. The bulk of Turkey's lignite production goes to coal-fired power plants. Turkey consumed about 70 Mmst of total primary coal in 2004, showing net imports of approximately 19 Mmst.



Source: EIA International Energy Annual

Around 40 percent of Turkey's lignite is located in the Afsin-Elbistan basin of southeastern Anatolia, while hard coal is mined only in one location, the Zonguldak basin of northwestern Turkey. The state-owned Turkish Hard Coal Enterprises (TTK) has a de facto monopoly in hard coal production, processing, and distribution, although there are no legal restrictions on private sector involvement. State-owned and private companies produce, process, and distribute lignite reserves, although state-owned Turkish Coal Enterprises (TKJ) has a majority market share. Restructuring of Turkey's coal sector has been underway since the 1990s, with a final goal of eventually privatizing TTK and TKJ as well as closing down smaller, less profitable mines.

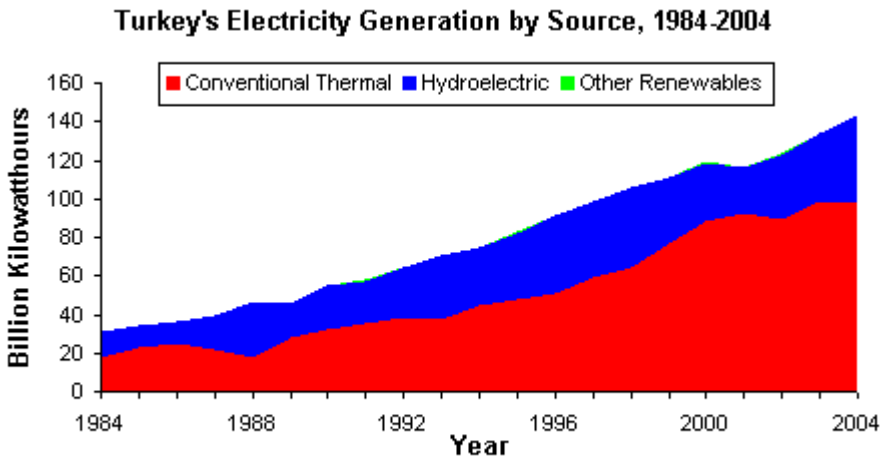
Electricity

The majority of Turkey's electricity comes from conventional thermal sources.

In 2004, Turkey had total installed electricity generating capacity of 35.6 Gigawatts (GW), a 36 percent increase since 2000. The country produced 143 billion kilowatthours (Bkwh) of electricity in 2004, while consuming 133 Bkwh. Conventional thermal sources comprise the largest share of Turkey's electricity supply, contributing 68 percent in 2004. Hydroelectricity generation makes up almost all of the remainder. Although Turkey does not currently produce any nuclear energy, the country's first nuclear power plant is expected to begin electricity generation in 2012.

Sector Organization

In March 2001, the Turkish government enacted a new Electricity Market Law, which sets the stage for liberalization of power generation and distribution activities. Under the law, the state-owned Turkish Electricity Generation and Transmission Corporation (TEAS) was split into separate generation, distribution, and trade companies, with a goal of eventual privatization of the generation and trade companies. Transmission of electricity will continue to be run by the state. The new law also created the Energy Market Regulation Board (EPDK), which oversees the power sector and natural gas markets, including the setting of tariffs, issuing licenses, and assuring competition.



Source: EIA International Energy Annual

After the passage of the Electricity Market Law, TEAS was split into separate state-owned companies: Turkish Electricity Generation Company (EUAS), Turkish Electricity Transmission Company (TEIAS), and Turkish Electricity Trading and Contracting Company (TETAS). Before the 2001 reforms, EUAS operated 91 percent of Turkey's power supply. However, EUAS will sell off most of its power plants and other holdings under the government's privatization plan. In June 2003, 27 state-owned coal and hydropower plants were transferred to a government holding company in preparation for privatization, accounting for 28 percent of the Turkish power generating market. The government of Turkey originally set a goal of 2006 for the total privatization of EUAS, although this has proceeded more slowly. To date, the privatization process has wavered due to lack of investor interest and political uncertainty, although external institutions have kept the process on track. In July 2004, Turkish authorities withdrew a bill that was proposed that would have weakened the country's power sector liberalization program after receiving heavy criticism from the World Bank, EU, and others.

In August 2006, the EPDK approved the privatization of Turkey's 20 regional electricity grids. The EPDK has approved a new electricity tariff structure, the final step before Turkey can invite tenders to auction the distribution grids. The power grids are expected to be sold in groupings of up to 6 regional grids at a time to encourage economies of scale and greater efficiency.

Conventional Thermal

Conventional thermal sources have historically been Turkey's largest power source. Natural gas-fired power plants have increased substantially in the last decade and now comprise more than half of the country's conventional thermal generation. However, in July 2006, two natural gas-fired power plants ceased operations, with the operator AK Enerji citing increasing natural gas costs. The company complained that natural gas prices for power producers have risen by 50 percent over the last year while the government-set electricity tariff for consumers has not changed. Still, plans for natural gas-fired power stations abound in Turkey, especially given that the country has contracts to purchase significant amounts of natural gas in the future. Turkish authorities have worked to privatize the country's electricity grid network, which they hope will resolve the current market problems.

Coal-fired power stations also remain an important energy source for Turkey, and there is renewed interest in exploiting Turkey's domestic coal resources following large natural gas price increases. In August 2006, tenders were offered by EUAS for the construction of two new 1,200-MW coal-fired units at the existing Afsin-Elbistan power plant. The Afsin-Elbistan region holds 3.3 billion short tons of lignite reserves, or 40 percent of Turkey's domestic total.

Over the last few years, several new conventional thermal power plants have come online. However, except for the recent EUAS tender, few new power stations are currently scheduled to be built in Turkey.

Hydroelectric

Turkey has significant hydroelectric power resources, with more than 100 total plants and total

installed hydroelectric generating capacity of 12.6 GW. Turkey is also developing a great deal more of hydropower plants, especially as part of the $32-billion Southeastern Anatolia Project (GAP) along the basin of the Tigris and Euphrates Rivers. Under the GAP project, which is considered one of the most ambitious water development projects ever undertaken, Turkey will erect 22 dams, 19 hydroelectric power stations (with around 7.5 GW of generating capacity), and an expansive network of tunnels and irrigation canals covering 1.7 million hectares of land. The GAP project is overseen by the Southeastern Anatolia Project Regional Development Administration (for more information, see a June 2006 GAP RDA Project Update Report). By the end of 2005, 8 hydropower plants had been completed, representing 74 percent of total planned energy projects under the GAP scheme. The 8 power stations generated 18.7 Bkwh of electricity in 2005, adding substantially to the share of hydroelectricity in Turkey's energy mix. The entire GAP project is scheduled to be completed by 2010.

Nuclear

In April 2006, the head of Turkey's Atomic Energy Agency (TAEK) confirmed that Turkish Prime Minister Recep Tayyip Erdogan had chosen the Black Sea port of Sinop to be the site of the country's first nuclear power plant. The site was one of eight identified by TAEK as a potential location for the power plant following a careful technical evaluation. The 1,800-MW power plant, which will cost an estimated $2.7 billion to construct, is scheduled to come online in 2014. Turkey originally hoped to build three new nuclear plants totaling 5,000 MW, but plans have been scaled back. Although Turkey is proceeding with its nuclear ambitions, there are still numerous obstacles facing the Sinop project. Turkey has tried to move ahead with plans to build a nuclear power plant for more than 30 years, but the plans have been blocked by difficulties attracting sufficient financing, legal issues, and opposition from environmental and anti-nuclear groups.

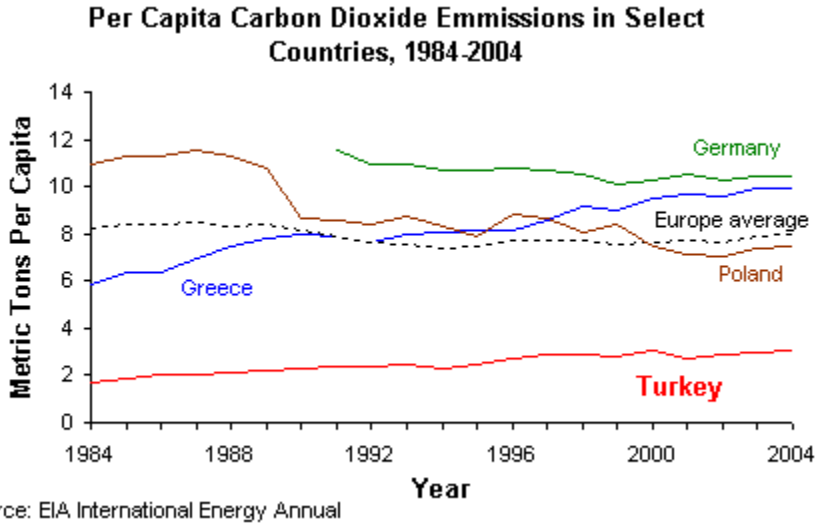
Other Renewables

Other renewable sources add very little to Turkey's total electricity supply, contributing only about one tenth of one percent to Turkey's electricity generation in 2004. However, Turkey is considered to have a large amount of wind, geothermal, and solar power potential, and a number of projects to exploit these sources are underway. However, renewable energy sources are not likely to contribute significantly to Turkey's energy mix in the near term.

Environment

Turkey's per capita carbon emissions remain well below the regional average, although emissions levels are on the rise.

Turkey's explosive economic growth in the mid-1990s had significant repercussions on the country's environment. Economic growth and energy consumption have gone hand-in-hand, and the effect has been increasing air pollution in cities that are already suffering from high pollution levels. Although low compared to advanced European economies, Turkey's per capita carbon emissions are increasing. In a good faith measure to help gain entry into the EU, Turkey ratified the Kyoto Protocol aimed at reducing global greenhouse gas (GHG) emissions in 2004, although the country does not have a formal emissions reduction target.



Source: EIA International Energy Annual

Of special concern to Turkey is the threat of marine pollution, especially from oil transport through

the narrow Bosporus Straits. The 17-mile passage is already one of the most difficult in the world to navigate, and increased oil shipping through the channel raises the possibility of an accident. Shipping has increased through the waterway both to support increased oil imports into Turkey, but also from increased Russian shipping from the Black Sea through the Straits and onto world markets. Past collisions in the Straits have resulted in large oil spills, and additional oil shipping from the Caspian Sea region via the Black Sea and the Bosporus could put the Istanbul metropolitan area at further environmental risk.

Profile

Country Overview

Prime Minister	Recep Tayyip Erdogan (since 14 March 2003)
President	Ahmet Necdet Sezer (16 May 2000)
Location	Southeastern Europe and southwestern Asia (that portion of Turkey west of the Bosporus is geographically part of Europe), bordering the Black Sea, between Bulgaria and Georgia, and bordering the Aegean Sea and the Mediterranean Sea, between Greece and Syria
Independence	29 October 1923 (successor state to the Ottoman Empire)
Population (2005E)	69,660,559

Economic Overview

Minister of Finance	Kemal Unakitan
Currency/Exchange Rate (October 3, 2006)	1 USD = 1.513 New Turkish Lira (YTL)
Inflation Rate (2005E)	8.2%
Gross Domestic Product (2005E)	$362.1 billion
Real GDP Growth Rate (2005E)	7.4%
Unemployment Rate (2005E)	10.2% plus 4% underemployment
External Debt (2005E)	$170.1 billion
Exports (2005E)	$99.3 billion
Exports - Commodities	apparel, foodstuffs, textiles, metal manufactures, transport equipment
Exports - Partners (2004E)	Germany 13.9%, UK 8.8%, US 7.7%, Italy 7.4%, France 5.8%, Spain 4.2%
Imports (2005E)	$123.1 billion
Imports - Commodities	machinery, chemicals, semi-finished goods, fuels, transport equipment
Imports - Partners (2004E)	Germany 12.9%, Russia 9.3%, Italy 7.1%, France 6.4%, US 4.8%, China 4.6%, UK 4.4%
Current Account Balance (2005E)	-$23.0 billion

Energy Overview

Minister of Energy and Natural Resources	Mehmet Hilmi Guler
Proven Oil Reserves (January 1, 2006E)	300 million barrels
Oil Production (2006E)	43,000 barrels per day, of which 99% was crude oil.
Oil Consumption (2005E)	637,000 barrels per day
Crude Oil Distillation Capacity (2006E)	714,275 barrels per day
Proven Natural Gas Reserves (January 1, 2006E)	300 billion cubic feet
Natural Gas Production (2004E)	24 billion cubic feet
Natural Gas Consumption (2004E)	793 billion cubic feet

Recoverable Coal Reserves (2003E)	4,614 million short tons
Coal Production (2004E)	51 million short tons
Coal Consumption (2004E)	67 million short tons
Electricity Installed Capacity (2004E)	35.6 gigawatts
Electricity Production (2004E)	143.3 billion kilowatt hours
Electricity Consumption (2004E)	132.7 billion kilowatt hours
Total Energy Consumption (2004E)	3.5 quadrillion Btus*, of which Oil (39%), Coal (25%), Natural Gas (23%), Hydroelectricity (13%), Nuclear (0%), Other Renewables (0%)
Total Per Capita Energy Consumption (2003E)	46.7 million Btus
Energy Intensity (2004E)	6,056.9 Btu per $2000-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2003E)	204.2 million metric tons, of which Oil (41%), Coal (38%), Natural Gas (21%)
Per-Capita, Energy-Related Carbon Dioxide Emissions (2003E)	2.9 metric tons
Carbon Dioxide Intensity (2004E)	0.4 Metric tons per thousand $2000-PPP**
Environmental Issues	water pollution from dumping of chemicals and detergents; air pollution, particularly in urban areas; deforestation; concern for oil spills from increasing Bosporus ship traffic
Major Environmental Agreements	party to: Air Pollution, Antarctic Treaty, Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Ozone Layer Protection, Ship Pollution, Wetlands signed, but not ratified: Environmental Modification

Oil and Gas Industry

Organization	Turkey's oil sector is mostly open to foreign company involvement, although both upstream and downstream activities are mostly dominated by state-owned companies.
Major Oil/Gas Ports	Ceyhan, Iskenderum, Istanbul, Izmir, Mersin
Foreign Company Involvement	Amity Oil, BP, Chevron, ConocoPhillips, Eni, ExxonMobil, OMV, Royal Dutch Shell, Toreador, Total
Major Oil Fields	Bati Raman, Karakas, K. Karakas, Raman
Major Natural Gas Fields	Marmara Kuzey
Major Refineries (capacity, bbl/d)	TPAO: Aliaga-Izmir (95,000), Izmit (251,600), Kirikkale (113,220). Atas: Mersin (95,000)

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.
**GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

Links

U.S. Government

CIA World Factbook - Turkey
U.S. State Department's Consular Information Sheet - Turkey
U.S. Embassy in Turkey

Associations and Institutions

Central Asia-Caucasus Institute: "The Baku-Tbilisi-Ceyhan Pipeline: Oil Window to the West"
Turkey and the IMF
World Bank: Turkey

EU Turkey Accession Page

Foreign Government Agencies
Turkey's Embassy in the U.S.
Turkey's Ministry of Energy and Natural Resources
Turkey's Ministry of Foreign Affairs

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Turkish Petroleum Corporation
Botas Petroleum Pipeline Corporation
Petrol Ofisi AS (POAS)
Turkish Petroleum Refineries Corporation (Tupras)

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Platts Oilgram News
Reuters
Turkish Daily News
U.S. Energy Information Administration
Wall Street Journal
World Gas Intelligence
World Markets Research Center

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