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Turkey

Turkey's strategic location makes it a natural "energy bridge" between major oil producing areas in the Middle East and Caspian Sea regions on the one hand, and consumer markets in Europe on the other. Turkey's port of Ceyhan is an important outlet both for current Iraqi oil exports as well as for potential future Caspian oil exports. Turkey's Bosphorus Straits are a major shipping "choke point" between the Black and Mediterranean Seas. Finally, Turkey is a rapidly growing energy consumer in its own right.

Note: Information contained in this report is the best available as of July 2005.



RECENT DEVELOPMENTS

Turkey has experienced a strong recovery from a severe economic contraction it experienced in 2001 due to a devastating financial and currency crisis. During 2004, Turkey's real gross domestic product (GDP) grew by a rapid 8.9 percent, with an inflation rate of 8.6 percent. For 2005, real GDP growth is forecast at 5.6 percent, with inflation of 8.0 percent.

Unemployment was running around 11.7 percent in the first quarter of 2005, down from 12.4 percent in the first quarter of 2004.

In response to Turkey's 2001 economic crisis, the International Monetary Fund (IMF) began working closely with the country. In early 2002, the IMF and Turkey agreed to an \$18.6 billion "Stand-By" assistance package. On May 11, 2005, the two parties agreed to a further \$10 billion, 3-year package. IMF assistance to Turkey is conditioned on implementation of a variety of reform measures aimed at addressing the root causes of the country's economic problems. Among other things, Turkey has pledged to cut state spending and subsidies, reform the country's banking sector, accelerate privatization of state-owned industries, lower the inflation rate, reduce the country's heavy debt burden, and in general create "a stable macroeconomic environment conducive to economic growth." In May 2005, the IMF stated that "Turkey's economic performance is the strongest in a generation." The IMF called for measures ranging from "continued independence of the central bank" to "full inflation targeting" in order to "facilitate further reductions in interest rates and generate sustained growth."

Despite the positive signs seen recently, Turkey continues to face numerous economic challenges, including: a large "underground" economy; sharp income inequalities; a large, inefficient state sector; overly complicated legal and administrative procedures; a relatively inhospitable foreign investment climate; and a stalled privatization program. In addition, Turkey's desire to join the European Union (EU) has increased political debate over such issues as rights for ethnic Kurds, the death penalty and human rights, emergency rule in four eastern provinces, economic reform, and democracy in general. In March 2004, Turkey held local elections, in which the ruling, Islamist-based Justice and Development Party (AKP) won a significant victory.

ENERGY

Prior to Turkey's severe economic difficulties in 2001, the country's energy consumption and net imports had been growing rapidly. Assuming that the Turkish economy and energy demand return to a rapid growth path, Turkey will require billions of dollars worth of investments in coming years. In 2001, Turkey ratified the Energy Charter Treaty, the international legal framework for energy investment. Also, in early 2001, the Turkish parliament passed an energy liberalization law aimed at ending the government's monopoly in the energy sector, and also geared towards attracting foreign energy investment. In December 2003, parliament passed legislation liberalizing the country's energy sector. In February 2004, the government raised taxes on unleaded gasoline, diesel, and natural gas as part of a move towards boosting budget revenues in line with IMF recommendations. In November 2004, two former Turkish energy ministers, Cumhur Ersumer and Zeki Cakan, went on trial for corruption in awarding natural gas and power projects.

In April 2005, the International Energy Agency (IEA) issued a report on Turkey which said that "Turkey has taken steps to implement energy market reforms which have resulted in clear and significant benefits. Now, continued action is needed to see the process through to a successful conclusion." The IEA elaborated that Turkey needs to "restructure the state-owned enterprises...create independent electricity and gas operators and to remove cross-subsidies from electricity and gas prices." The IEA report follows an October 2004 European Commission assessment of Turkey, in which the Commission called on Turkey to continue liberalizing the country's energy sector in line with the single European energy market, and recognized Turkey's role as an important oil and gas transit center. As part of the Turkey's efforts to join the European Union (EU), the country has incorporated numerous EU energy laws and standards into its own national energy legislation. In addition, Turkey has ratified the Kyoto Protocol on global climate change.

OIL

In general, Turkish oil consumption has increased in recent years, although the country's recent economic recession plus price deregulation measures (which have raised the price of many oil products) since June 1999 appear to have interrupted this trend for the time being. During 2002, for instance, Turkish oil consumption and imports were down approximately 30,000 barrels per day (bbl/d) from 2000 levels. In the long-run, Turkish oil demand and imports are expected to resume steady growth (during 2004, Turkish oil demand increased by about 30,000 bbl/d, to around 685,000 bbl/d). Oil provides over 40 percent of Turkey's total energy requirements, but its share is declining (as the share of natural gas rises).

Around 90 percent of Turkey's oil supplies are imported, mainly from the Middle East (Saudi Arabia, Iran, Iraq, Syria) and Russia. Turkey's port of Ceyhan is a major outlet for Iraqi oil exports, with optimal pipeline capacity from Iraq of about 1.5-1.6 million bbl/d, but oil flows have been only sporadic since late March 2003, following the outbreak of the Iraq war. On March 8, 2004, Iraq issued a tender for Kirkuk oil via the Turkish port of Ceyhan, the first such sale from Iraq's northern oil fields in a year. Since then, flows through Ceyhan have been erratic as the Baku-Ceyhan line has

been subject to frequent attacks.

Three companies account for the majority of Turkey's oil production -- the Turkish State Petroleum Company (TPAO), and foreign operators Royal Dutch/Shell (Shell) and ExxonMobil. Smaller companies include Petrom of Romania (produces around 2,600 bbl/d in the Selmo block) and Aladdin Middle East (480 bbl/d in Siirt and Gaziantep). TPAO alone accounts for about 80 percent of the country's total oil output (currently around 43,000 bbl/d, down from 90,000 bbl/d in 1991). Turkish oil fields are generally small, and scattered around the country. Oil fields in the country's southeast (specifically the Hakkari Basin, Turkey's main oil producing area) are old and expensive to exploit. In addition to the Hakkari Basin, Turkey contains oil prospects in its European provinces, in the Black Sea shelf region, and in other oil basins in southern and southeastern Turkey. Potential oil reserves in the Aegean Sea have not been explored due to conflicting Greek claims over the area. In December 2003, TPAO stated that it was planning large-scale exploration for oil and gas in the Black Sea, Mediterranean, and Aegean Seas (plus southeastern Turkey). Since 1961, only 1,400 exploration and appraisal wells have been drilled in Turkey. In July 2003, Australia's Amity Oil reported a commercial discovery at its Adatepe #1 well in the Thrace Basin.

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 sector, to liberalize pricing (and domestic content purchase requirements) of oil and oil products, end restrictions on vertical integration, and integrate pipeline, refining, and distribution functions. Tupras (Turkish Petroleum Refineries Corporation) and POAS (Petrol Ofisi, Turkey's major petroleum product retailer) are to be privatized as well. Also, as a result of this Law, price ceilings and import quotas on petroleum products were lifted in early 2005.

In early 2004, the Turkish government approved the sale of a 66.76 percent stake in Tupras for \$1.3 billion to a group led by Russia's Tatneft (and its German subsidiary, Efremov Kautschuk). In late May 2004, a Turkish court suspended the sale after a union filed a lawsuit claiming that privatization procedures were not properly followed. In March 2005, Turkey's government sold a 14.56 percent share in Tupras for \$446 million. In April 2005, Turkey's privatization board announced its intention to open a new tender for the remaining 51 percent of the company. In May 2005, the board also said that whoever buys Tupras will not be forced to maintain the Korfez petrochemical complex, which has been losing money. In mid-June 2005, Spain's Repsol submitted a 1-billion-euro bid for a 51 percent stake in Tupras. Other entities reportedly interested in Tupras include the Indian Oil Company, Lukoil, Eni, OMV, and the the Turkish military pension fund.

Pipelines

Oil and gas transportation is a crucial and contentious issue in the Caspian Sea/Central Asia regions. For several years, Turkey and the United States had pushed for a "Western route" pipeline that would carry oil from Azerbaijan's port of Baku through Azerbaijan and Georgia and then across Turkey to Ceyhan. Now, construction of the 1-million-bbl/d capacity, \$4 billion [Baku-Tblisi-Ceyhan \(BTC\) "Main Export Pipeline,"](#) has been completed. The BTC line stretches approximately 1,038 miles (281 miles through Azerbaijan, 135 miles through Georgia, and 622 miles through Turkey). On May 25, 2005 Azerbaijan began filling the Azeri section of BTC. The BTC pipeline allows oil to bypass the crowded Bosphorus and Dardanelles Straits and is also the first pipeline able to export oil from the Caspian Sea that does not cross Russian soil. Test filling began in early May 2005, and the [BP-led consortium](#) expects the first tanker loadings during the fourth quarter of 2005. Turkey is expected to earn billions of dollars in transit revenues from the pipeline over its lifetime.

In addition to BTC, a Russian-backed "Northern route" carries oil across the Caucasus to the Russian Black Sea port of Novorossiisk. In March 2001, the Caspian Pipeline Consortium (CPC)

commissioned the 990-mile, \$2.5 billion, 1.34 million-bbl/d-capacity pipeline. From there, oil is transported through the Bosphorus Straits. Turkey has raised concerns about the ability of the narrow and twisting Bosphorus Straits to handle additional tanker traffic that will be necessary to handle the planned volume of oil to be exported via CPC, in addition to other oil shipments. Specifically, Turkey is concerned that a major accident and environmental disaster could take place right next to Istanbul, the country's largest city. In addition, delays at the Bosphorus can cost oil supertankers \$30,000 per day (or more) in "demurrage" charges, and there reportedly have been delays of up to 30 days. Currently, more than 50,000 commercial ships per year transit the Bosphorus, with oil flows of around 3 million bbl/d in 2003. Russia's CPC oil exports through the Bosphorus have been increasing, reaching approximately 450,000 bbl/d in 2004.

To help resolve these problems, half a dozen or more Bosphorus bypass options - aside from BTC - are under consideration in southeastern Europe and in Turkey itself. One possibility is a 1.2-million-bbl/d, \$400-\$900 million line running from Kiyikoy on Turkey's Black Sea coast to Ibrikbaba on the country's Aegean Sea coast near the border with Greece. Russia's Transneft had the lead on this project, but announced in March 2005 that it was pulling out. In addition, the Kiyikoy-Ibrikbaba line is opposed by environmentalists, since Ibrikbaba lies in a national park and the pipeline would pass near coral reefs in the Saronic Gulf. A rival option, led by Houston-based Thrace Petroleum, involves a similar route, from Igneada on the Black Sea to Saros Bay on the Aegean Sea.

In January 1997, Bulgaria, Greece, and Russia agreed on a plan to build an oil pipeline linking the Bulgarian Black Sea port of Burgas with Alexandroupolis on the Mediterranean coast of Greece. As originally conceived, the proposed 178-mile, \$600 million, underground pipeline would allow Russia to export oil via the Black Sea while bypassing the Bosphorus. However, the project has been stalled for several years by a wide range of technical and economic issues, including disagreement between Russia and Greece over transit fees.

Other proposals for Bosphorus bypass routes include a 1.1-million-bbl/d line from the Black Sea port of Samsun in northeastern Turkey to Ceyhan, the 570-mile, 750,000-bbl/d "AMBO" line between Burgas and the Albanian port of Vlore, and the "SEEL" line from Romania's port of Constanza to Italy's Adriatic port city of Trieste. In December 2004, AMBO announced that front-end engineering and design (FEED) on the \$1.2-billion pipeline would be completed in early 2005 following the December 28, 2004 signing of a memorandum of understanding (MOU) by ministers from Bulgaria, Albania, and Macedonia. Construction is expected to begin within the next 12 months for operation within three years. In November 2004, the governments of Romania, Serbia-Montenegro, Croatia, Slovenia, Italy, and Austria agreed to endorse SEEL and its connection with the TransAlpine pipeline, which supplies refineries in Austria, Germany and the Czech Republic. In February 2005, Hill International Company completed a feasibility study on the pipeline. Construction is scheduled to commence in late 2005, with flows of 480,000 bbl/d expected by 2007.

In addition to looking at bypasses to the Bosphorus, Turkey also has been attempting to increase capacity in the straits. To increase safety and improve traffic flow in the Bosphorus, Turkey has constructed a \$45 million radar-controlled Vessel Traffic and Management System, with ships monitored from a facility similar to an airport traffic control center.

Refining/Downstream

Turkey has refining capacity of 802,275 bbl/d at 7 refineries. Refining and other downstream operations in Turkey are dominated by partly-state-owned company Tupras, which has four main refining complexes: Batman in the southeast, Aliaga near Izmir, Izmit near Istanbul (the country's largest refinery, damaged during the August 1999 earthquake), and the Central Anatolian Refinery at Kirikkale near Ankara. In 2002, Tupras' share of the Turkish fuels and lubricants market was

around 78 percent, with other major retailers including BP, ExxonMobil, TotalFinaElf, Agip, and ConocoPhillips. Tupras is planning a fifth refinery -- a \$700-\$800 million facility near Yarimca in western Turkey -- to be completed by 2007.

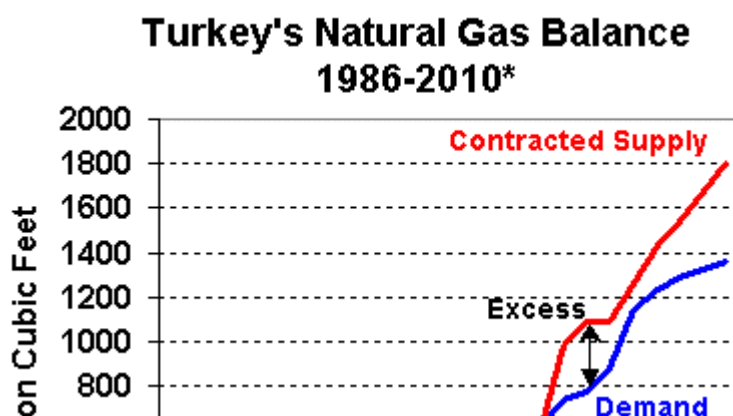
Tupras has a modernization program designed to switch output at its refineries towards lighter products and to meet European standards. Turkey's sole private refinery is Atas, with a capacity of 88,000 bbl/d, located near Mersin on the Mediterranean coast, a joint venture of ExxonMobil (51 percent), Shell (27 percent), BP Amoco (17 percent), and local company Marmara Petrol ve Rafineri Isleri AS (5 percent). A report in June 2004 indicated that Atas would shut down due to profitability concerns. In late June 2005, Tupras was granted a \$128 million loan by the Turkish Finance Ministry to upgrade the Kirikkale refinery so it meets EU regulations.

In July 2002, Turkey's government announced that it would sell its 25.8 percent share in POAS to the majority shareholder, Is Dogan Petrol Yatirimlari AS ("Dogan"). The announcement came amidst calls by the IMF for an acceleration in Turkey's privatization process. In October 2004, Dogan announced that it had dropped plans to sell its 47 percent stake in the company to foreign investors after failing to receive adequate offers. In June 2005, POAS applied for pre-qualification on a bid for Tupras.

One of Turkey's next priorities for privatization in the energy sector is the country's largest petrochemical producer, Petkim. In August 2003, Turkey announced the opening of a tender for sale of an 88 percent stake in Petkim after canceling another possible sale, for \$605 million to the prominent Uzan family. In April 2005, 35.4 percent of the government's shares in Petkim were sold, mainly to foreign investors, for \$267 million.

NATURAL GAS

Turkey consumed 748 billion cubic feet (Bcf) of natural gas (nearly all imported) in 2003, up from 150 Bcf consumed in 1991. In 2003, the Turkish power sector accounted for about 65 percent of total Turkish gas demand, with the industrial and residential sectors accounting for 19 percent and 14 percent, respectively (fertilizer production took the remaining 2 percent). Prior to Turkey's severe economic problems (plus 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, state natural gas and pipeline company Botas revised its natural gas demand growth projections down sharply, from about 1.6 trillion cubic feet (Tcf) in 2005 to under 0.9 Tcf in that year, a 45 percent downward revision (see graph). Many analysts now believe that, given lower Turkish natural gas consumption forecasts, only one of the main import options under development (i.e., [Blue Stream](#), Trans-Caspian Pipeline - TCP, Shah Deniz) -- can be supported for some time.



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 need. 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 gas consumption (1.4 Tcf) in that year. Currently, about 1.1 Tcf of gas

comes from Russia (0.7 Tcf), Iran (0.2 Tcf), plus Algeria and Nigeria combined (0.2 Tcf) in the form of liquefied natural gas (LNG). Turkey has one 112-Bcf/year capacity LNG terminal, adjacent to the existing Marmara Ereğlisi combined cycle gas turbine power station (for a detailed map of Turkey's natural gas import pipeline system, click [here](#)).

By 2010, over 31 percent of Turkey's gas imports are to be supplied from Russia via the Black Sea (see "Blue Stream" below), more than 27 percent from Russia via Bulgaria, about 19 percent from Iran, about 13 percent from Azerbaijan, and the remainder from Algeria and Nigeria. 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.

If Turkish demand does not support the level of natural gas imports for which it has contracted, Turkey could become an important transit center for natural gas exports to Greece and beyond. Along these lines, Greece and Turkey signed a binding agreement in December 2003 which calls for extending an Azerbaijan-Turkey natural gas pipeline into Greece. Reportedly, the 177-mile-long pipeline would connect Ankara to Alexandroupolis in northern Greece, would supply around 18 Bcf of gas per year starting in 2006, and would cost around \$250 million. After that, natural gas could be transported to Central and Western Europe via Bulgaria or via an undersea pipeline to Italy, where gas demand -- especially for electric power generation -- is expected to grow rapidly in coming years.

Natural gas is Turkey's preferred fuel for new power plant capacity for several reasons: environmental (gas is less polluting than coal or oil); geographic (Turkey is located near to huge amounts of gas in the Middle East and Central Asia); economic (Turkey could offset part of its energy import bill through transit fees it could charge for oil and gas shipments across its territory); and political (Turkey is seeking to strengthen relations with Caspian and Central Asian countries, several of which are potentially large gas exporters). The United States, among others, has been encouraging Turkey to utilize its unique geographical position to become a [major transit center for natural gas](#) from the Caspian/Central Asia to Europe. At the same time, however, Turkey's reliance on Russia for gas imports could reach 70 percent or higher, seemingly undercutting Turkey's goal of diversifying its fuel suppliers. In April 2003, Turkish Energy Minister Hilmi Guler told Parliament that the government had a "strategic goal" of sharply reducing Turkey's reliance on Russian natural gas -- from 70 percent now to 30 percent within five years. This goal appears to conflict, however, with the volume of Russian gas already contracted for via Bulgaria and "Blue Stream."

Turkish natural gas production in 2002 (13 billion cubic feet -- Bcf) met just 2 percent of domestic natural gas consumption requirements. Marmara Kuzey (North Marmara), which came onstream in May 1997, is the country's largest non-associated gas field. Marmara Kuzey is located offshore in the Thrace-Gallipoli Basin of the Sea of Marmara. In March 2002, the Gocerler natural gas field was officially opened, 16 months after its discovery in the Thrace basin. Production potential is estimated to be as high as 6.6 Bcf per year. Also, in July 2001, TPAO announced that it had found gas in the Mersin and Iskenderun Bays in Turkish areas of the Mediterranean. In September 2004, TPAO said that it had found a viable gas deposit at the Ayazli-1 well off the Turkish Black Sea coast. Currently, most Turkish associated gas is reinjected into oilfields as part of an Enhanced Oil Recovery (EOR) system.

"Blue Stream" Pipeline

In October 2002, a twin 866-mile natural gas pipeline running from Russia under the Black Sea to Turkey was completed, with natural gas flows starting in February 2003, about one year behind the original schedule. The \$3.2 billion "Blue Stream" pipeline runs from Izobilnoye in southern Russia, to Dzhugba on the Black Sea, then under the Black Sea for about 247 miles to the Turkish port of Samsun, and on to Ankara.

In March 2003, Turkey halted gas imports from Blue Stream for six months, with a Botas official stating simply that "we don't need the gas right now." In November 2003, Russia's Gazprom announced that it had resolved its dispute with Turkey, reportedly agreeing on a new, "competitive" price for Blue Stream gas somewhere between the old price (\$3.20 per million Btu) and Botas' desired price (\$2.08 per million Btu). By 2009, Blue Stream had been expected to reach peak capacity of 565 Bcf per year, but this is now somewhat doubtful given Turkey's lower gas demand forecasts. Over the course of the 25-year agreement signed in December 1997, Turkey was to import 14.1 Tcf of natural gas from Russia via Blue Stream, with the pipeline eventually extended to other Mediterranean countries, including Greece.

Other Natural Gas Import Deals

In late January 2002, Iran and Turkey officially inaugurated a much-delayed natural gas pipeline link between Tebriz (northern Iran) and Ankara (the capital of Turkey). In 1996, Iran and Turkey had signed a \$30 billion, 25-year agreement that called for Iran to supply Turkey with more than 8 Tcf of natural gas beginning in late 1999. Officials in Turkey and Iran variously blamed U.S. sanctions, financing problems on the Turkish leg of the \$1.9 billion pipeline, economic recession in Turkey, and delays by the Iranians in completing an important metering station for delaying the project. Exports of Iranian natural gas to Turkey were expected to reach 350 Bcf per year by 2007. There are questions, however, whether Turkish demand will grow rapidly enough to absorb this volume of natural gas from Iran, in addition to gas slated to be supplied by Russia, Algeria, and Nigeria. In June 2002, for instance, Turkey halted natural gas imports from Iran, citing problems with "gas quality," even though a lack of demand on the Turkish side appeared much more likely. On November 13, 2002, Turkey announced that it had resumed gas imports from Iran after reportedly securing a lower price and a reduction in the "take-or-pay" percentage. In August 2004, Turkish officials stated that they would seek international arbitration in the natural gas price dispute with Iran.

On May 21, 1999, Turkey's state natural gas and pipeline company Botas signed an agreement on building a \$2-\$2.4 billion, 1,050-mile, gas pipeline from Turkmenistan, underneath the Caspian Sea, across Azerbaijan and Georgia (both of which would collect transit fees), and on to Turkey. Gas deliveries of 565-1,060 Bcf per year are possible, with additional gas possibly being sent onwards to Europe. The consortium is led by U.S. company Bechtel and includes General Electric, Shell, and PSG International. In mid-July 1999, a top Turkish energy official stated that the Trans-Caspian Gas Pipeline (TCGP) from Turkmenistan was still the preferred option for Turkey despite the potentially huge (as high as 35 trillion cubic feet -- Tcf) Shah Deniz gas field in Azerbaijan, which is located hundreds of miles closer (and on the western side of the Caspian Sea) to Turkey than Turkmenistan. Currently, however, progress on the TCGP appears stalled indefinitely, with the international consortium essentially having suspended operations, and with Turkey already oversupplied with gas from Iran and Russia ("Blue Stream").

After months of negotiation and delay, Azerbaijan and Turkey signed a long-term natural gas purchase and supply contract on March 12, 2001 (granted final approval on the Turkish side in February 2003). Starting in 2006, two years later than the original target date, Azerbaijan is to deliver 70 Bcf of natural gas to Turkey, rising to 177 Bcf in 2007 and around 223 Bcf per year from 2009 through 2020. Natural gas for the deal is to come mainly from Azerbaijan's \$3.2 billion, BP-

led Shah Deniz Phase I field development project (given the financial green light in February 2003). To transmit the gas, the \$900 million South Caucasus (Baku-Tbilisi-Erzurum) pipeline would stretch some 630 miles, including 290 miles in Azerbaijan and approximately 170 miles in both Georgia and Turkey. Like Turkey's other possible gas deals, the pipeline from Shah Deniz has been called into question by lack of gas demand in Turkey, and now may not be built at all.

Egypt, with huge gas reserves of its own, represents yet another possible source of gas for Turkey, either by pipeline or via LNG tanker. This latter option would include construction of a \$1.2 billion liquefaction terminal near Port Said on the Mediterranean coast, and a regasification facility at Aliaga (near Izmir) in Turkey. Egypt and Turkey signed a preliminary agreement for LNG exports in 1996, but analysts have raised serious questions about whether the project is economically feasible. Also, as mentioned above, Turkey already has committed to buying more gas than it probably needs for years to come.

Other Natural Gas Issues

In 2001, Turkey passed an Natural Gas Market Law which will significantly reform the country's gas sector. 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. In the meantime, Botas is supposed to sell off at least 10 percent of its market share every year, eventually getting it down from 100 percent to 20 percent by 2009. To date, however, progress in these areas has lagged, with -- among other things -- parliamentary delays in approving an amendment easing restrictions on foreign players in Turkey's gas sector. In March 2004, Turkey's energy market regulatory agency threatened Botas with fines over the company's failure to meet the target of reducing its market share by 10 percent per year. As of June 2005, the so-called "gas release" program still had not gotten underway. One obstacle is opposition by Russian and Iran to changing the terms of their gas export contracts with Botas. In June 2004, the Turkish Energy Ministry proposed reducing the share of gas contracts that Botas would have to transfer to the private sector; 25 percent by 2009 instead of 80 percent. The bill was withdrawn a few weeks later in response to both domestic and foreign opposition.

In July 2002, TPAO said that it would begin negotiations with Germany's Lurgi Oel Gas Chemie on building Turkey's first natural gas storage unit. The facility would be located 50 miles west of Istanbul on the Marmara Sea coast, and will include equipment to for gas purification. Meanwhile, Botas reportedly plans to build another gas storage plant at Salt Lake (Tuz Golu) in central Anatolia.

In December 2004, Russian President Vladimir Putin visited Turkey, during which the two countries signed a memorandum of cooperation on natural gas development. This includes the volume and pricing of Russian gas sold to Turkey via the Blue Stream pipeline.

COAL

Turkey has hard coal (anthracite and bituminous) reserves of around 1.1 billion short tons, plus lignite reserves around 8 billion short tons. 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. Turkey's state-owned coal company, TTK, produces, processes, and distributes hard coal, while Turkish Coal Enterprises produces most of Turkey's lignite. In addition, Turkey's Electricity Generating Authority produces lignite for three power plants. Between 1990 and 2000, the number of workers in Turkey's coal sector fell from 63,993 to 35,665. Turkish coal, which is used mainly for power generation, is generally of poor quality and highly polluting.

ELECTRIC POWER

As of early 2004, Turkey had electric power generating capacity of around 32,000 megawatts (MW), and was building 13,000 MW more. With a young and growing population, low per capita electricity consumption, rapid urbanization and generally strong economic growth, Turkey for nearly two decades has been one of the fastest growing power markets in the world. Prior to Turkey's economic difficulties in 2001, projections by Turkey's Electricity Generating and Transmission Corporation (TEAS), a public company which owns and operates 15 thermal and 30 hydroelectric plants generating 91 percent of Turkey's electricity, had indicated that rapid growth in electricity consumption would continue over the next 15 years. Now, though, power demand growth looks much weaker, with demand hit hard by Turkey's 2001 economic crisis, and with a surplus of generating capacity for the time being. Still, the government anticipates the need for significant increases in power generating capacity in coming years, possibly 54,000 MW by 2020, requiring billions of dollars in foreign investment.

The IMF and World Bank are pressing Turkey to move towards rapid privatization of the country's power sector in order to increase efficiency and to relieve pressure on the government's budget situation. To date, privatization has been slowed by lack of investor interest, as well as economic and political uncertainty, although the Turkish Privatization Administration said in September 2004 that it would start privatizing the country's regional power distributors at the end of 2004.

A major dilemma now faced by Turkey is how to invest in new electric power capacity while at the same time adhering to foreign debt ceilings mandated under lending rules set by the IMF. Conventional financing of major infrastructure projects would only increase the amount of foreign credit, so Turkey's Energy Ministry has conceived other options for financing projects. One option used until now has been the so-called Build, Operate and Transfer (BOT) model, under which private investors build and operate private sector generation facilities for a set number of years, at which point they transfer ownership to the state. First introduced in 1984 (under Law 3096) by then Prime Minister Turgut Ozal, BOT projects have been plagued by legal problems, which has slowed their implementation (although 23 BOT projects, plus five "build-operate" plants, have been commissioned since 1993). Another problem with BOT projects is that they obligate the government to commit to long-term power contracts at predetermined -- and often high -- prices (in exchange for lower capital costs initially). In October 2003, Turkish Energy Minister Guler denied that the government planned to seize four gas-fired and six hydroelectric power plants, all BOT, despite unfavorable contract conditions.

In February 2001, Turkey passed the long-anticipated Electricity Market Law, which paves the way for a free market in power generation and distribution in the country. Among other things, the legislation (which President Sezer signed into law in July 2001) calls for: 1) TEAS to be broken up into separate generation, distribution, and trade companies; 2) trade and generation companies to be privatized, while transmission remains in state hands; and 3) a new regulatory board to be set up which will oversee the Turkish power market, set tariffs, issue licenses, and prevent uncompetitive practices. The new law throws into doubt the fate of dozens of BOT and TOR (transfer-of-operating-rights) power projects. In May 2002, the Energy Ministry put six power plants (Orhaneli, Hamitabat, Catalagzi, Soma A-B, and Ergil) and nine distribution grids on sale, transferring their assets to the country's privatization authority. Overall, however, progress has been slower than expected in implementing the 2001 Law. Current plans are for Turkey's power distribution and generation network to be privatized by the end of 2006, with the country being divided into 17-20 power distribution areas.

In July 2004, the Turkish government backed off after introducing a draft bill that the World Bank, EU and others criticized for weakening Turkey's power and gas liberalization program. The bill

would have strengthened the role of the Turkish Power Trading Company (TETAS), which owns 84 percent of the sector, and possibly made it easier for the state to acquire BOT power plants.

In February 2004, Germany's STEAG, a subsidiary of RAG, announced that it had completed construction on a \$1.5 billion, 1,210-MW, coal-fired power plant near Iskenderun, in southern Turkey. The plant, which represents the largest foreign direct investment ever by a German company in Turkey, is expected to burn 3.3 million metric tons of imported coal per year. Aside from this large coal-fired facility, Turkey is mainly focused on increased natural gas use for thermal electric power production. In September 2002, two new combined cycle gas-fired power plants (the 770-MW Adapazari and 1,540-MW Gebze facilities) came online, ahead of schedule. A third, 1,525-MW, gas-fired plant was scheduled to come online in December 2002 at Izmir. Finally, Tractebel is scheduled to complete a 763-MW gas-fired plant at Baymina, near Ankara, by late 2003. Several pipeline projects have been proposed to supply gas to these facilities, as well as several LNG terminals. In addition, Botas is expanding its natural gas transmission network along the Black Sea and the Aegean.

In addition to increasing domestically generated electricity through construction of new power plants, Turkey is looking outside its borders to help meet the country's growing power demand. In December 2003, for instance, Turkey began importing 300 million kilowatthours (kwh) per year of power from Turkmenistan (via Iran), with plans to double this to 600 million kwh. Turkey reportedly is paying 3.35 cents per kwh for the power, a lower price than it pays for power imports from Bulgaria. In April 2003, Turkey announced that it was unilaterally terminating power deliveries from Bulgaria, after declaring that Bulgaria had not met its obligations under a 1998 bilateral, 10-year energy agreement. In February 2004, Turkey again stated that it would stop purchases of power from Bulgaria, this time, reportedly, due to Bulgaria's failure to grant highway and dam contracts to Turkish contractors as provided for in a bilateral power trade agreement. Besides Bulgaria and Turkmenistan, Turkey also imports power from Russia (via Georgia) and Iran. In July 2004, Turkey and Greece agreed on a 16-mile-long power line linking the two countries, which will help to further integrate Turkey's power grid with Europe's.

In July 2000, the Turkish government decided to abandon a planned, but oft-delayed, \$4 billion, 1,300-MW nuclear power plant. Three international consortia (AECL of Canada, Westinghouse-Mitsubishi of the United States and Japan, and NPI of France and Germany) had submitted bids to build the plant, which would have been Turkey's first nuclear plant. The project was to have been turnkey and would have been located at Akkuyu, on the southern Mediterranean coast. Reportedly, the plant was canceled for financial reasons, although there also had been opposition from environmental and anti-nuclear groups, as well as neighboring countries like Greece. In November 2004, Turkish Energy Minister Guler said that nuclear power plants with 4,500 MW of capacity would start operating in Turkey by 2012.

Turkey has significant hydroelectric power resources (more than 104 total plants, installed capacity over 10.2 GW), and is developing a great deal more, especially as part of the \$32 billion Southeast Anatolia -- GAP -- hydropower and irrigation project. When completed, GAP, which is considered one of the most ambitious water development projects ever undertaken, will include 21 dams, 19 hydro plants (with around 7.5 GW of power generating capacity), and a network of tunnels and irrigation canals. Major Turkish hydro dams as part of the GAP include: Ataturk (2,400 MW capacity); Karakaya (1,800 MW); Ilisu (1,200 MW; the largest hydro project on the Tigris River, but highly controversial due to environmental concerns); Cizre (240 MW); Silvan/Kayser (240 MW); Hakkari (208 MW); Alpaslan II (200 MW); Batman (198 MW); Konaktepe (180 MW); and Karkamis (180 MW).

Turkey is considered to have a large amount of wind, geothermal, and solar power potential. In January 2001, Turkey announced approval for 17 wind and one geothermal BOT power plants, and in December 2004 the Parliament's Industry and Energy commission approved a draft bill encouraging renewables. Currently, wind power capacity in Turkey is around 19 MW, with units located all over the country. Potential for wind power may be as high as 120,000 MW, with particularly attractive areas for wind located along Turkey's west coast and in southeastern Anatolia. Solar energy is mainly used for roof-top hot water. Geothermal energy potential is estimated at around 35 GW. In March 2004, the World Bank granted Turkey a \$200 million Energy Reform Loan to encourage the use of renewable energy in the country.

ENVIRONMENT

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 an increasing air pollution in cities that are already suffering from high pollution levels. Although Turkey is beginning to take steps to improve air quality, the increased number of automobiles on Turkish streets is hampering this effort.

Of special concern to Turkey is the threat of marine pollution, especially from oil transport through the narrow Bosphorus Straits. The 12-mile passage is already one of the most difficult in the world to navigate, and increased shipping--from oil and gas imports flowing into Turkey, as well as increased Russian shipping from the Black Sea through the Straits to world markets--raise the possibility of an accident. 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 Bosphorus could put the Istanbul area at further environmental risk.

Industrial production has meant that Turkey's carbon emissions are on the rise. Compared to other International Energy Agency countries, Turkey's energy and carbon intensities are low, but per capita energy consumption and per capita carbon emissions are trending upwards.

Turkey has substantial renewable energy resources--especially hydroelectric power--and it is currently constructing a series of dams and hydroelectric power plants. As Turkey looks towards possible European Union membership, it will need to continue utilizing this cleaner energy as a means to achieve sustainable economic development. Turkey also has a great degree of potential for energy efficiency improvements.

COUNTRY OVERVIEW

President: Ahmet Necdet Sezer (since May 5, 2000)

Prime Minister: Recep Tayyip Erdogan (since March 11, 2003)

Independence: October 29, 1923 (successor state to the Ottoman Empire)

Population (July 2005E): 69.7 million

Location/Size: Southwest Asia/780,580 sq. km (301,930 sq. mi.), slightly larger than Texas

Major Cities: Ankara (capital), Istanbul, Izmir, Adana

Languages: Turkish (official), Kurdish, Arabic

Ethnic Groups: Turkish (80%), Kurdish (20%)

Religions: Muslim (99.8%, mostly Sunni), other 0.2%

ECONOMIC OVERVIEW

Finance Minister: Kemal Unakitan

Currency: Turkish New Lira (TNL)

Market Exchange Rate (6/2/05): US\$1=1.364 TNL

Gross Domestic Product (GDP) (2004E, market exchange rates): \$298.9 billion

Real GDP Growth Rate (2004E): 8.9% **(2005F):** 5.6%
Consumer Price Inflation Rate (2004E): 8.6% **(2005F):** 8.0%
Unemployment Rate (1Q04E): 12.4% **(1Q05E):** 11.7%
Current Account Balance (2004E): -\$15.5 billion
Major Trading Partners: Germany, United States, Italy, France, United Kingdom, Russia
Merchandise Exports (2004E): \$67.0 billion
Merchandise Imports (2004E): \$90.7 billion
Merchandise Trade Balance (2004E): -\$23.8 billion
Major Export Products: Agricultural, textiles, iron, steel
Major Import Products: Oil, machinery, chemicals, iron, steel
Official Reserve Assets (12/04): \$33.9 billion
Net External Debt (12/04): \$114.3 billion (40.7% of GDP)

ENERGY OVERVIEW

Minister of Energy and Natural Resources: Hilmi Guler
Proven Oil Reserves (1/1/05E): 300 million barrels
Oil Production (2004E): 42,904 barrels per day (bbl/d) of which 42,421 bbl/d was crude oil
Oil Consumption (2004E): 685,000 bbl/d
Net Oil Imports (2004E): 642,081 bbl/d
Crude Oil Refining Capacity (1/1/05E): 802,275 bbl/d (including the 88,000-bbl/d private Atas refinery)
Natural Gas Reserves (1/1/05E): 300 billion cubic feet (Bcf)
Natural Gas Production (2003E): 20 Bcf
Natural Gas Consumption (2003E): 748 Bcf (quintuple the 150 Bcf consumed in 1991)
Net Natural Gas Imports (2003E): 728 Bcf
Coal Production (2003E): 53.1 million short tons (Mmst)
Coal Consumption (2003E): 71.0 Mmst
Net Coal Imports (2003E): 17.9 Mmst
Estimated Recoverable Coal (2003E): 4.6 billion short tons
Electric Generation Capacity (early 2004E): 32.3 gigawatts (in 2003, 40% of Turkey's power capacity was gas-fired, 28% hydro, 24% coal, and 7% oil)
Net Electricity Generation (2003E): 133.6 terawatt-hours (Twh)
Electricity Consumption (2003E): 124.9 Twh (up sharply from 54.0 Twh in 1991)

ENVIRONMENTAL OVERVIEW

Minister of Environment and Forestry: Osman Pepe
Total Energy Consumption (2003E): 3.3 quadrillion Btu* (0.8% of world total energy consumption)
Energy-Related Carbon Dioxide Emissions (2002E): 191.1 million metric tons (0.8% of world total carbon dioxide emissions)
Per Capita Energy Consumption (2002E): 44.0 million Btu (vs. U.S. value of 339.1 million Btu)
Per Capita Carbon Dioxide Emissions (2002E): 2.7 metric tons (vs. U.S. value of 20.0 metric tons)
Energy Intensity (2002E): 7,576 Btu/\$1995 (vs U.S. value of 10,618 Btu/\$1995)**
Carbon Dioxide Intensity (2002E): 0.47 metric tons/thousand \$1995 (vs U.S. value of 0.63 metric tons/thousand \$1995)**
Fuel Share of Energy Consumption (2002E): Oil (41.6%), Coal (26.1%), Natural Gas (21.0%)
Fuel Share of Carbon Dioxide Emissions (2002E): Oil (42.6%), Coal (39.5%), Natural Gas (17.9%)
Status in Climate Change Negotiations: Turkey ratified the Kyoto treaty in February 2004.
Major Environmental Issues: Water pollution from dumping of chemicals and detergents; air

pollution, particularly in urban areas; deforestation; concern for oil spills from increasing Bosphorus ship traffic.

Major International Environmental Agreements: A party to Conventions on Air Pollution, Antarctic Treaty, Biodiversity, Desertification, Hazardous Wastes, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Wetlands and Whaling. Has signed, but not ratified, Antarctic-Environmental Protocol and Environmental Modification. Has not signed the UN Framework Convention on Climate Change.

* 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 based on OECD Purchasing Power Parity (PPP) figures

OIL AND GAS INDUSTRIES

State Oil Company: Turkish State Petroleum Company (TPAO)

State Refining Company: Turkish Petroleum Refineries Corporation (Tupras)

State Pipelines and Gas Agency: Botas

State Oil Products Retailer: Petrol Ofisi AS (POAS)

Major Ports: Iskenderun, Istanbul, Mersin, Izmir

Major Oil and Gas Fields: Bati Raman, Karakus, K. Karakus

Major Pipelines: Turkey-Iraq ; Turkey contains 1,078 miles of crude oil pipelines, 1,439 miles of oil product pipelines, and 439 miles of natural gas pipelines

Major Refineries (crude oil capacity): Izmit (251,600 bbl/d), Aliaga-Izmir (226,440 bbl/d), Kirikkale (113,200 bbl/d), Atas-Mersin (88,000 bbl/d); Batman (22,015 bbl/d); Narli-Kahramanmaraş (6,000 bbl/d)

Sources for this report include: Agence France Presse; Alexander's Gas and Oil Connections; APS Review Market Trends; Associated Press Newswires; BBC Summary of World Broadcasts; Cambridge Energy Research Associates; CIA World Factbook; CSIS Caspian Energy Update; Deutsche Bank special report, "Turkey: Winning the Gas Import Race;" Dow Jones Newswires; Economist Intelligence Unit Country Reports, ViewsWire; Energy Day; Energy Report; Financial Times; Global Insight; Global Power Report; Hart's European Petroleum Finance Week; Hart's Oil and Gas Investor; International Energy Agency; International Monetary Fund; International Water Power and Dam Construction; Middle East Economic Digest; National Post (Canada); New York Times; Oil Daily; Oil and Gas Journal; Petroleum Economist; Petroleum Intelligence Weekly; Reuters; PR Newswire; Stratfor.com; Turkish Daily News; Turkish Probe; U.S. Energy Information Administration; Wall Street Journal; Washington Post; World Gas Intelligence; World Markets Online.

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[U.S. Department of Energy's Office of Fossil Energy's International section - Turkey](#)
[U.S. State Department's Consular Information Sheet - Turkey \(March 2004\)](#)
[US State Department's Country Commercial Guide - Turkey FY 2003](#)
[Library of Congress Country Study on Turkey \(September 1987\)](#)
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