The People's Republic of China (China) is the world's most populous country and the second largest energy consumer (after the United States). Production and consumption of coal, its dominant fuel, is the highest in the world. Rising oil demand and imports have made China a significant factor in world oil markets. China also surpassed Japan as the world's second-largest petroleum consumer in 2003.

All information contained in this report is the best available as of August 2005.

China is the world's most populous country, with a rapidly growing economy. Economic development has proceeded unevenly, with urban coastal areas, particularly in the southeast, experiencing more rapid economic development than in other areas of the country. China has a mixed economy, with a combination of state-owned and private firms. A number of state-owned firms have undergone partial or full privatization in recent years. The Chinese government has encouraged foreign investment -- in some sectors of the economy and subject to constraints -- since the 1980s, offering several "special economic zones" in which foreign investors receive preferable tax, tariff, and investment treatment.

Breaking with previous policy, China in July 2005 delinked its currency from the U.S. dollar, resulting in a devaluation of 2.1 percent. The Chinese Yuan now will float within a very narrow band against a basket of currencies from the country's major trading partners.

In March 2003, a long-expected transition in China's political leadership took place. Hu Jintao assumed the country's presidency, as well as chairmanship of the ruling Communist Party. Wen Jiabao became the new premier. In March 2005, Hu Jintao replaced former president Jiang Zemin as chairman of the Central Military Commission, completing the leadership transition.

With China's entry into the World Trade Organization (WTO) in November 2001, the Chinese...
government made a number of specific commitments to trade and investment liberalization which, if fully implemented, will substantially open the Chinese economy to foreign firms. In the energy sector, this will mean the lifting or sharp reduction of tariffs associated with imports of some classes of capital goods, and the eventual opening to foreign competition of some areas such as retail sales of petroleum products.

Despite moves toward privatization, much of China's economy remains controlled by large State Owned Enterprises (SOE's), many of which are inefficient and unprofitable. Restructuring of the SOE sector, including the privatization of some enterprises, is a major priority of the government, as is restructuring of the banking sector. Many Chinese banks have had to write off large amounts of delinquent debts from state-owned enterprises.

Layoffs have been part of the restructuring of the SOEs, as many were severely overstaffed. This has created unemployment, and also has been a burden on the government budget, as the government begins to provide social benefits which were previously the responsibility of the SOEs. The geographic concentration of privately-owned industry in the urban centers along the coast also has created social strains.

China's real gross domestic product (GDP) grew at a rate of 9.5 percent in 2004, held steady from 2003's growth rate. Real GDP for the first quarter of 2005 was up 9.5 percent year-on-year -- a pace most observers expect to slow in coming years. Real GDP growth is forecast to drop to 9.0 percent for 2005 as a whole, and 7.8 percent in 2006. Much of the increase in the GDP growth rate has come from excessive spending on capital goods and construction, particularly in the state sector. In an effort to cool an economy seen as overheating, the Chinese government took a number of steps in 2004 designed to counter this trend, including tightening bank lending policies. China's banking sector remains a key concern for the country's economic stability, as the ratio of problem loans has been rising.

Inflows of foreign direct investment (FDI) into China in 2004 totalled $57.0 billion, a new record, but up only modestly from the 2003 figure of $53.5 billion. Japan, South Korea, Taiwan, and the United States are China's most important sources of FDI.

China's merchandise trade surplus rose in 2004 to $32.6 billion, from $25.3 billion in 2003. It is forecast to rise to a remarkable $83.0 billion in 2005. Imports increased by 35.8 percent in 2004, largely capital goods being acquired to refurbish outdated industrial facilities. Exports increased by 35.4 percent in 2004.

**OIL**

China was the world's second largest consumer of petroleum products in 2004, having surpassed Japan for the first time in 2003, with total demand of 6.5 million barrels per day (bbl/d). China's oil demand is projected by EIA to reach 14.2 million bbl/d by 2025, with net imports of 10.9 million bbl/d. As the source of around 40% of world oil demand growth over the past four years, with year-on-year growth of 1.0 million bbl/d in 2004, Chinese oil demand is a key factor in world oil markets.

China's petroleum industry has undergone major changes over the last decade. In 1998, the Chinese government reorganized most state owned oil and gas assets into two vertically integrated firms -- the China National Petroleum Corporation (CNPC) and the China Petrochemical Corporation (Sinopec). Before the restructuring, CNPC had been engaged mainly in oil and gas exploration and production, while Sinopec had been engaged in refining and distribution. This reorganization
created two regionally focused firms -- CNPC in the north and west -- and Sinopec in the south, though CNPC is still tilted toward crude oil production and Sinopec toward refining. The other major state sector firm in China is the China National Offshore Oil Corporation (CNOOC), which handles offshore exploration and production and accounts for more than 10% of China's domestic crude oil production. Regulatory oversight of the industry now is the responsibility of the State Energy Administration (SEA) which was created in early 2003.

The intention of the restructuring was to make these state firms more like vertically integrated corporate entities elsewhere. In connection with this process, the firms have been spinning off or eliminating many unprofitable ancillary activities such as running housing units, hospitals, and other services near company facilities. Massive layoffs also have been undertaken, as like many other Chinese SOEs, they were severely overstaffed.

The three largest Chinese oil and gas firms - Sinopec, CNPC, and CNOOC - all successfully carried out initial public offerings (IPOs) of stock between 2000 and 2002, bringing in billions of dollars in foreign capital. In early 2000, CNPC separated out most of its high quality assets into a subsidiary called PetroChina, and carried out its IPO of a minority interest on both the Hong Kong and New York stock exchanges in April 2000. The IPO raised over $3 billion, with BP the largest purchaser at 20% of the shares offered. Sinopec carried out its IPO in New York and Hong Kong in October 2000, raising about $3.5 billion. Like the PetroChina IPO, only a minority stake of 15% was offered. About $2 billion of the IPO was purchased by the three global super-majors - ExxonMobil, BP, and Shell. CNOOC held its IPO of a 27.5% stake in February 2001, after an earlier attempt in September 1999 was canceled. Shell bought a large block of shares valued at around $200 million.

In 2002, Chinese oil companies began to look at separating out some of their business units into subsidiaries. CNPC has set up subsidiaries for drilling services and geological survey work, and plans to eventually spin them off through international IPOs. CNOOC also has created an oilfield services unit -- China Oilfield Service, Ltd. (COSL) -- which was listed on the Hong Kong stock exchange in November 2002.

Some aspects of these stock offerings were atypical. First, they all involved only minority stakes. Second, they did not give the foreign investors a major voice in corporate governance. The Chinese government still holds majority stakes in all three firms, and the foreign investors have not received seats on their boards of directors. Analysts have generally seen these investments as attempts by the supermajors to gain a foothold in China, which will necessarily involve partnerships with the Chinese majors. Even with the opening to foreign investment envisioned in China's commitments for membership in the WTO, it is still likely that almost all major oil and gas projects in China will
involve one of the Chinese majors. All three of the global supermajors, BP, ExxonMobil, and Shell, are planning to enter the Chinese retail market in partnership with CNPC, Sinopec, or both.

As a net oil importer since 1993, China's petroleum industry is focused on meeting domestic demand. Retail prices for petroleum products are regulated, with variations based on location and the type of consumer. Recently, there has been substantial pressure to raise domestic prices in the context of high world oil prices. A series of increases in the state-mandated prices, however, has still not been sufficient to keep pace with the world market. This led, in the first half of 2005, to increases in exports of some petroleum products, particularly diesel, as the gap between domestic prices and world prices widened. The eventual goal is to eliminate subsidized prices, but given the dependency of vulnerable segments of the Chinese population on cheap fuels, particularly in agriculture, it will likely take at least several years to accomplish this goal.

Most Chinese oil production capacity, close to 85%, is located onshore. One field alone, Daqing in northeastern China, accounts for about 900,000 bbl/d of China's production, out of a total crude oil production of around 3.6 million bbl/d. Daqing is a mature field, however, inaugurated in 1963, and production fell by around 5 percent in 2004. At China's second-largest producing field, Liaohe in northeastern China, CNPC has contracted with several foreign firms for work to enhance oil recovery and extend the life of the field. In April 2004, Chinese authorities announced several new finds in the area of the existing Shengli field in the northeast, which is expected to extend oil production in the area. Government priorities focus on stabilizing production in the eastern regions of the country at current levels, increasing production in new fields in the west, and developing the infrastructure required to deliver western oil and gas to consumers in the east, which remains a major obstacle, given the long distances involved. Offshore oil development also is a high priority.

Recent offshore oil exploration interest has centered on the Bohai Sea area, east of Tianjin, believed to hold more than 1.5 billion barrels in reserves, and the Pearl River Mouth area. ConocoPhillips announced in March 2000 that it had completed its appraisal drilling of the Peng Lai find in Block 11/05, and would proceed with development. Commercial production began in December 2002, and is around 20,000 bbl/d as of mid-2005. ConocoPhillips is planning a $1.8 billion investment to further develop its holdings in the Bohai Sea, over a period of several years, eventually raising production at Peng Lai to 140,000 bbl/d. CNOOC brought its Luda heavy oil field in the Bohai Sea into production in early 2005, and it is now producing around 40,000 bbl/d. In July 2001, CNOOC signed a production sharing contract with Canadian independent Husky Oil for Block 39-05 in the Pearl River Mouth, near the Wenchang 13-1/13-2 blocks, where Husky Oil and CNOOC currently are producing about 50,000 bbl/d. In October 2002, ChevronTexaco also concluded an agreement with CNOOC in for the development of the Bozhong field in the Bohai Sea, which has reserves estimated at 1.3 billion barrels, and is expected to begin production in the third quarter of 2005. In February 2005, Kerr-McGee signed a production sharing contract (PSC) for deepwater Block 43/11, southeast of Hong Kong. Kerr-McGee is funding 100 percent of the exploration costs, but CNOOC has farm-in rights for a 51 percent stake in the development phase, if oil is discovered. Meanwhile, improvement in Sino-Vietnamese relations has opened the way for oil and gas exploration in the Beibu Gulf (known in Vietnam as the Gulf of Tonkin). In December 2000, China and Vietnam signed an agreement which settled their outstanding disputes over sovereignty and economic rights in offshore areas near their border.

With China's expectation of growing future dependence on oil imports, the country has been acquiring interests in exploration and production abroad. CNPC has acquired oil concessions in Azerbaijan, Canada, Kazakhstan, Venezuela, Sudan, Indonesia, Iraq, and Iran. The Greater Nile Petroleum Operating Company (GNPOC), the Sudanese oil project in which CNPC owns a stake, began exports in August 1999, and CNPC's equity oil from the project is around 150,000 bbl/d.
Sinopec also has begun purchasing overseas oil assets, with its most notable success being a contract for the development of Iran's Yadavaran oil field signed in November 2004. Yadavaran may eventually produce 300,000 barrels per day. Sinopec also acquired a 40 percent stake in Canada's Northern Lights oil sands project in May 2005, which is expected to produce around 100,000 bbl/d by 2010. CNOOC also has purchased an upstream equity stake in the small Malacca Strait oilfield in Indonesia, and made an unsuccessful offer to purchase Unocal in May 2005. For all the attention given to Chinese firms' investments in overseas oil assets, though, their total current contribution to China's oil imports is well under 300,000 bbl/d as of mid-2005, a small amount compared to imports currently running at around 3.5 million bbl/d. Despite efforts to diversify its sources of supply, roughly half of China's imported oil comes from the Middle East, with Saudi Arabia alone accounting for 17 percent in the first quarter of 2005.

The most significant deal thus far is CNPC's acquisition of a 60 percent stake in the Kazakh oil firm Aktobemunaiogaz, which came with a pledge to invest significantly in the company's future development over the next twenty years. The Kazakh and Chinese governments signed an agreement in May 2004 for the construction of a $700 million pipeline to export Kazakh crude oil into western China. The pipeline would run from Atasu in central Kazakhstan to Xinjiang, supplying three refineries with about 200,000 bbl/d of crude oil. The projected completion date for the pipeline is December 2005.

Russia's Far East is seen as a potential source of Chinese crude oil imports. The Russian and Chinese governments have been holding regular discussions on the feasibility of pipelines to make such exports possible. One proposed plan is a pipeline which would carry as much as 1-million-bbl/d of crude oil from Anagarsk in Russia to join the existing Chinese pipeline network at Daqing. Yukos Oil of Russia and CNPC signed a memorandum of understanding in June 2003 for sales of oil via the pipeline, contingent on the pipeline being built. An alternative plan, proposed by Russian pipeline operator Transneft, would take Russian crude from both West Siberia and East Siberia via a 1 million bbl/d pipeline to an export terminal at the Pacific coast port of Nakhodka. Japan and China each have undertaken intense efforts to sway Russia toward their preferred pipeline option. As of mid-2005, it is unclear which option will prevail. Russian pipeline operator Transneft has stated that it will begin construction of the first phase of the pipeline, to Skovordino, less than 50 miles from the Chinese border, in late 2005. This could link to rail shipments to China and to Japan via Nakhodka. China is supporting the concept of a spur from Skovordino to Daqing, while Japan still wants to see the Nakhodka export terminal as the exclusive outlet from the pipeline, and is concerned that exports might end up going exclusively to China.

After a period of consolidation in the Chinese refining industry, in which dozens of small refineries were shut down, the major Chinese oil companies are again seeking to add capacity. CNOOC has a 240,000 bbl/d refinery project under development in the city of Huizhou in Guangdong province, which is expected to become operational in early 2008. Another current project is a $3.5 billion expansion of the Quongang refinery in Fujian, which will raise its capacity from 80,000 bbl/d to 240,000-bbl/d. ExxonMobil and Saudi Aramco signed a contract with Sinopec for the project in July 2005. CNPC also is planning a major expansion of the Dushanzi refinery in Xinjiang, which will be partially supplied by the new pipeline from Kazakhstan. A major issue for the Chinese downstream sector is the lack of adequate refining capacity suitable for heavier Middle Eastern crude oil, which will become a necessity as Chinese import demand rises in the mid-term future. Several existing refineries are being upgraded to handle heavier and more sour grades of crude oil. With consumption of petroleum products rising so rapidly, some interest is being rekindled in the construction of more modern greenfield refineries.

Chinese officials have spoken of their intention to build a national strategic petroleum reserve, and
announced that construction would begin on storage capacity for the reserve in 2005. The reserve will consist of three tank farms, co-located with major refineries, and will be built and filled in phases, with the first purchases of crude oil to fill the reserve beginning in the third quarter of 2005.

NATURAL GAS
Historically, natural gas has not been a major fuel in China, but given China's domestic reserves of natural gas, which stood at 53.3 trillion cubic feet (Tcf) at the beginning of 2005, and the environmental benefits of using natural gas, China has embarked on a major expansion of its gas infrastructure. Until the 1990s, natural gas was used largely as a feedstock for fertilizer plants, with little use for electricity generation. Natural gas currently accounts for only around 3 percent of total energy consumption in China, but consumption is expected to nearly double by 2010. This will involve increases in domestic production, and imports, by pipeline and in the form of liquefied natural gas (LNG).

The country's largest reserves of natural gas are located in western and north-central China, necessitating a significant further investment in pipeline infrastructure to carry it to eastern cities. CNPC completed construction of its main natural gas backbone, the "West-to-East Pipeline," in January 2005. It transports natural gas to demand centers in the southeast from deposits in the western Xinjiang province to Shanghai, picking up additional gas in the Ordos Basin along the way. Construction began in July 2002, and a section of the pipeline east of the Ordos Basin began operation in early 2004. The segment connecting to Xinjiang was completed last, in January 2005. While it was expected initially that several major foreign oil and gas companies would take stakes in the project, the project has progressed without foreign equity participation. Shell is, however, involved in the development of the Changbei natural gas deposit, which will feed into the pipeline, and is set to invest $600 million in the project by 2007.

China announced the discovery of a major gas field at Sulige in the Ordos Basin in the Inner Mongolia Autonomous Region, adjacent to the Changqing oilfield, in 2001. Unofficial reserve estimates cited in the trade press put reserves in the range of 16-21 Tcf, substantially more than was assumed when the discovery was first announced. CNPC has begun large-scale development of the Sulige fields in 2005. Total currently is in negotiations with CNPC for the development of a portion of the reserves in the area. Some natural gas from the Ordos Basin is likely to be put into the West-to-East Pipeline, which was to run through the area in any case, to help make it economically viable. A pipeline was completed in 1997 between the Ordos Basin and Beijing, and a second pipeline may become necessary, as demand for natural gas in Beijing, Tianjin, and nearby Hebei province already is outstripping the capacity of the original pipeline. If reserves prove adequate, the pipeline to Beijing may eventually be extended to other cities to the northeast.

Another proposed pipeline project would link the Russian natural gas grid in Siberia to China and possibly South Korea via a pipeline from the Kovykta gas fields near Irkutsk, which hold reserves of more than 50 Tcf. The cost of the project has been estimated at around $12 billion. The pipeline would have a planned capacity of 2.9 billion cubic feet per day (Bcf/d), of which China would likely consume about 1.9 Bcf/d and South Korea 1 Bcf/d. The main South Korea gas company, Kogas, formally joined the feasibility study in November 2000, and both Kogas and CNPC signed letters of intent for the project in November 2003. The main foreign backer of the project is BP, which owns a 30% stake in Rusia Petroleum, the license holder for the Kovykta gas field. Due to tensions on the Korean peninsula, the route currently under consideration for the section of the pipeline to South Korea would bypass North Korea by running undersea from the city of Dalian in China to the South Korean coast near Seoul. The new route also would bypass Mongolia. Gazprom has taken an increasingly prominent role in the negotiations for the final contract in 2004, and Chinese and South Korean observers have increasingly seen LNG imports as a viable alternative if
agreement cannot be reached on pricing and terms for Russian natural gas imports. As of July 2005, no final decision on the project has been made.

Aside from these huge projects, other pipelines are being developed to link smaller natural gas deposits to other consumers. A pipeline was completed in early 2002 linking the Sebei natural gas field in the Qaidam Basin with consumers in the city of Lanzhou. CNPC also recently completed a pipeline from natural gas deposits in Sichuan province in the southwest to demand centers in Hubei and Hunan provinces in central China at a cost of $600 million.

One major hurdle for natural gas projects in China is the lack of a unified regulatory system. Currently, natural gas prices are governed by a patchwork of local regulations. The Chinese government is in the process of drafting a new legal framework for the natural gas sector, but the process has been slow, and there are still considerable uncertainties regarding price regulation and taxation issues dealing with natural gas sales.

Offshore gas projects also are becoming a significant part of China's gas supply. The Yacheng 13-1 field, developed in the mid-1990s, has been producing gas for Hong Kong and Hainan Island since 1996. The Chunxiao gas field in the East China Sea may also become a significant producer within the next decade, though it lies in the Xihu Trough, an area of the East China Sea where exclusive economic rights are disputed between China and Japan.

Imported liquefied natural gas (LNG) will be used primarily in China's southeastern coastal region, with possible later expansion in the north, particularly if Russian supplies fail to materialize. Guangdong province already has launched a project to build six, 320-megawatt (MW) gas-fired power plants, and to convert existing oil fired plants with a capacity of 1.8 gigawatts (GW) to LNG. In March 2001, it was announced that BP had been selected to build China's first LNG import terminal, to be located near the city of Guangdong. BP will take a 30% equity stake in the project, with CNOOC holding 31 percent and the rest held by local firms from Guangdong and Hong Kong. A supply contract has been signed for LNG from Australia's North West Shelf LNG terminal. Earlier delays have been resolved, and the terminal is expected to begin operation by mid-2006. A second LNG terminal is under construction in Zhangzhou, in Fujian province farther up the coast, which is scheduled for completion in late 2007. A supply agreement has been concluded with BP for LNG from its Tangguh project in Indonesia. Other planned LNG projects not yet under construction include CNPC projects in Dalian, Hebei, and Jiangsu, CNOOC projects in Zhejiang and Shanghai, and a Sinopec project in Shangdong.

**COAL**

Coal makes up 65% of China's primary energy consumption, and China is both the largest consumer and producer of coal in the world. China's coal consumption in 2003 was 1.53 billion short tons, or 28% of the world total. The Chinese government has made major upward revisions to coal production and consumption figures covering the last several years. The new figures show coal consumption rising sharply in 2001-2003, reversing the decline seen from 1997 to 2000. The decline during that period also is much less than the previously reported data.

China's demand for coal is rising rapidly as its economy grows. As recently as 2002, China had a surplus of coal, and was seeking to export the extra coal to other markets in Asia. Previously, in the late 1990s, China had attempted to shut down tens of thousands of small coal mines, both for safety reasons and as a result of overproduction. Anecdotal evidence suggests that not all of the mines which officially "closed" actually ceased production, however. Chinese statistical data for the late 1990s was adjusted upward in 2001 and 2002, after previously showing a sharp decline in production. Since 2004, surging domestic demand has caused exports to fall, which rapidly reversed
an earlier trend in 2002-2003 of depressed prices in Asian coal markets due to Chinese exports.

Over the longer term, China's coal demand is projected to rise significantly. While coal's share of overall Chinese energy consumption is projected to fall, coal consumption will still be increasing in absolute terms. Several projects exist for the development of coal-fired power plants co-located with large mines, so called "coal by wire" projects. Other technological improvements also are being undertaken, including the first small-scale projects for coal gasification, and a coal slurry pipeline to transport coal to the port of Qingdao. Coalbed methane production also is being developed, with recent investors in this effort including BP, ChevronTexaco, and Virgin Oil, which was awarded a concession for exploration in Ningxia province in January 2001. ChevronTexaco is the largest foreign investor in coalbed methane, with activities in several provinces. Far East Energy of the U.S. received approval from Chinese authorities in April 2004 for a farmout agreement with ConocoPhillips, under which it would undertake exploratory drilling for coalbed methane in Shaanxi province, in a location near the West-to-East Pipeline route.

In contrast to the past, China is becoming more open to foreign investment in the coal sector, particularly in modernization of existing large-scale mines and the development of new ones. The China National Coal Import and Export Corporation is the primary Chinese partner for foreign investors in the coal sector. Areas of interest in foreign investment concentrate on new technologies only recently introduced in China or with environmental benefit, including coal liquefaction, coal bed methane production, and slurry pipeline transportation projects. Over the longer term, China plans to aggregate the large state coal mines into seven corporations by the end of 2005, in a process similar to the creation of CNPC and Sinopec out of state assets. Such firms might then seek to pursue foreign capital through international stock offerings.

China has expressed a strong interest in coal liquefaction technology, and would like to see liquid fuels based on coal substitute for some of its petroleum demand for transportation. A coal liquefaction facility is under construction by the Shenhua Group in Inner Mongolia, with a projected startup date of 2005. Despite the high costs, Chinese officials have shown increasing interest in further research into improving coal liquefaction technologies, in the hope that it may eventually provide an economically viable domestic source of liquid fuels.

**ELECTRICITY**

China's electric power industry experienced a serious oversupply problem in the late 1990s, due largely to demand reductions from closures of inefficient state-owned industrial units, which were major consumers of electricity. The Chinese government responded to the short-term oversupply in part by implementing a drive to close down small thermal power plants and by imposing a moratorium (with a few exceptions) on approval of new power plant construction, which ran through January 1, 2002. In hindsight, this was clearly an overcorrection, as surging demand has surpassed the completion of new generating capacity coming online since 2003. The Chinese government has approved dozens of major new electric power projects since 2003, but the long construction lead times have left a significant shortage of generating capacity in the short-term estimated at around 30 gigawatts at the end of 2004. This has contributed to increased demand for petroleum products, as many commercial and industrial enterprises have responded to the lack of reliability of electricity supplies from utilities by using off-grid backup generators powered primarily by diesel.

China's electric utility sector also is characterized by fragmentation. Historically, electric utilities were run by the provincial governments, which led to the development of a power grid with relatively little interconnection between provinces. This is being gradually reversed under current policy, but China still lacks a truly national electric grid. This has led to a situation where, despite
the national shortage of generating capacity, there are some locations which still have surplus capacity, but a lack of transmission capacity to move it to areas with a capacity shortage.

Over 120 GW of generating capacity is currently under construction in China, as a result of the new projects approved since 2002, but it will likely be take until 2007 for generating capacity to catch up with demand in most areas, given the roughly 15 percent-per-year rate of increase in demand. The largest project under construction, by far, is the Three Gorges Dam, which, when fully completed in 2009, will include 26 separate 700-MW generators, for a total of 18.2 GW. Plans were announced in March 2002 to reorganize the Three Gorges project into the China Yangtze Three Gorges Electric Power Corporation. The reservoir created by the dam began to fill in June 2003, and it began operating its initial turbines in July 2003.

Another large hydropower project involves a series of dams on the upper portion of the Yellow River. Shaanxi, Qinghai, and Gansu provinces have joined to create the Yellow River Hydroelectric Development Corporation, with plans for the eventual construction of 25 generating stations with a combined installed capacity of 15.8 GW.

Many of the major developments taking place in the Chinese electricity sector recently involve nuclear power. China's total installed capacity for nuclear power generation increased from 2 GW at the beginning of 2002 to 15 GW as of mid-2005. The first generation unit of the Lingao nuclear power plant in Guangdong province began commercial operation in May 2002, with a capacity of 1-GW. The second 1-GW generating unit began operating in January 2003. An additional 600-MW generating unit at the Qinshan nuclear power plant in Zhejiang province began operation in February 2002, and another 600-MW unit at the same site came online in December 2002. A new 6-GW nuclear complex is planned for construction at Yangjiang in Guangdong province, to begin commercial operation in 2010. A second generating facility also is planned for Daya Bay. Chinese government policy emphasizes nuclear power generation as a source of clean electricity generation and a means of reducing dependence on fossil fuels. China plans a total of 27 GW of additional nuclear generating capacity to be completed by 2020, but even with this large capacity expansion, it will be less than 5 percent of total installed capacity at that point.

Growth in Chinese electricity consumption is projected at an average of 4.3 percent per year through 2025. The largest future growth in terms of fuel share in the future is expected to be natural gas, due largely to environmental concerns in China's rapidly industrializing coastal provinces, though the largest increase in absolute terms is likely to be coal. If a truly competitive market for electric power develops as planned, the Chinese market may once again become attractive to foreign investment. At present, foreign direct investment is allowed only in power generation, but loan financing has been obtained for some power transmission projects.

The Chinese government is in the early stages of formulating a fundamental long-term restructuring of their electric power sector, embodies in the National Power Industry Framework Reform Plan promulgated by the State Council in April 2002. As with many other countries reform programs, generating assets are being largely separated from transmission and distribution. The State Power Corporation (SPC) divested most of its generating assets and was split into 11 regional transmission and distribution companies in December 2002. Electricity prices will still be regulated, but there are likely to be major changes in tarriffs and the overall regulatory structure for electricity pricing. The process is at an early stage, and many of the details remain to be worked out. A new electricity law, superseding the one established in 1995, is expected to be promulgated within the next year.

ENVIRONMENT
China suffers from major energy-related environmental problems. According to a report by the
World Health Organization (WHO), seven of the world's ten most polluted cities are in China. The country's heavy use of unwashed coal leads to large emissions of sulfur dioxide and particulate matter. China also is important to any effort to curb emissions of greenhouse gases, as it is projected to experience the largest absolute growth in carbon dioxide emissions between now and the year 2025.

China is a non-Annex I country under the United Nations Framework Convention on Climate Change, meaning that it has not agreed to binding targets for reduction of carbon dioxide emissions under the Kyoto Protocol. While the Chinese government is concerned with its environmental problems, it tends to be more concerned with local problems, such as particulate matter and sulfur dioxide emissions. Thus, it is undertaking efforts to lessen emissions of pollutants such as sulfur dioxide and nitrogen oxide, through improved pollution controls on power plants as well as policies designed to increase the share of natural gas in the country's fuel mix, particularly around major metropolitan areas.

**COUNTRY OVERVIEW**

**President:** Hu Jintao (since March 2003)

**Premier:** Wen Jiabao (since March 2003)

**Population (July 2005E):** 1.3 billion

**Location/Size:** Eastern Asia/3.7 million square miles (9.6 million square kilometers, slightly smaller than the United States)

**Major Cities:** Beijing (capital), Shanghai, Tianjin, Guangzhou, Shenyang, Wuhan, Chengdu, Hong Kong

**Languages:** Mandarin (official), many local dialects

**Ethnic Groups:** Han Chinese (92%); Zhuang, Uygur, Hui, Yi, Tibetan, Miao, Manchu, Mongol, Buyi, Korean, others (8%)

**Religion:** Officially atheist; Daoist (Taoist), Buddhist, Muslim (1-2%), Christian (3-4%)

**ECONOMIC OVERVIEW**

**Currency:** Yuan

**Exchange Rate (7/27/05):** US$1 = 8.12 Yuan/Renminbi

**Gross Domestic Product (2004E):** $1.65 trillion  
**2005F:** $1.89 trillion

**Real GDP Growth Rate (2004E):** 9.5%  
**2005F:** 9.0%

**Inflation Rate (2005F):** 3.9%

**Current Account Surplus (2005F):** $81.6 billion

**Major Trading Partners:** Japan, United States, European Union, South Korea, Taiwan

**Merchandise Exports (2005F):** $757.6 billion

**Merchandise Imports (2005F):** $674.7 billion

**Merchandise Trade Surplus (2005F):** $83.0 billion

**Major Export Products:** Light industrial and textile products, mineral fuels, heavy manufactures, agricultural goods

**Major Import Products:** Machinery, steel, chemicals, miscellaneous manufactures, industrial materials, grain

**External Debt (2004E):** $228.6 billion

**ENERGY OVERVIEW**

**Proven Oil Reserves (1/1/05E):** 18.3 billion barrels

**Oil Production (2004E):** 3.62 million barrels per day (bbl/d), of which 3.49 million bbl/d was crude oil

**Oil Consumption (2004E):** 6.53 million bbl/d

**Net Oil Imports (2004E):** 2.91 million bbl/d

http://www.eia.doe.gov/emeu/cabs/china.html
Crude Oil Refining Capacity (1/1/05E): 4.65 million bbl/d  
Natural Gas Reserves (1/1/05E): 53.3 trillion cubic feet (Tcf)  
Natural Gas Production (2003E): 1.21 Tcf  
Natural Gas Consumption (2003E): 1.21 Tcf  
Recoverable Coal Reserves (2003E): 126.2 billion short tons  
Coal Production (2003E): 1.63 billion short tons  
Coal Consumption (2003E): 1.53 billion short tons  
Electric Generation Capacity (1/1/03E): 338 GW (253 GW thermal; 83 GW hydro; 2 GW nuclear)  
Electricity Generation (2003E): 1,807 billion kilowatthours (1,484 conventional thermal; 279 hydro; 42 nuclear)

Statistical note: All data reported here exclude Hong Kong, a former British colony which reverted to China on July 1, 1997.

ENVIRONMENTAL OVERVIEW  
Minister of Land and Natural Resources: Tian Fengshan  
Minister of Water Resources: Wang Shucheng  
Total Energy Consumption (2003E): 45.5 quadrillion Btu (10.8% of world total energy consumption)  
Energy-Related Carbon Dioxide Emissions (2003E): 3,541.0 million metric tons of carbon dioxide (14.1% of world carbon dioxide emissions)  
Per Capita Energy Consumption (2003E): 34.9 million Btu (vs. U.S. value of 339.9 million Btu)  
Per Capita Carbon Dioxide Emissions (2003E): 2.72 metric tons of carbon dioxide (vs. U.S. value of 19.95 metric tons of carbon dioxide)  
Carbon Dioxide Intensity (2002E): 0.55 metric tons of carbon dioxide/nominal -- PPP (vs. U.S. value of 0.55 metric tons/n nominal)**  
Fuel Share of Energy Consumption (2003E): Oil (25.0%), Natural Gas (2.6%), Coal (64.8%)  
Fuel Share of Carbon Emissions (2003E): Oil (20.8%), Natural Gas (2.0%), Coal (77.1%)  
Major Environmental Issues: Air pollution (greenhouse gases, sulfur dioxide particulates) from the overwhelming use of high-sulfur coal as a fuel, producing acid rain which is damaging forests; water shortages experienced throughout the country, particularly in urban areas and in the north; future growth in water usage threatens to outpace supplies; water pollution from industrial effluents; much of the population does not have access to potable water; less than 10% of sewage receives treatment; deforestation; estimated loss of one-fifth of agricultural land since 1949 to soil erosion and economic development; desertification; trade in endangered species.  

* 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 figures for Purchasing Power Parity (PPP)**

**ENERGY INDUSTRY**

**Organization:** Coal - China National Local Coal Mines Development Corp., China Northeast & NEI-Mongolia United Coal Co., numerous local state-owned mines and rural collectives; *Coal import/exports* - China Coal Import and Export Group; *Petroleum* - China National Petroleum Corp. (CNPC, PetroChina is its publicly traded subsidiary), China National Offshore Oil Corp. (CNOOC), China National Oil & Gas Exploration & Development Corp. (CNOEC), China National Star Petroleum (Star); China National Petrochemical Corp. (SINOPEC); *Oil imports/exports* - China National Chemicals Import and Export Corporation (SINOCHEM), China United Petroleum Corporation (China Oil), China United Petrochemical Corp. (UNIPEC); *Electric power* - China State Power Corp., Huaneng Group, Inc., China National Power Industry Corp. (CNPIC), regional electric power corporations, China National Nuclear Industry Corp., China International Water and Electric Corp. (CWE); *Energy Finance* - China National Energy Investment Corp.

**Major Refineries (1/1/05 Capacity):** Zhenhai (344,722 bbl/d), Maoming (273,750 bbl/d), Gaoqiao (219,000 bbl/d), Jinling (212,917 bbl/d), Qilu (212,917 bbl/d), Fushun (184,800 bbl/d), Yanshan (162,222 bbl/d), Dalian (142,600 bbl/d)

*Sources for this report include:* Asia Pulse; China Daily; Coal Week International; Dow Jones Newswire; Economist Intelligence Unit; Financial Times; Global Insight Asia Economic Outlook; Oil and Gas Journal; Oil Daily; Petroleum Economist; Petroleum Intelligence Weekly; South China Morning Post; U.S. Commerce Department; International Trade Administration -- Country Commercial Guides; U.S. Energy Information Administration; World Gas Intelligence.

---

**LINKS**

For more information from EIA on China, please see:

EIA - Country Information on China

Links to other U.S. Government sites:

CIA World Factbook - China
U.S. Department of Energy - Office of Fossil Energy - China
Lawrence Berkeley National Laboratory (LBNL) - China Energy Group
Pacific Northwest National Laboratory (PNL) - China E-News
Los Alamos National Laboratory (LANL) - China Energy Study
National Renewable Energy Laboratory (NREL) - China
U.S. State Department Consular Information Sheet - China Programs
U.S. State Department - Country Commercial Guide - China
U.S. State Department Background Notes on China
U.S. Embassy, Beijing
Library of Congress Country Study on China

The following links are provided solely as a service to our customers, and therefore should not be construed as advocating or reflecting any position of the Energy Information Administration (EIA) or the United States Government. In addition, EIA does not guarantee the content or accuracy of any information presented in linked sites.

China's Embassy in the United States

http://www.eia.doe.gov/emeu/cabs/china.html
If you liked this Country Analysis Brief or any of our many other Country Analysis Briefs, you can be automatically notified via e-mail of updates. You can also join any of our several mailing lists by selecting the listserv to which you would like to be subscribed. The main URL for listserv signup is http://www.eia.doe.gov/listserv_signup.html. Please follow the directions given. You will then be notified within an hour of any updates to Country Analysis Briefs in your area of interest.

Return to Country Analysis Briefs home page

File last modified: August 2, 2005

Contact: Lowell Feld
lfeld@eia.doe.gov
Phone: (202)586-9502
Fax: (202)586-9753

URL: http://www.eia.doe.gov/emeu/cabs/china.html