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## Thailand

*Thailand is a significant net oil importer. Energy consumption is growing rapidly as a result of strong economic growth.*

*Note: The information in this report is the best available as of October 2003 and can change.*



### GENERAL BACKGROUND

Thailand's economy has experienced strong growth over the past year, fuelled by improved demand for Thai exports, as well as by growth in domestic demand. The country's real gross domestic product (GDP) grew 5.3% in 2002, up from only 1.9% in 2001. Real GDP growth for 2003 is projected at 6.4%. Longer-term annual growth rates in 2004 and beyond are projected in the range of 5.8%-6.6%.

Still, the risks confronting Thailand's economic recovery are serious. The Thai economy is burdened by a relatively weak banking sector with a high proportion of non-performing loans. Delays in the restructuring of corporate debt also have been worrisome enough to prompt warnings from the International Monetary Fund (IMF) and international credit rating analysts. Any worldwide economic downturn could affect Thailand rapidly due to these structural weaknesses.

Thailand's energy sector is undergoing a period of restructuring and privatization. The Thai electric utility and petroleum industries, which historically have been state-controlled monopolies, are currently being restructured.

### OIL

Thailand contains 583 million barrels of proven oil reserves. In 2002, Thailand produced about 193,162 barrels per day (bbl/d) of oil, an increase of about 18,000 bbl/d from the previous year. Of that production, about

127,162 bbl/d was crude oil. Most of the remainder was natural gas liquids (NGLs). Oil consumption in 2002 was 821,000 bbl/d, up from 785,000 bbl/d in 2001. Preliminary figures indicate that consumption has continued to grow rapidly in 2003, despite the Thai government's moves to increase taxes on petroleum products.

The oil industry in Thailand is dominated by PTT, formerly the Petroleum Authority of Thailand. PTT Exploration and Production (PTTEP) is the main upstream subsidiary of PTT. Thai Oil, the country's largest refiner, is also controlled by PTT. The company underwent a partial privatization in November 2001, in which 32% of its equity was sold through the Bangkok Stock Exchange. The Thai government still owns a 68% stake in PTT, and does not plan to sell its controlling interest in the near future.

Despite the industry's financial problems, there have been a number of significant recent Thai oil discoveries, most notably offshore in the Gulf of Thailand. The country's modest proven oil reserves rose in 2002, from 516 million barrels in January 2002 to 583 million barrels by the end of the year, as a result of small new finds. Chevron is investing heavily in developing Block B8/32 in the Gulf of Thailand. Unocal also is investing in offshore oilfield development, and reported a significant new find in October 2000. Unocal announced in September 2003 that new investments in developing its offshore fields in the Gulf of Thailand should double current production, reaching 40,000 bbl/d by mid-2005. Seven new exploration blocks, including both onshore and offshore acreage, were awarded in May 2003 as a result of the most recent licensing round. Companies receiving exploration rights included ChevronTexaco and China's CNPC.

### **Refining/Downstream**

Thailand has four oil refineries, with a combined capacity of 703,100 bbl/d. The three main refineries are Shell Co. Of Thailand Ltd. (275,000 bbl/d) located in Rayong, Thai Oil Co. Ltd., in Sriracha (192,850 bbl/d), and Esso Standard Thailand Ltd. (173,500 bbl/d), also located in Sriracha.

The Thai government has been discussing a proposal to attempt to turn the country into a regional processing and transportation hub for the oil industry. One possibility would be the amendment of regulations to create a bonded-processing zone for export-oriented refineries. The targeted export market would likely be cities in south-central China, which are closer to Thai ports than to the Pacific coast of China. Another proposal would see the construction of a pipeline across the isthmus of Kra, which would allow oil shipments from the Persian Gulf to East Asia to bypass the congested Strait of Malacca.

Thailand also plans to reduce its consumption of petroleum and imports of gasoline additive methyl tertiary butyl ether (MTBE) in the future by promoting ethanol. The Thai government approved a package of tax incentives in December 2000 to encourage more production of ethanol for fuel use, but as of 2003, it is not yet being blended into gasoline in commercial quantities. Marubeni of Japan reportedly plans to build Thailand's first ethanol plant by 2005, but construction has not yet begun.

### **NATURAL GAS**

Thailand contains about 13.3 trillion cubic feet (Tcf) of proven natural gas reserves, of which it produced (and consumed) 845 billion cubic feet (Bcf) in 2001, up sharply from the 2000 figure of 705 Bcf. Much of the country's natural gas is used for generating electricity. In 2001, Thailand completed its program for the conversion of almost all oil-fired electric power plants to natural gas. Demand for natural gas is expected to rise at a 6% annual rate over the next five years, which represents a substantial revision downward from previous official estimates. Bongkot is Thailand's largest gas field, located 400 miles south of Bangkok in the Gulf of Thailand. Thailand began imports of gas from Burma in late 2000, used mainly at the Ratchaburi power plant. PTT also is in the process of building an extensive gas distribution network around Bangkok, which will provide fuel for power plants as well as large industrial consumers.

Thailand's economic difficulties in 1997-1998, which reduced natural gas demand, along with rising domestic production, forced the country to re-examine two natural gas deals signed with Oman and

Indonesia. Planned imports of liquefied natural gas (LNG) from Oman and piped natural gas from Indonesia's Natuna gas fields, for which preliminary agreements had been signed in the mid-1990's, were delayed. Development of Thailand's domestic natural gas resources and the imports from Burma are expected to cover anticipated Thai demand for the next several years, though LNG remains a long-term option for Thailand.

Unocal Thailand is the country's largest natural gas producer, and has continued to increase its production with the development of new reserves. The Pailin gas field, which came onstream in August 1999, added 165 million cubic feet per day (MMcf/d) to Thailand's gas production. Unocal also started production at the Trat field in 1999. Unocal is undertaking a second phase of development at its Pailin field, which will eventually increase its production to around 330 MMcf/d.

Chevron is currently producing about 145 MMcf/d from its offshore Block B8/32. The company has put its estimated gas reserves in the block at 2.5 Tcf, and has plans to expand production in the future to about 250 MMcf/d. Amerada Hess reported a new onshore natural gas find in northeastern Thailand in early 2003, which currently is under evaluation. The company has projected a startup date for production from the Phu Horm field sometime in mid-to-late 2005.

The \$1 billion, 416-mile Thai-Burmese natural gas pipeline, running from Burma's Yadana gas field in the Andaman Sea to an Electricity Generating Authority of Thailand (EGAT) power plant in Ratchaburi province, was completed in mid-1999. A new connecting line also has been built linking Ratchaburi to the Bangkok area, which provides for other uses for imported Burmese gas in addition to the Ratchaburi power plant.

### **Joint Development Area**

One of Thailand's most active areas for gas exploration is the Malaysian-Thailand Joint Development Area (JDA) located in the lower part of the Gulf of Thailand, and governed by the Malaysia-Thailand Joint Authority (MTJA). The JDA covers blocks A-18 and B-17 to C-19. A 50:50 partnership between Petronas Carigali and Triton Energy Ltd. (now a subsidiary of Amerada Hess) is developing the Cakerwala field in block A-18, while PTTEP and Petronas Carigali also share equal interests in the remaining blocks. An agreement was signed in October 1999 for sales of gas from the block to PTT and Petronas, for use in both Thailand and Burma. PTT has agreed to purchase 390 MMcf/d of gas over 10 years from the Cakerawala field, the first JDA field to come on stream, beginning in 2006. Natural gas deliveries prior to then will be solely to Malaysia. Cakerawala contains estimated reserves of 2 Tcf.

As the project has moved forward, however, it has become controversial in Thailand. The pipeline is to come ashore in Songkla province in Thailand with a connection overland to Malaysia. Strong opposition to the project developed in 2000 among residents of Songkla, who have voiced concerns about the environmental impact of the project. The Thai government announced a decision in May 2002 to proceed with construction of the pipeline, but on a slightly different route which will avoid local population centers. Construction began in mid-2003, and the project is scheduled to begin commercial operation in mid-2005.

### **ELECTRIC POWER**

Thailand had 21 gigawatts (GW) of power generation capacity as of January 2001, from which it produced approximately 98 billion kilowatt-hours (Bkwh) of electricity. The decline of the Thai economy as a result of the Asian financial crisis resulted in a decline in domestic demand for electricity of about 3 Bkwh in 1998, before rebounding in 1999. This situation compelled EGAT, the state-owned electricity company, to revise its electricity demand projections. EGAT postponed or delayed a number of projects including: delaying the commissioning of the third and fourth 300-

MW thermal units of the Ratchaburi power complex by three years to 2004 and 2005, respectively; postponing the start-up of the second 300-MW thermal unit at the Krabi power plant from 2001 to 2005; and delaying power purchases from three Laotian projects - the lignite-fired Hongsa project and the Nam Ngum 1-2 hydro projects to 2004 and 2005, respectively. While demand growth has recovered in step with Thailand's economic recovery, EGAT decided to lower its planned generating capacity reserve from 25% to 15%, which has diminished the immediate need for additional generating capacity. In recent months, reserve capacity has still been over 25%, though demand growth forecast at 4% is expected to produce requirements for additional power plants.

The Ratchaburi power plant, Thailand's largest power project, has moved forward despite the slowdown in power demand growth. The complex eventually will have a capacity of 3,200 MW, including 1,800 MW in six combined cycle gas-fired generators and 1,400 MW in two conventional thermal units which can burn either natural gas or fuel oil. The first combined-cycle unit began operation in January 2000, and the current capacity of the plant is 2,125 MW. Ownership of the plant was transferred from EGAT to Ratchaburi Electric Generation in October 2000, and a successful initial public offering of stock was carried out, only the second IPO on the Thai market since the crisis of 1997-98.

One other independent power producer (IPP) also began operation in August 2000, Tri Energy, which has a 700-MW plant at Ratchaburi. The company is owned by a consortium including Edison Mission Energy, Texaco, and local Thai firms. Additional IPP capacity may be added later in the decade, once the power generation capacity reserve ratio declines. The Thai government has stated that it plans to eventually privatize EGAT, but it is still studying the options for structuring the privatization process. EGAT selected six firms in July 2003 to provide advice on structuring the privatization process, and current plans call for the initial public offering (IPO) of stock in EGAT to take place in March 2003.

The Thai government announced a decision in May 2002 to postpone two new coal-fired power projects in southern Thailand at Bo Nok and Hin Krut by at least two years. The two projects, originally scheduled for completion in 2002, had been met by opposition from local communities and environmentalists. The Thai government also announced its intention to assess the possibility of changing the location of the new power plants and switching to natural gas as a fuel. The question of possible overdependence on natural gas, however, is a growing concern for the Thai government.

## **ENVIRONMENT**

The 1997-1998 Asian financial crisis brought an end to Thailand's economic boom and turned the spotlight on to the effects of rapid industrialization on the country's environment. Perhaps the most visible environmental side effect of Thailand's industrial development is the growing problem of air pollution, where thick smoke often chokes city streets in Bangkok. Although traffic congestion has proven to be a difficult problem to tackle, the Thai government has instituted a number of measures to address urban air pollution problems, including phasing out leaded gasoline, and Bangkok's air quality is improving. Marine pollution is another threat, with increased risks if an offshore gas pipeline linking Thailand and Malaysia proceeds as planned.

Although slowed by the 1997-1998 financial crisis, Thailand's rate of energy consumption has picked up speed once again, continuing to grow at a fast pace. Thailand's carbon emissions have mirrored the growth in energy consumption, doubling between 1990 and 2001. Thailand is a non-Annex I country under the Kyoto Protocol, meaning it is not required to reduce its carbon emissions below 1990 levels by 2008-2012, but, owing to concerns for Bangkok and the country's other low-lying coastal areas in the event of rising oceans due to climate change, the Thai government ratified

the agreement in August 2002.

As with other East Asian countries, both Thailand's energy intensity and carbon intensity levels have increased over the past 15 years. Thailand hopes to reduce its carbon intensity by diversifying its fuel share of energy consumption to emphasize more renewable energy sources, chiefly solar power. A number of solar-powered projects are in development, and the Thai government has given incentives for other non-conventional, alternative energy production. Thailand's environmental outlook is improving, especially as the government conducts required environmental impact assessments (EIAs) and allows for more public participation in the development of infrastructure projects. Still, better enforcement of existing environmental laws and regulations will be necessary to boost Thailand's environmental record.

*Sources for this report include: Bangkok Post; CIA World Factbook 2003; Dow Jones News Wire service; Economist Intelligence Unit ViewsWire; FT Power in Asia; Global Insight Asia Economic Outlook; International Oil Daily; Oil & Gas Journal; Petroleum Intelligence Weekly; Platt's Oilgram News; Reuters News Wire; U.S. Energy Information Administration; U.S. Department of State.*

## **COUNTRY OVERVIEW**

**Chief of State:** King Phumiphon Adunyadet (since 6/9/46)

**Prime Minister:** Thaksin Shinawatra (since February 2001)

**Independence:** 1238 (traditional founding date)

**Population (2003E):** 64.3 million

**Location/Size:** Southeastern Asia/514,000 square kilometers (198,455 square miles), about twice the size of Wyoming

**Major Cities:** Bangkok (capital)

**Language:** Thai, English, ethnic and regional dialects

**Ethnic Groups:** Thai (75%), Chinese (14%), other (11%)

**Religions:** Buddhism, 95%; Muslim, 4%; Other, 1%

## **ECONOMIC OVERVIEW**

**Currency:** Baht (Bt)

**Exchange Rate (10/3/03):** US\$1 = Bt39.7

**Gross Domestic Product (2002E):** \$126.5 billion **(2003E):** \$140.1 billion

**Real GDP Growth Rate (2002E):** 5.3% **(2003F):** 6.4%

**Inflation Rate (consumer prices) (2002E):** 0.6% **(2003F):** 1.8%

**Current Account Balance (2002E):** \$7.6 billion

**Merchandise Exports (2002E):** \$66.8 billion

**Merchandise Imports (2002E):** \$57.0 billion

**Trade Balance (2003E):** \$9.8 billion

**Major Export Products (2003):** Textiles, canned food, integrated circuits, rice, tapioca, rubber, maize, precious stones

**Major Import Products (2003):** Food and beverages, household appliances, chemicals, base metals, machinery, fuel and lubricants

**Major Trading Partners (2003):** Japan, United States, Malaysia, Singapore, EU

**External Debt (2002E):** \$52.3 billion

## **ENERGY OVERVIEW**

**Proven Oil Reserves (1/1/03E):** 583 million barrels

**Oil Production (2002E):** 193,162 barrels per day (bbl/d), of which 127,162 bbl/d is crude oil

**Oil Consumption (2002E):** 821,000 bbl/d

**Net Oil Imports (2002E):** 627,838 bbl/d  
**Crude Oil Refining Capacity (1/1/03E):** 703,100 bbl/d  
**Natural Gas Reserves (1/1/03):** 13.3 trillion cubic feet  
**Natural Gas Consumption/Production (2001E):** 845 billion cubic feet (bcf)  
**Recoverable Coal Reserves (12/31/96):** 2.2 billion short tons  
**Coal Production (2001E):** 21.6 million short tons  
**Coal Consumption (2001E):** 27.1 million short tons  
**Electric Generation Capacity (1/1/01E):** 21 gigawatts  
**Electricity Generation (2001E):** 98 billion kilowatthours

## ENVIRONMENTAL OVERVIEW

**Total Energy Consumption (2001E):** 2.9 quadrillion Btu\* (0.7% of world total energy consumption)

**Energy-Related Carbon Emissions (2001E):** 48.5 million metric tons of carbon (0.7% of world total carbon emissions)

**Per Capita Energy Consumption (2001E):** 46.2 million Btu (vs. U.S. value of 341.8 million Btu)

**Per Capita Carbon Emissions (2001E):** 0.8 metric tons of carbon (vs. U.S. value of 5.5 metric tons of carbon)

**Energy Intensity (2001E):** 8,126 Btu/ \$1995 (vs U.S. value of 11,014 Btu/ \$1995)\*\*

**Carbon Intensity (2001E):** 0.14 metric tons of carbon/thousand \$1995 (vs U.S. value of 0.17 metric tons/thousand \$1995)\*\*

**Fuel Share of Energy Consumption (2001E):** Oil (55.8%), Natural Gas (28.4%), Coal (12.7%)

**Fuel Share of Carbon Emissions (2001E):** Oil (56.0%), Natural Gas (24.5%), Coal (19.5%)

**Status in Climate Change Negotiations:** Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified December 28th, 1994). Signatory to the Kyoto Protocol (February 2nd, 1999- not yet ratified)

**Major Environmental Issues:** Air pollution from vehicle emissions; water pollution from organic and factory wastes; deforestation; soil erosion; wildlife populations threatened by illegal hunting

**Major International Environmental Agreements:** A party to Conventions on Climate Change, Endangered Species, Hazardous Wastes, Marine Life Conservation, Nuclear Test Ban, Ozone Layer Protection, Tropical Timber 83 and Tropical Timber 94. Has signed, but not ratified, Biodiversity and Law of the Sea

\* 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 OECD figures at Purchasing Power Parity (PPP)

## ENERGY INDUSTRY

**Major Foreign Oil Company Involvement:** Chevron; Shell; Texaco; Total; Unocal

**State Energy Companies:** PTT is the state oil company. Electricity Generating Authority of Thailand (EGAT), Thailand's state electric power authority, has spun off Electricity Generating PCL (EGCOMP), but still owns a 41% share. EGAT also has sold off the Electricity Generating Public Co. Ltd. of Thailand (EGCO). Ratchaburi Electric Generating Company is an IPP. Thailand has two other state-owned electric companies: the Metropolitan Electricity Authority (MEA) and the Provincial Electricity Authority (PEA).

**Major Refineries (Crude oil refining capacity - bbl/d):** Shell Company of Thailand (275,000); Thai Oil Co. Ltd (192,850); Esso Standard Thailand Ltd. (173,500); Petroleum Authority of

Thailand (61,750)

**Major Ports:** Bangkok; Laem Chabang; Pattani; Phuket; Sattahip; Sri Racha; Songkla

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## LINKS

For more information on Thailand, see these other sources on the EIA web site:

[EIA - Country Information on Thailand](#)

Links to other U.S. government sites:

[CIA World Factbook - Thailand](#)

[U.S. Department of Energy - Office of Fossil Energy - Thailand](#)

[U.S. State Department Consular Information Sheet - Thailand](#)

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