

## COUNTRY ANALYSIS BRIEFS

# Japan

Last Updated: December 2006

### General Background

**Japan is the third largest oil consumer in the world behind the United States and China, and the second largest net importer of oil.**

Japan boasts one of the largest economies in the world. The country continues to experience a moderate economic recovery that began in 2003, following a decade of economic stagnation. Japan's real gross domestic product (GDP) grew by 2.5 percent in 2005 and 2.3 percent in 2004. The modest upturn over the last few years reflects higher business confidence in Japan, a surge in export demand led by exports to China, and robust consumer spending. Unemployment in Japan fell to 4.4 percent in 2005, down from an early 2003 peak of 5.5 percent.



Japan has virtually no domestic oil or natural gas reserves, and in 2005 was the second largest net importer of crude oil in the world. Despite the country's dearth of hydrocarbon resources, Japanese companies have actively pursued upstream oil and natural gas projects overseas. Japan remains one of the major exporters of energy-sector capital equipment, and Japanese companies provide engineering, construction, and project management services for energy projects.

Japan's National Diet (parliament) elected Shinzo Abe as the country's new prime minister on September 26, 2006, succeeding Junichiro Koizumi, who held the position for more than five years. Both Abe and Koizumi come from the Liberal Democratic Party (LDP), which has been in power since 1955. Before coming into office, Abe held the post of Chief Cabinet Secretary under Koizumi. Many political analysts expect Abe to adopt similar economic and foreign policies to his predecessor, although this remains to be seen.

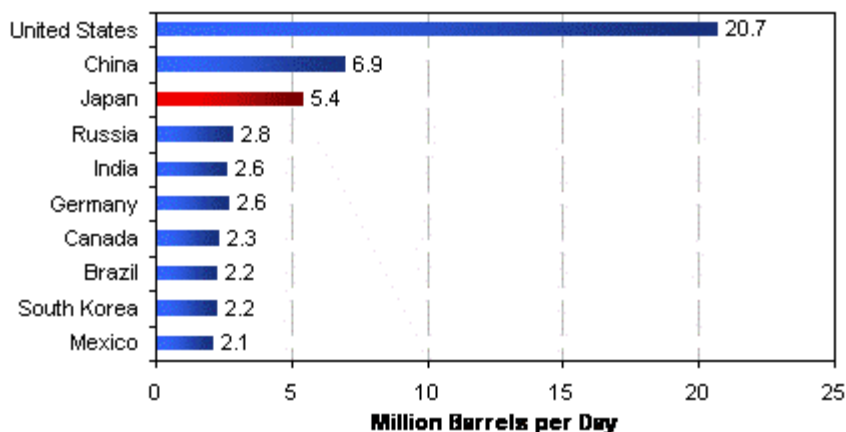
### Oil

**Japan has limited domestic oil reserves or production, despite being the world's third-largest**

Japan has very limited domestic oil reserves and relies almost totally on imports to meet its consumption needs. As of January 2006, *Oil & Gas Journal (OGJ)* estimated that Japan held 59 million barrels of proven oil reserves. During the first three quarters of 2006, Japan produced about 125,000 barrels per day (bbl/d) of oil, of which less than five percent was crude oil. The vast

**oil consumer.** majority (83 percent) of Japan's oil production comes in the form of refinery gain, resulting from the country's large petroleum refining sector. For 2006, EIA forecasts that Japan will consume 5.3 million barrels per day (Mmbbl/d) of oil. Japan remains the second largest net importer of oil behind the United States and the third largest consumer of oil behind the United States and China.

**World's Top Ten Oil Consumers, 2005**



Source: EIA, *Short Term Energy Outlook* (November 2006)

### Sector Organization

Although Japan is not a major oil producing country, it has a robust oil sector, comprised of various state-run, private, and foreign companies. Although the country is open to foreign investment in the energy sector, government restrictions and regulations have historically limited the involvement of international oil companies in Japan.

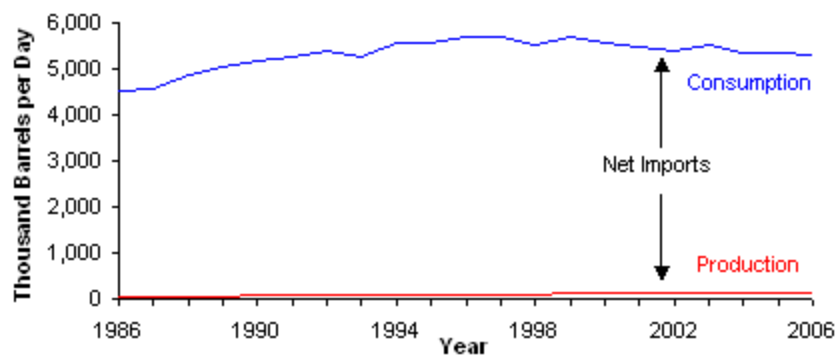
Until recently, Japan's oil sector was dominated by the Japan National Oil Corporation (JNOC), which was formed by the Japanese government in 1967 and charged with leading oil exploration and production domestically and overseas. In November 2001, then-Prime Minister Koizumi announced the planned breakup of JNOC. The move was part of Koizumi's wider reform agenda, designed to spin off JNOC's profitable business units into new companies and introduce greater competition into Japan's energy sector. Many of JNOC's activities were spun off into the Japan Oil, Gas and Metals National Corporation (JOGMEC), which was formed in 2004. JOGMEC is a state-run enterprise charged with aiding Japanese companies involved in exploration and production overseas and the promotion of commodity stockpiling at home. Some of JNOC's most successful business units formed new companies. Two of the largest to be formed through this process are Inpex, now Japan's largest oil company, and the Japan Petroleum Exploration Co., Ltd. (Japex). Both companies carried out successful initial public offerings (IPOs) on the Tokyo Stock Exchange, although the Japanese government maintains an equity stake in each firm.

Japan's large downstream sector is dominated by private Japanese companies, as foreign companies have faced regulatory restrictions that limit market entry. Over the last several years, these regulations have been eased, which has led to increased competition in the petroleum refining sector. The country's refiners also went through a long period of consolidation beginning in 1999, which saw the merger of many large downstream companies. While Japanese companies such as Nippon Oil remain the largest players, international firms, such as Shell and ExxonMobil, also have a sizeable market share in Japan.

### Exploration and Production

Japan has limited domestic oil reserves and production, concentrated primarily along the country's western coastline. During the last several years, Japan's crude oil production (which excludes refinery gain) has hovered around 6,000 bbl/d, covering only a tiny portion of the country's oil consumption. Offshore areas surrounding Japan, such as the East China Sea, contain oil deposits. However, development of these zones has been held up by competing territorial claims with China (see the [China Country Analysis Brief](#) for more information).

### Japan's Oil Production and Consumption, 1986-2006\*



Source: EIA, *International Energy Annual 2004*;  
*Short Term Energy Outlook* (November 2006)

\*2006 is forecast

#### Overseas

In an effort to mitigate the country's lack of domestic oil resources, Japanese oil companies have sought participation in exploration and production projects overseas. In May 2006, Japan's Minister of Trade, Economy and Industry announced a long-term strategy that urges Japanese companies to increase energy exploration and development projects around the world to help secure a stable supply of oil and natural gas. Furthermore, he announced a goal of Japan importing 40 percent of its oil needs from Japanese-owned concessions by 2030, up from the current level of about 15 percent.

One of Japan's largest investments in oil projects overseas was in the Neutral Zone (sometimes called the "Divided Zone") between Kuwait and Saudi Arabia. However, the Japanese-owned Arabian Oil Company (AOC) lost its concession in the Saudi portion of the Neutral Zone in 2000. AOC also controlled 40 percent of the Kuwaiti portion of the project, as the operator of the Khafji and Hout oil fields. However, this concession expired in January 2003, although AOC continues to operate in the Kuwaiti portion of the Neutral Zone under a service contract. While AOC does not hold an equity stake in the project, it continues to receive about 50,000 bbl/d of oil from the joint development, although this figure is much smaller than the previous offtake received from the Saudi concession (see the [Kuwait](#) and [Saudi Arabia](#) Country Analysis Briefs for more information).

Inpex was awarded a \$2 billion contract to develop the large Azadegan oil field in Iran in 2004, which is estimated to hold 6 billion barrels of recoverable oil reserves. Inpex was the operator of the project and held a 75 percent stake. However, in October 2006, the state-owned National Iranian Oil Company (NIOC) slashed Inpex's share to 10 percent, after the Iranian government complained the Japanese company had not developed the oil field quickly enough. The future status of the Azadegan project remains unclear, and NIOC is reportedly in discussions with other oil companies to develop the oil field (see the [Iran Country Analysis Brief](#) for more information).

Aside from the Persian Gulf, Japanese companies have also sought equity participation in oil projects in the Caspian Sea region. In 2002, Inpex acquired a 10 percent stake in the Azeri-Chirag-Guneshli (ACG) Project in Azeri territory of the Caspian Sea. The ACG oil fields currently produce around 420,000 bbl/d of oil and hold between 5.4 – 6.9 billion barrels of recoverable reserves. While Inpex holds a 10 percent stake in the ACG project, Japan does not currently import any crude oil from Azerbaijan or the Caspian region (see the [Azerbaijan Country Analysis Brief](#) and the [Caspian Sea Regional Analysis Brief](#) for more information). Inpex has also held an 8 percent interest in the North Caspian Sea Block of the Kashagan offshore oil field in Kazakhstan since 1998.

Another region where Japanese companies have been involved in exploration and production activities is the Russian Far East, primarily through the Sakhalin-I and -II oil and natural gas projects. Japan's Sakhalin Oil and Gas Development Company (SODECO), a consortium of public and private Japanese oil companies, holds a 30 percent interest in the Sakhalin-I project. Oil production at Sakhalin-I began in 1999, and is expected to reach 250,000 bbl/d by year-end 2006. Japanese officials are keeping a close eye on ongoing projects in Russia. The Sakhalin-II

project, in which Mitsui and Mitsubishi hold a combined 45 percent stake, recently experienced problems with its environmental license. Russian authorities have also complained about Sakhalin-I's escalating costs (see the [Russia Country Analysis Brief](#) and [Sakhalin Island Brief](#) for more information). Japan is also carefully observing Russian plans to build an oil pipeline to the Pacific Coast, for which Russia has yet to choose a final destination. Beijing has lobbied for the "ESPO" (Eastern Siberia Pacific Coast) route to pump oil to China, although Russian officials have said they favor a route that would allow exports to both China and Japan.

Japanese companies are involved in numerous other exploration and production projects, primarily in the Middle East and Southeast Asia (see the Inpex Exploration and Production website for more information on their ongoing projects). Apart from Inpex, Japanese oil companies involved in exploration and production projects overseas include: Cosmo Oil, Idemitsu Kosan Co. Ltd., Japan Energy Development Corporation, Japex, Mitsubishi, Mitsui, Nippon Oil, and others. Many of these companies are involved in small-scale projects that were originally set up by JNOC. However, many of the highest profile projects being carried out by Japanese firms, some of which are described above, have faced obstacles and other setbacks.

### Downstream/Refining

According to *OGJ*, Japan had 4.7 Mmbbl/d of oil refining capacity at 31 facilities as of January 2006, down from 5 Mmbbl/d in 2001. The refining sector in Japan was characterized by overcapacity in recent years, as petroleum product consumption stagnated. In addition, the country began to allow imports of petroleum products in the mid-1990s, which placed additional pressures on Japanese refiners to lower costs and become more competitive. This resulted in a period of consolidation, with many large refiners merging with and/or acquiring middle market players. There is little new refining capacity planned or under construction, as oversupply remains a problem. Some older facilities are being upgraded and retrofitted with new technologies, however. In November 2006, Idemitsu Kosan and Cosmo Oil each agreed to take a 10 percent equity stake in a new refinery project located in Qatar. The planned facility, which is expected to have a daily refining capacity of 146,000 bbl/d and a cost of \$800 million, marks the Japanese industry's first overseas refinery investment.

Japan's Refining Sector as of January 2006		
Company	Number of Refineries	Refining Capacity (bbl/d)
Nippon Oil	6	1,157,000
Idemitsu Kosan	4	608,000
TonenGeneral	3	590,000
Cosmo Oil	4	565,250
Others	16	1,751,690
<b>Total</b>	<b>31</b>	<b>4,671,940</b>
Japan's Largest Refineries		
Operator	Location	Refining Capacity (bbl/d)
Nippon Oil	Negishi	340,000
TonenGeneral	Kawasaki	296,000
Nippon Oil	Mizushima	250,000
Cosmo Oil	Chiba	228,000
Showa Sekiyu	Yokkaichi	222,000
Idemitsu Kosan	Ichihara, Chiba	209,000
Fuji Oil	Sodegaura	192,000
Japan Energy Co.	Mizushima	190,190
Source: <i>OGJ</i> (January 2006)		

Currently, private refiners in Japan are required to maintain petroleum product stocks worth 70 days of consumption, which imposes large additional costs to these companies. The government is reportedly considering reducing this level by five to ten days in order to provide relief to the country's downstream sector.

**Japan is the largest importer of liquefied natural gas in the world.**

## Natural Gas

According to *Oil & Gas Journal*, Japan had about 1.4 trillion cubic feet (Tcf) of proven natural gas reserves as of January 2006. Despite limited natural gas resources, Japan is an important natural gas consumer and imports virtually all of its natural gas from other countries. Lacking international pipeline connections, all of Japan's imports come in the form of liquefied natural gas (LNG). Japan began importing LNG from Alaska in 1969, making it one of the first countries to pioneer LNG trade. Today, Japan is the largest importer of LNG in the world.

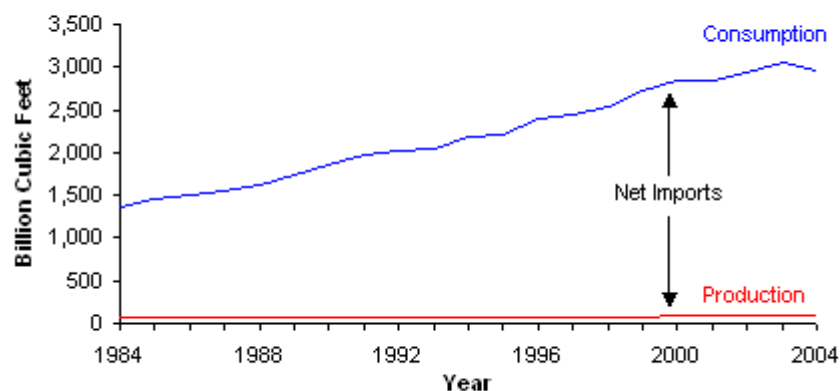
### Sector Organization

As with the oil industry, Inpex and the companies created from the former Japan National Oil Company are the primary actors in Japan's upstream natural gas sector. Besides Inpex, various other Japanese companies are involved in natural gas exploration and production efforts, primarily overseas. Because Japan is the world's largest LNG buyer, the country has a robust LNG infrastructure, most of which is owned and operated by local power generation companies. Osaka Gas, Tokyo Gas, and Toho Gas are Japan's largest retail natural gas companies, with a combined share of about 75 percent of the retail market. Although Japan is a large natural gas consumer, it has a limited natural gas pipeline transmission system. This is partly due to geographical constraints posed by the country's mountainous terrain, but it is also the result of previous regulations that limited investment in the sector. Reforms enacted in 1995 and 1999 have helped to open the sector to greater competition, and a number of new private companies have entered the industry since the reforms.

### Exploration and Production

Japan's natural gas production is limited, totaling 104 billion cubic feet (Bcf) in 2004. On the other hand, Japan consumed 2,950 Bcf of natural gas in 2004, making it a large net importer of natural gas. Most of Japan's natural gas fields are associated, meaning that they are co-located with the country's oil fields. Japan's largest natural gas field is Yufutsu, which produces approximated 40 million cubic feet per day (Mmcf/d). The Iwafune-Oki field, operated by Japex and Mitsubishi, produces around 6 Mmcf/d.

**Japan's Natural Gas Production and Consumption, 1984-2004**



Source: EIA, *International Energy Annual 2004*

The East China Sea is believed to hold substantial natural gas reserves and is one possible site of future offshore development by Japan. However, development of hydrocarbon reserves in the region has been hindered by disagreements between Japan and China over the demarcation of their maritime boundary. Japan has objected to China's exploration and production activities in the Chunxiao natural gas field, which is three miles west of the median line, but which Japan contends may be tapping natural gas reserves which extend past the median line. The Japanese government granted a drilling concession in July 2005 to Teikoku Oil for an area just east of the median line. The Japanese and Chinese governments have participated in several rounds of bilateral negotiations aimed at resolving the impasse, although so far no specific agreements have emerged from these talks.

### Overseas Activities

To help mitigate the country's shortfall of domestic natural gas resources, Japanese companies have actively sought participation in natural gas exploration and LNG projects overseas. One of the largest initiatives is Inpex's \$6-billion Ichthys project in offshore Western Australia. In 1998, Inpex acquired a 100 percent stake in the WA-285-P field in the offshore Ichthys natural gas-bearing structure. The company has since put forward plans for the project to eventually produce 6 million tons per year (Mmt/y) of LNG (292 Bcf/y), all of which would be exported to Japan. In August 2006, Inpex announced that it had transferred a 24 percent participating interest in the project to Total, while Inpex would remain the Ichthys project operator (see the [Australia Country Analysis Brief](#) for more information).

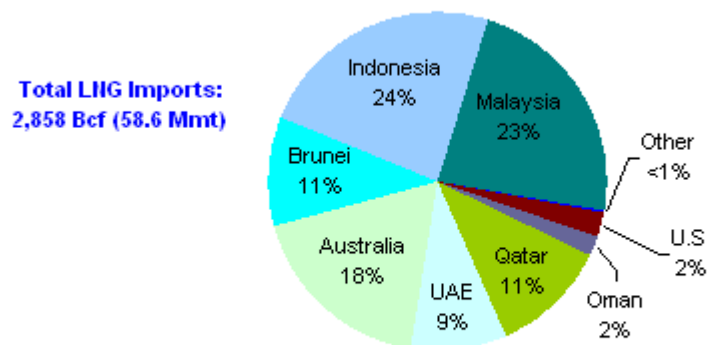
Another high profile LNG project in which Japanese companies have a stake is the Sakhalin-II project in Russia. The project is being developed by Sakhalin Energy, with Shell as the operator (55 percent controlling stake) and Japanese companies Mitsui (25 percent) and Mitsubishi (20 percent) holding participating stakes (see the [Sakhalin Energy website](#) for more information about the company). In September 2006, the Russian Natural Resources Ministry froze a key environmental permit for Sakhalin-II, which has effectively curtailed operations. The project is slated to begin LNG production in 2008, although it is unclear if this will be delayed as a result of the current environmental problems. Russian officials have proclaimed their discontent with the project's rising costs, which the Shell-led consortium estimates will reach \$22 billion, almost double the 2001 estimate of \$12 billion. At its peak, Sakhalin-II is expected to produce 9.6 Mmt/y (468 Bcf/y) of LNG, of which eight Japanese companies have already signed contracts to buy 4.7 Mmt/y (230 Bcf/y) (see the [Sakhalin Island Analysis Brief](#) for more information).

Japanese companies have also invested in several natural gas projects in Indonesia. In October 2006, Inpex announced that it had found substantial natural gas reserves in the Masela Block in the Timor Sea, in which Inpex holds a 100 percent stake. The company did not offer a specific reserve estimate, but Inpex will reportedly submit a \$4.2 billion project proposal to the Indonesian government. The project will aim to ship 3-5 Mmt/y (150-250 Bcf/y) of LNG to Japan and elsewhere by 2015. Inpex is currently involved in two other LNG-producing projects in Indonesia, one on Kalimantan Island and another on the island of New Guinea (see the [Indonesia Country Analysis Brief](#) for more information).

### Liquefied Natural Gas

As noted earlier, Japan is the largest LNG importer in the world. In 2005, the country had net imports of 2,858 Bcf (58.6 Mmt) of LNG. Japan has 23 LNG import terminals with a total throughput capacity of more than 60 Mmt/y (2,925 Bcf/y). Most LNG terminals are located around the island nation's main population centers of Tokyo, Osaka, and Nagoya. Many of Japan's LNG facilities are owned by local power generation companies that operate natural gas-fired power stations, often in partnership with natural gas distribution companies. These same companies own much of Japan's LNG tanker fleet.

Japan's LNG Imports by Source, 2005



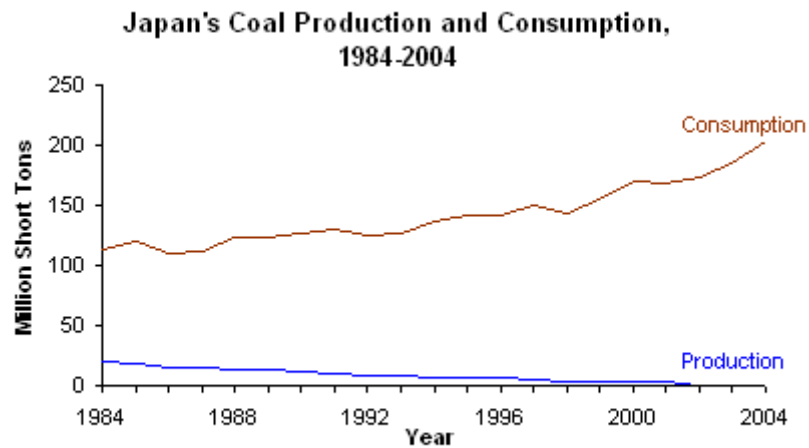
Source: EIA *Natural Gas Monthly* (August 2006);  
IEA *Natural Gas Information 2006*

Japanese regulations permit individual utilities and natural gas distribution companies to sign LNG supply contracts with foreign sources. The largest LNG supply agreements are held by Tokyo Gas, Osaka Gas, Toho Gas, and TEPCO, primarily with countries in Southeast Asia and the Middle East. Many of Japan's existing LNG contracts date from the 1970s and 1980s, when terms were less flexible and tied to prices for crude oil. With these contracts coming up for renewal, Japanese firms have been insisting on terms more favorable to the buyer, including volume variances and a weakening in the pricing link to crude oil. Many of these agreements are set to expire over the next decade, and it remains uncertain whether or not Japanese companies will be able to renew the contracts on favorable terms. Some industry analysts posit that this is driving Japanese firms' interest in acquiring equity stakes in foreign LNG projects, in an effort to guarantee future supply.

## Coal

***Japan relies totally on coal imports to satisfy its domestic requirements.***

Japan has small coal reserves of 396 million short tons. The country ceased coal production in January 2002 with the closure of its last operating coal mine at Kushiro, on the northern island of Hokkaido. Despite Japan's limited domestic coal reserves and lack of production, the country is a large importer of coal. Japan is the world's largest importer of steam coal, which it uses for power generation, paper plants, and cement production. Japan is also an important buyer of coking coal for use in its steel industry.



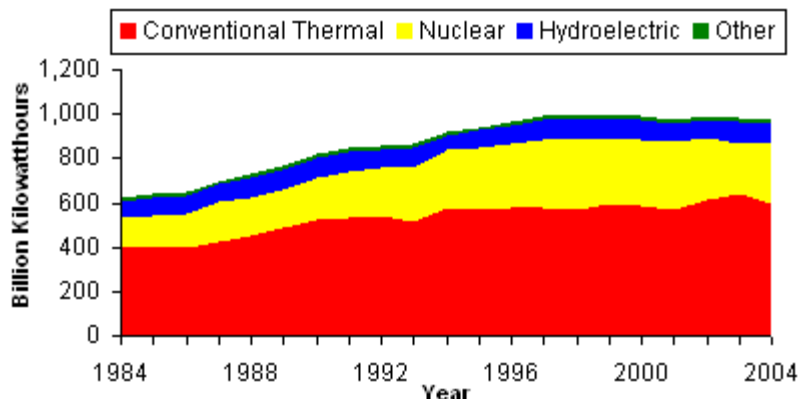
Source: EIA, *International Energy Annual 2004*

## Electricity

***Japan is the world's third-largest producer of nuclear power.***

In 2004, Japan had 243.5 gigawatts (GW) of installed electricity generating capacity, the second largest in the world behind the United States. During 2004, Japan generated 974 billion kilowatt-hours (Bkwh) and consumed 906 Bkwh of electric power. Of the country's generation, about 61 percent came from conventional thermal sources, 28 percent came from nuclear electric sources, 10 percent from hydroelectric sources, and less than 2 percent from other renewables.

### Japan's Electricity Generation by Source, 1984-2004



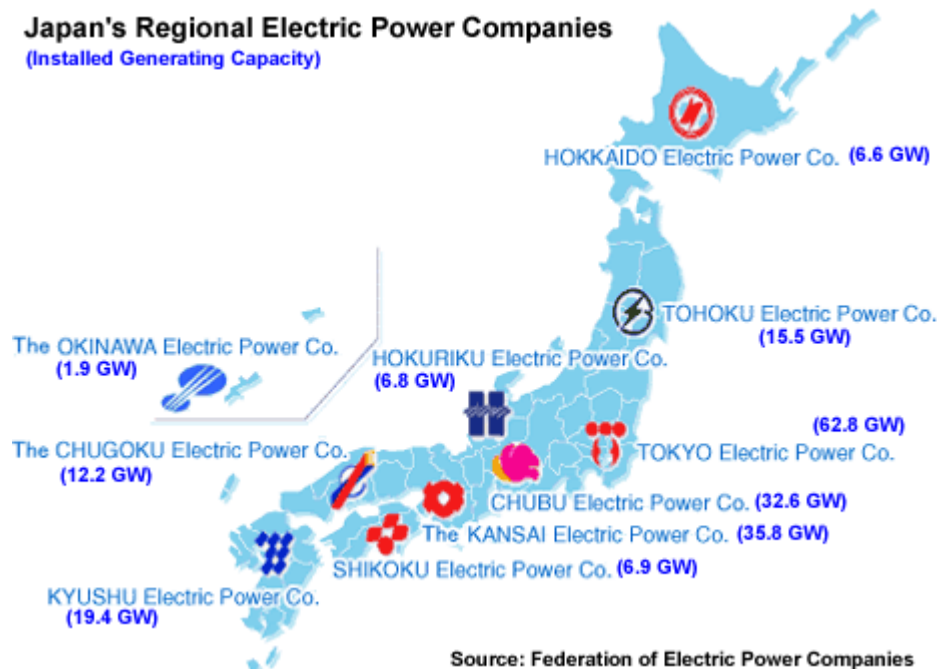
Source: EIA, *International Energy Annual 2004*

### Sector Organization

Japan's electricity industry is dominated by 10 privately-owned, integrated power companies that act as regional monopolies, the largest of which is the Tokyo Electric Power Company (TEPCO). These companies account for more than three-quarters of Japan's electricity capacity and also control the country's regional transmission and distribution infrastructure, leaving limited room for independent power producers (IPPs). The 10 companies cooperate with one another to ensure the stability of electricity supply and work together to exchange or provide electricity during emergency situations or power shortages. Other players in the electricity market are the Japan Atomic Power Company (JAPC), which operates three nuclear power plants, and the Electric Power Development Company (known as J-Power), which operates 16 GW of hydroelectric and thermal power plants. J-Power, formerly a state-owned enterprise, was privatized in September 2004.

### Japan's Regional Electric Power Companies

(Installed Generating Capacity)



Source: Federation of Electric Power Companies

While Japan's 10 regional power companies are privately owned and subject to some competition, historical regulation of the power sector has guaranteed effective monopolies for the companies. Japan has set out to liberalize and deregulate the electric power sector on a step-by-step basis. The Japanese Diet passed a bill in May 1999 that amended the Electric Utilities Industry Law to allow a partial opening to competition. Beginning in March 2000, large industrial



power purchasers, representing about one-third of the Japanese electricity market, have been able to choose their power suppliers. In April 2005, the scope of liberalization was increased to include medium-scale electricity purchasers. The Japanese government intends to consider full liberalization beginning in April 2007. In February 2004, the Electric Power System Council of Japan (ESCJ) was established to oversee the liberalization and deregulation program.

The Ministry of Economy, Trade and Industry (METI) has primary regulatory authority for the energy industry. Within METI, the Agency of Natural Resources and Energy (ANRE) and its various electric power subdivisions oversee the electricity sector. Japan's Nuclear Safety Commission regulates operations at the country's nuclear power plants.

### Conventional Thermal

In 2004, Japan had about 175 GW of conventional thermal electric generating capacity, an 8 percent increase from 2000. The country has a large number of oil-fired power plants, although much of this capacity is primarily reserved as slack capacity to meet peak demand. Natural gas-fired power stations are increasing in Japan. Coal remains an important fuel source for many generating facilities, although the Japanese government has encouraged the use of less polluting technologies. Still, as a means of decreasing the country's reliance on hydrocarbon imports from the Middle East for power generation, emerging coal technologies are being promoted. J-Power and the regional power companies have formed Clean Coal Power R&D, a joint-venture that aims to build an experimental 250-megawatt (MW) coal gasification power plant that will have the highest thermal efficiency rate in the world.

### Nuclear

Japan currently has 55 operating nuclear reactors with a total installed generating capacity of around 50 GW, the third-largest in the world behind the United States and France. While Japan has promoted nuclear electricity over the years as a means of diversifying its energy sources and reducing carbon emissions, safety and reliability at many of the country's reactors has become a concern. In August 2002, it emerged that maintenance inspection findings at some nuclear reactors owned by TEPCO had not been properly reported to government regulators. This led to the shutdown of all 17 of TEPCO's nuclear reactors over the following several months. Several new reactor projects, including some proposed by other utilities, were put on hold while the issue was resolved. In the short term, this led to increases in Japan's fuel oil and LNG consumption, as generating capacity using fossil fuels was brought online to make up for the shortage of nuclear generating capacity. TEPCO gradually brought all 17 of its nuclear generating units back online, completing the process in August 2004.

This incident has empowered a growing anti-nuclear lobby in Japan. In March 2006, a district court ordered Hokuriko Electric Power Company to cease the development of its new 1,350-MW nuclear reactor at Shika based on an initiative introduced to the courts by public advocacy groups. However, despite some opposition, industry reports predict that new reactors and expansions at existing facilities will increase Japan's installed nuclear capacity by up to 20 GW in the next decade. Media reports also suggest that without new nuclear electric power, Japan is unlikely to meet its Kyoto Protocol emissions reduction targets.

### Hydroelectric

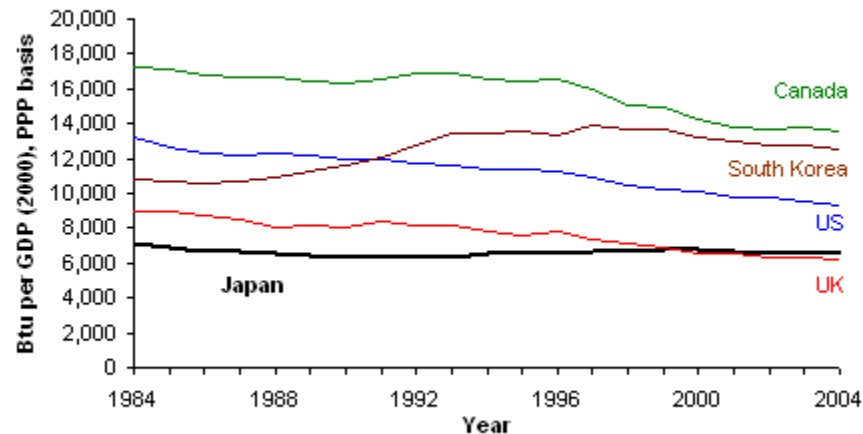
Japan had installed hydroelectric generating capacity of 22 GW in 2004, or about 9 percent of total capacity. While Japan would like to see additional development of hydropower to increase the country's energy self-sufficiency, government reports suggest that the country has nearly exhausted its sites for additional large-scale hydroelectric projects. J-Power has cancelled plans for two new hydropower projects in Fukui and Niigata prefectures.

### Environment

In the past few decades (and especially since the late 1980s), Japan has significantly improved energy conservation and environmental protection. Since that time, Japan has become a world leader in the development and implementation of pollution control technologies and energy efficiency innovations. However, owing to its large economy, Japan remains one of the primary emitters of carbon dioxide in the world, emitting about 1.3 billion metric tons of carbon dioxide in 2004, or nearly 5 percent of the global total. Nevertheless, Japan has a relatively low carbon intensity level and has one of the lowest energy intensity levels among the advanced OECD economies.

***Japan has one of the lowest carbon intensity and energy intensity levels among the OECD countries.***

### Energy Intensity in Select Countries, 1984-2004



Source: EIA, *International Energy Annual 2004*

Japan has been a strong supporter of efforts to combat global warming and played host to the conference that led to the [Kyoto Protocol to the United Nations Framework Convention on Climate Change](#), which was finalized in December 1997. Under the Kyoto agreement, which took effect in February 2005, Japan has set out to reduce its carbon dioxide output to 6 percent lower than its 1990 emissions levels. However, despite these proposals and strong public support for the ideals set out in the Kyoto Protocol, Japan's carbon emissions have been on the rise in recent years. Furthermore, in 2004, the country's total carbon dioxide emissions were 24 percent higher than its 1990 levels.

Click [here](#) to view the full environmental report.

## Profile

### Country Overview

Prime Minister	Shinzo Abe (since 26 September 2006)
Location	Eastern Asia, island chain between the North Pacific Ocean and the Sea of Japan, east of the Korean Peninsula
Independence	660 BC (traditional founding by Emperor JIMMU)
Population (2005E)	127,417,244

### Economic Overview

Minister of Economy, Trade and Industry	Akira Amari (since 29 September 2006)
Currency/Exchange Rate (17 November 2006)	1 USD = 117.635 Japanese Yen (JPY)
Inflation Rate (2005E)	-0.6%
Gross Domestic Product (2005E)	\$4.6 trillion
Real GDP Growth Rate (2005E)	2.6%
Unemployment Rate (2005E)	4.4%
External Debt (2005E)	\$1.5 trillion
Exports (2005E)	\$652.2 billion
Exports - Commodities	transport equipment, motor vehicles, semiconductors, electrical machinery, chemicals
Exports - Partners (2004E)	US 22.7%, China 13.1%, South Korea 7.8%, Taiwan 7.4%, Hong Kong 6.3%
Imports (2005E)	\$589.4 billion
Imports - Commodities	machinery and equipment, fuels, foodstuffs, chemicals, textiles, raw materials

(2001)

<b>Imports - Partners (2004E)</b>	China 20.7%, US 14%, South Korea 4.9%, Australia 4.3%, Indonesia 4.1%, Saudi Arabia 4.1%, UAE 4%
<b>Current Account Balance (2005E)</b>	\$167.3 billion

## Energy Overview

<b>Proven Oil Reserves (January 1, 2006E)</b>	59 million barrels
<b>Oil Production (2006E)</b>	125,700 barrels per day, of which 5% was crude oil.
<b>Oil Consumption (2005E)</b>	5.4 million barrels per day
<b>Crude Oil Distillation Capacity (2006E)</b>	4.7 million barrels per day
<b>Proven Natural Gas Reserves (January 1, 2006E)</b>	1.4 trillion cubic feet
<b>Natural Gas Production (2004E)</b>	104 billion cubic feet
<b>Natural Gas Consumption (2004E)</b>	2,950 billion cubic feet
<b>Recoverable Coal Reserves (2003E)</b>	395.7 million short tons
<b>Coal Production (2004E)</b>	None
<b>Coal Consumption (2004E)</b>	203.7 million short tons
<b>Electricity Installed Capacity (2004E)</b>	243.5 gigawatts
<b>Electricity Production (2004E)</b>	974.4 billion kilowatt hours
<b>Electricity Consumption (2004E)</b>	906.2 billion kilowatt hours
<b>Total Energy Consumption (2004E)</b>	22.6 quadrillion Btus*, of which Oil (48%), Coal (21%), Natural Gas (14%), Nuclear (12%), Hydroelectricity (4%), Other Renewables (1%)
<b>Total Per Capita Energy Consumption (2003E)</b>	175.6 million Btus
<b>Energy Intensity (2004E)</b>	6,531.9 Btu per \$2000-PPP**

## Environmental Overview

<b>Energy-Related Carbon Dioxide Emissions (2004E)</b>	1,262.1 million metric tons, of which Oil (53%), Coal (34%), Natural Gas (13%)
<b>Per-Capita, Energy-Related Carbon Dioxide Emissions ((Metric Tons of Carbon Dioxide) 2004E)</b>	9.9 metric tons
<b>Carbon Dioxide Intensity (2004E)</b>	0.4 Metric tons per thousand \$2000-PPP**
<b>Environmental Issues</b>	air pollution from power plant emissions results in acid rain; acidification of lakes and reservoirs degrading water quality and threatening aquatic life; Japan is one of the largest consumers of fish and tropical timber, contributing to the depletion of these resources in Asia and elsewhere
<b>Major Environmental Agreements</b>	party to: Antarctic-Environmental Protocol, Antarctic-Marine Living Resources, Antarctic Seals, Antarctic Treaty, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands, Whaling

## Oil and Gas Industry

<b>Organization</b>	The Japanese government began breaking up former state-owned enterprise Japan National Oil Corporation (JNOC) in 2001. Japan's oil and natural gas sectors are open to foreign involvement, although the government still plays a small role in the industry.
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**Major Refineries (capacity, bbl/d)** Nippon Oil (Negishi - 340,000; Mizushima – 250,000); TonenGeneral (Kawasaki – 296,000); Cosmo Oil (Chiba – 228,000); Showa Shell Sekiyu (Yokkaichi – 222,000); Idemitsu Kosan (Ichihara, Chiba – 209,000)

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

\*\*GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

## Links

### EIA Links

[EIA - Country Information on Japan](#)

### U.S. Government

[CIA World Factbook - Japan](#)

[Library of Congress Country Study on Japan](#)

[U.S. Embassy in Tokyo](#)

[U.S. State Department Background Notes on Japan](#)

### Foreign Government Agencies

[Japanese Agency for Natural Resources and Energy](#)

[Japanese Ministry of Economy, Trade and Industry](#)

[Japanese Ministry of Foreign Affairs](#)

### Oil and Natural Gas

[Arabian Oil Company, Ltd. \(AOC\)](#)

[Cosmo Oil](#)

[Idemitsu Kosan Co., Ltd.](#)

[Inpex Corporation](#)

[Japan Oil, Gas and Metals National Corporation \(JOGMEC\)](#)

[Japan Petroleum Exploration Co., Ltd. \(Japex\)](#)

[Mitsui Oil Exploration Co., Ltd.](#)

[Nippon Oil Corporation](#)

[Teikoku Oil Co., Ltd.](#)

[TonenGeneral Sekiyu K.K.](#)

### Electricity

[Electric Power Development Company \(J-Power\)](#)

[Federation of Electric Power Companies \(FEPC\)](#)

[FEPC's Electricity Review of Japan, 2005-2006](#)

[Japan Atomic Power Company \(JAPC\)](#)

[Japan Electric Power Information Center](#)

[Nuclear Safety Commission of Japan](#)

[Tokyo Electric Power Company \(TEPCO\)](#)

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