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Malaysia

Malaysia is important to world energy markets because of its 75 trillion cubic feet of natural gas reserves and its net oil exports of almost 300,000 barrels per day.

Note: All information contained in this report is the best available as of November 2003 and is subject to change



GENERAL BACKGROUND

Malaysia's economy has resumed growth in 2002 and 2003, following a stall in 2001, which was largely due to reduced demand for Malaysian exports. Following growth of only 0.3% decline in real gross domestic product (GDP) in 2001, Malaysia experienced real GDP growth of 4.1% in 2002. Growth is projected to reach 4.4% for 2003. Malaysia's merchandise trade surplus

has risen sharply in 2003, after having fallen in 2001 and 2002.

Malaysia's banking system has been stabilized, after being undermined by a high proportion of nonperforming loans during the Asian financial crisis of 1997-98. The country's banking sector went through a major restructuring in 2000, with many weaker financial institutions being taken over by stronger ones. In order to stimulate the economy, the country's government has increased spending since 2001, incurring a budget deficit of 5.6% of GDP in 2002.

Malaysia has maintained its policy of a fixed exchange rate between the ringgit and the U.S. dollar, which was imposed by Prime Minister Mahathir in September 1998, as part of capital controls designed to stem the outflow of short-term capital in the wake of the Asian financial crisis. Malaysian currency is considered somewhat undervalued at the present exchange rate of 3.8 ringgits to one U.S. dollar. Some of the capital controls imposed in 1998 were relaxed in early 2001, such as the taxes on repatriation of short-term stock market profits by foreign portfolio investors.

Prime Minister Mahathir Muhammad stepped down in October 2003 after over two decades in office. He was succeeded by Abdullah Ahmed Badawi, who had previously served as Deputy Prime Minister.

OIL

Malaysia contains proven oil reserves of 3.0 billion barrels, down from 4.3 billion barrels in 1996. Despite this trend toward declining oil reserves (due to a lack of major new discoveries in recent years), Malaysia's crude oil production has been relatively stable in recent years, with monthly

production numbers fluctuating between 650,000 barrels per day (bbl/d) and 730,000 bbl/d between 1996 and mid-2003. In 2002, crude oil production averaged 675,973 bbl/d. That figure has risen to 693,781 bbl/d for the first nine months of 2003. After peaking in 2001 at 472,000 barrels per day, Malaysia's oil demand has been relatively stable, due to conservation efforts and the conversion of oil-fired power plants to natural gas. However, barring major new oil discoveries, the country may become a net oil importer around the end of the current decade.

As a result of declining oil reserves, Petronas, the state oil and gas company, has embarked on an international exploration and production strategy. Currently, Petronas is invested in oil exploration and production projects in Syria, Turkmenistan, Iran, Pakistan, China, Vietnam, Burma, Algeria, Libya, Tunisia, Sudan, and Angola. Overseas operations now make up nearly one-third of Petronas revenue. Malaysia exports the majority of its oil to markets in Japan, Thailand, South Korea, and Singapore.

Malaysia's domestic oil production occurs offshore and primarily near Peninsular Malaysia. Most of the country's oil fields contain low sulfur, high quality crude, with gravities in the 35°-50° API range. More than half of the country's oil production comes from the Tapis field, which contains 44° API oil with a low sulfur content. Esso Production Malaysia Inc. (EPMI), an affiliate of ExxonMobil Corporation, is the largest crude oil producer in Peninsular Malaysia, accounting for nearly half of Malaysia's crude oil production. EPMI operates seven fields near the peninsula, and one-third of its production comes from the Seligi field. The Seligi-F platform, with its 28 wells, is the newest satellite in the Seligi field, located 165 miles off the coast of Terengganu, Peninsular Malaysia. EPMI holds a 78% interest in the project with Petronas Carigali holding the remaining 22%. EPMI began production from the offshore Larut field in Block PM5 in early 2002, which is expected to reach peak production of 140,000 bbl/d, offsetting some of the future decline in Malaysia's production from mature fields.

In other developments, Sabah Shell Petroleum Company, a unit of Royal Dutch/Shell Group, has raised production at the Kinabalu field to 36,000 bbl/d, as well as 28 million cubic feet per day (Mmcf/d) of gas. Production at Kinabalu, located in the SB-1 block 34 miles off the coast of Labuan, Sabah in east Malaysia, began in December 1997. As operator of the SB-1 block, Shell holds an 80% stake in the block, with Petronas holding a 20% stake. In February 1998, Amerada Hess signed two, five-year production sharing contracts (PSCs) with Petronas for blocks PM304 and SK306. The PSCs commit Amerada to \$24.9 million of exploration activities on the two blocks. Under the PSCs, Amerada holds a 70% stake in PM304, offshore Terengganu, and an 80% stake in SK 306, offshore Sarawak, with Petronas holding the remaining interests in both blocks.

In February 2000, Sweden's Lundin Oil announced that it had signed a sales agreement with Petronas and PetroVietnam which will allow it to proceed with development of its long-delayed Bunga Kekwa project. Production has now reached a peak of 40,000 bbl/d. Lundin Oil is the operator of the field, and Petronas and Petrovietnam hold equity stakes in the project. Petrovietnam, Pertamina of Indonesia, and Petronas concluded an agreement in June 2003 for joint exploration of Block SK305 offshore from Sarawak.

Murphy Oil reported a sizable new find in August 2003 at Kikeh, in Block K offshore from Sabah. Exploratory drilling in the area continues, and Murphy Oil has set a target of 2007 for commercial production. This will be Malaysia's first deepwater oil production. Murphy Oil was awarded two new exploration areas in January 2003, Blocks L and M, adjacent to Block K. Canadian independent Talisman Oil reported a new find in Block PM305 in shallow waters offshore from peninsular Malaysia in May 2003. Talisman expects the South Angsi field to come onstream in

mid-2005, at a production rate of 15,000 to 20,000 bbl/d.

Refining & Downstream

Malaysia has six refineries, with a total processing capacity of 516,000 bbl/d. The three largest are the 155,000 bbl/d Shell Port Dickson refinery and the Petronas Melaka-I and Melaka-II refineries, which each have a capacity of 95,000 bbl/d.

The second phase of the \$1.4-billion, 200,000-bbl/d Melaka refinery complex, located about 90 miles south of Kuala Lumpur, commenced operation in August 1998. The 100,000-bbl/d Melaka-II second phase is a joint venture between Petronas (45%), Conoco (40%), and Statoil (15%). This second refinery contains a 62,000-bbl/d vacuum distillation unit, 26,000-bbl/d catalytic cracker, 28,500-bbl/d hydrocracker, 35,000-bbl/d desulfurization unit, and 21,000-bbl/d coker. One of the main purposes of this refinery is to supply gasoline to Conoco's service stations in Thailand and a new line of stations planned for Malaysia. The first phase of the Melaka refinery was finished in mid-1994 and consisted of a 100,000-bbl/d sweet crude distillation unit, which is wholly-owned by Petronas and processes Tapis crude oil.

NATURAL GAS

Malaysia contains 75 trillion cubic feet (Tcf) of proven natural gas reserves. Natural gas production has been rising steadily in recent years, reaching 1.9 Tcf in 2001, up sharply from 1.5 Tcf in 2000. Natural gas consumption in 2001 was estimated at 1.1 Tcf, with LNG exports of around 0.8 Tcf (mostly to Japan, South Korea, and Taiwan).

One of the most active areas in Malaysia for gas exploration and development is the Malaysia-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 MTJA was established by the two governments for joint exploration of the once-disputed JDA. The JDA covers blocks A-18 and B-17 to C-19. A 50:50 partnership between Petronas and Amerada Hess is developing block A-18, while the Petroleum Authority of Thailand (PTT) and Petronas also share equal interests in the remaining blocks. PTT and Petronas announced an agreement in November 1999 to proceed with development of a gas pipeline from the JDA to a processing plant in Songkla, Thailand, and a pipeline linking the Thai and Malaysian gas grids. Malaysia and Thailand will eventually each take half of the gas produced, though initial production will go just to Malaysia. The project had been controversial in Thailand, facing opposition from local residents in Songkla along the pipeline route. In May 2002, the Thai government announced a final decision to commence construction on the project later in 2002, through the pipeline route was altered slightly to avoid some populated areas. Construction has begun, and the delivery of natural gas into Malaysia is scheduled to begin in mid-2005.

ExxonMobil announced in March 2002 that it would move forward with development of the offshore Bintang natural gas field in the South China Sea. The field contains about 1 Tcf of proven reserves, and is expected to reach a peak output of 335 Mmcf/d. Commercial production at Bintang began in February 2003.

Malaysia accounted for approximately 14% of total world LNG exports in 2002. After much delay, Malaysia is proceeding with a long-planned expansion of its Bintulu LNG complex in Sarawak. In February 2000, Petronas signed a contract with a consortium headed by Kellogg Brown and Root for construction of the MLNG Tiga facility, with two LNG liquefaction trains and a total capacity of 7.6 million metric tons (370 Bcf) per year, which was completed in April 2003. The Bintulu facility as a whole is now the largest LNG liquefaction center in the world, with a total capacity of 23 million metric tons (1.1 Tcf) per year. Most of the production from the new LNG trains will be sold under term contracts to utilities in Japan. Tokyo Electric Power (TEPCO), Tokyo Gas, and

Chubu Electric all have signed contracts for LNG from the project. A fire at the MLNG Tiga plant in August 2003, however, has forced a temporary shutdown for repairs. The facility is scheduled to resume normal operation in April 2004.

In addition to LNG, Malaysia exports 150 million cubic feet per day (Mmcf/d) to Singapore via pipeline. Surprisingly, Malaysia also is an importer of gas from Indonesia. Petronas signed an agreement in April 2001 with Indonesia state oil and gas company Pertamina for the import of gas from Conoco's West Natuna offshore field in Indonesian waters. The move is being seen as part of a Malaysian strategy to become a hub for Southeast Asian natural gas integration. Deliveries from the pipeline commenced in mid-2003. The pipeline connects to an existing pipeline from the shore to Malaysia's offshore Duyong field, helped to minimize construction costs. There also have been preliminary discussions of a project to link gas deposits off Sarawak to the Philippines.

ELECTRICITY

Malaysia currently has approximately 14 gigawatts (GW) of electric generation capacity, of which 86% is thermal and 14% is hydroelectric. In 2001, Malaysia generated around 65 billion kilowatthours of electricity. The Malaysian government expects that investment of \$9.7 billion will be required in the electric utility sector through 2010. Much of that amount will be for coal-fired plants, as the Malaysian government has adopted a policy of attempting to reduce the country's heavy reliance on natural gas for electric power generation, with a goal of increasing coal's share of electricity generation to 30% by 2006.

The largest thermal project under development in Malaysia is the 2,100-MW coal-fired Tanjung Bin project in Johor province. Sumitomo was awarded a \$1.5 billion contract in early 2003 by SKS Power, a Malaysian IPP, for the construction of three 700-MW generating units at the site, with the first unit scheduled to begin commercial operation in August 2006.

Malaysia also has plans to build a 1,400-MW coal-fired plant at Jemah in Negri Sembilan province. Bids for the project were originally to have been solicited this year, but have been delayed.

In 1994, the Malaysian government granted approval for the massive 2.4-GW Bakun hydroelectric project in Sarawak. Scheduled for completion in 2002, the Bakun Dam had been slated to send 70% of its generated power from Sarawak to Kuala Lumpur through the construction of 415 miles of overhead lines in eastern Malaysia, 400 miles of submarine cables, and 285 miles of distribution infrastructure in Peninsular Malaysia. In addition, expansion plans included a high voltage line south to Johor Baharu and north to Perlis, near the western Thai border. A local company, Ekran, was awarded a turnkey contract to manage the project in January 1995. In 1996, the construction contract went to Sweden's Asea Brown Boveri (ABB). However, in early September 1997, the Malaysian government announced that it was delaying the project indefinitely, citing an unexpected rise in the dam's cost due to the country's economic difficulties at the time.

In mid-1999, work resumed on the river diversion tunnels, a major component of the project, which have since been completed. The Malaysian government has taken control of the project and negotiated financial settlements with the firms involved. The subsea transmission line concept has been abandoned, and the Malaysian government is exploring the possibility of sales of electricity to Brunei and Indonesia. While it had appeared likely that the project would be scaled back from its 2,400-MW capacity, the Malaysian government announced in February 2001 that it had decided to complete the project on its original scale. Bids were received in July 2002 for the main construction work for the dam, and a construction contract was awarded to a consortium of six Malaysian and Chinese companies in March 2003. Current plans call for the 300-MW generating units to be brought online in stages, with the first capacity to come online in 2007. While electricity demand in

Sarawak is modest (currently under 1 GW), the potential to use the electricity to develop a metal smelting industry in Sarawak is largely behind the renewed interest in the project.

Malaysia is considering reforms to its power sector to make it more competitive and lower costs. Currently, three state-owned utilities dominate power generation and distribution in Malaysia. The market was opened to independent power producers (IPPs) in 1994, and 15 IPPs were licensed, though not all of the projects have been built.

In recent developments, Tenaga Nasional Bhd, the main state-owned utility, began in 1999 to divest some of its power generation units. Eventually, Malaysia expects to achieve a fully competitive power market, with generation, transmission, and distribution decoupled, but reform is still at an early stage and the exact process of the transition to a competitive market has not been decided. The issue is still under study, and many observers have voiced caution in light of the experiences of other deregulated utility systems.

Sources for this report include: Asiaweek; Bernama News Agency; Dow Jones Newswire service; Economist Intelligence Unit; Global Insight; Oil and Gas Journal; Petroleum Economist; Petroleum Intelligence Weekly; New Straits Times; Project Finance; The Star (Malaysia); U.S. Energy Information Administration; World Gas Intelligence.

COUNTRY OVERVIEW

Prime Minister and Minister of Home Affairs: Abdullah Ahmad Badawi (since October 2003)

Independence: August 31, 1957 (from United Kingdom)

Population (2003E): 23.1 million

Location/Size: Southeast Asia/127,320 sq. mi. (slightly larger than New Mexico)

Major Cities: Kuala Lumpur (capital), Ipoh, Melaka, Johor Baharu, Penang, Kota Baharu, Georgetown, Kuching

Languages: Malay (official), English, Chinese dialects, Tamil, tribal dialects

Ethnic Groups: Malay and other indigenous (58%), Chinese (26%), Indian (7%), others (9%)

Religion: Islam, Buddhism, Confucianism, Hinduism, Christianity, various tribal

ECONOMIC OVERVIEW

Currency: Ringgit

Market Exchange Rate (11/17/03): \$1 = 3.8 ringgits

Gross Domestic Product (market exchange rates) (2003E): \$104.6 billion; **(2004F):** \$115.1 billion

Real GDP Growth Rate (2003E): 4.4%; **(2004F):** 5.2%

Inflation Rate (consumer prices)(2003E): 5.6%; **(2004F):** 4.1%

Current Account Balance (2003E): \$12.8 billion; **(2004F):** \$13.7 billion

Major Trading Partners (2003): Singapore, Japan, United States, European Union

Merchandise Exports (2003E): \$97.9 billion; **(2004F):** \$105.0 billion

Merchandise Imports (2003E): \$77.9 billion; **(2004E):** \$87.6 billion

Major Export Products: Petroleum and petroleum products, palm oil, rubber, tin, electronic equipment

Major Import Products: machinery equipment, chemicals and food

External Debt (2003E): \$43.1 billion

ENERGY OVERVIEW

Minister of Energy, Communications, and Multimedia: Dato' Leo Moggie Anak Irok
Proven Oil Reserves (1/1/03E): 3.0 billion barrels
Oil Production (Jan.-Oct. 2003E): 764,781 barrels per day (bbl/d), of which 693,781 bbl/d is crude oil
Oil Consumption (2003E): 470,000 bbl/d
Net Oil Exports (2003E): 294,781 bbl/d
Crude Oil Refining Capacity (1/1/03E): 516,000 bbl/d
Natural Gas Reserves (1/1/03E): 75.0 trillion cubic feet (Tcf)
Natural Gas Production (2001E): 1.9 Tcf
Natural Gas Consumption (2001E): 1.1 Tcf
LNG Exports (2001E): 0.8 Tcf
Recoverable Coal Reserves (12/31/96): 4 million short tons
Coal Production (2001E): 0.4 million short tons
Coal Consumption (2001E): 3.1 million short tons
Net Coal Imports (2001E): 2.7 million short tons
Electricity Generation Capacity (1/1/01): 14 gigawatts (86% thermal, 14% hydroelectric)
Electricity Generation (2001E): 65 billion kilowatthours

ENVIRONMENTAL OVERVIEW

Minister of Science, Technology and Environment: Law Hieng Ding
Total Energy Consumption (2001E): 2.3 quadrillion Btu* (0.56% of world total energy consumption)
Energy-Related Carbon Emissions (2001E): 36.2 million metric tons of carbon (0.55% of world total carbon emissions)
Per Capita Energy Consumption (2001E): 96.3 million Btu (vs U.S. value of 341.8 million Btu)
Per Capita Carbon Emissions (2001E): 1.5 metric tons of carbon (vs U.S. value of 5.5 metric tons of carbon)
Energy Intensity (2001E): 12,479 Btu/\$1995 (vs U.S. value of 11,014 Btu/\$1995)**
Carbon Intensity (2001E): 0.20 metric tons of carbon/thousand \$1995 (vs U.S. value of 0.17 metric tons/thousand \$1995)**
Fuel Share of Energy Consumption (2001E): Oil (42.1%), Natural Gas (51.1%), Coal (3.6%)
Fuel Share of Carbon Emissions (2001E): Oil (48.0%), Natural Gas (46.3%), Coal (5.7%)
Status in Climate Change Negotiations: Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified July 13th, 1994). Ratified the Kyoto Protocol on September 4, 2002.
Major Environmental Issues: Air pollution from industrial and vehicular emissions; water pollution from raw sewage; deforestation; smoke/haze from Indonesian forest fires.
Major International Environmental Agreements: A party to Conventions on Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Life Conservation, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94.

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

**GDP based on OECD Purchasing Power Parity (PPP) figures for 2001

OIL AND GAS INDUSTRIES

Organization: Malaysia's national petroleum corporation, Petroliam Nasional Berhad (Petronas), was formed in 1974. Petronas controls oil production through partnerships with Exxon (Esso Production Malaysia) and Shell (Sabah Shell Petroleum, Sarawak Shell Berhad, and Sarawak Shell/Petronas Carigali)

Major Foreign Oil Company Involvement: BP Amoco, Conoco, Enron, ExxonMobil, Lundin Oil, Murphy Oil, Nippon Mitsubishi Oil, Occidental, Shell, Texaco, Triton

Major Oil Fields: Bekok, Bokor, Erb West, Bunga Kekwa, Guntong, Kepong, Kinabalu Pulau, Samarang, Seligi, Semangkok, Tapis, Temana, Tiong

Major Natural Gas Fields: Bedong, Bintang, Damar, Jerneh, Laho, Lawit, Noring, Piong, Resak, Telok, Tujoh

Major Oil Refineries (capacity - bbl/d): Port Dickson-Shell (155,000), Melaka I (95,000), Melaka II (95,000), Kerteh-Petronas (40,000), Port Dickson-Esso (86,000), Lutong-Shell (45,000)

Major Oil Pipelines: Malaysia-Singapore pipeline, planned Malaysia - Songkhla (Thailand) product pipeline

Major Oil Terminals: Bintulu, Johor Baharu, Kerteh, Kuching, Melaka, Penang, Port Dickson, Port Kelang

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