

COUNTRY ANALYSIS BRIEFS

Malaysia

Last Updated: March 2007

Malaysia is a net exporter of oil and natural gas.

Background

Malaysia is a significant Southeast Asian producer of oil and natural gas, although proven oil reserves have declined in recent years. Malaysia's western coast runs alongside the Strait of Malacca, an important route for seaborne energy trade that links the Indian and Pacific Oceans (for more information, see the [World Oil Transit Chokepoints Brief](#)). Malaysia's gross domestic product (GDP) grew at an estimated rate of 5.9 percent in 2006, with average growth at 5.4 percent since the 1997-98 Asian Financial Crisis. Sustained economic growth has helped make the country a growing energy consumer in its own right.



Malaysia contests ownership of the Spratly Islands and other seabed portions of the South China Sea with Brunei, China, the Philippines, Taiwan, and Vietnam. Several of Malaysia's natural gas fields in offshore Sarawak and Sabah fall under Chinese claims, although China has not specifically objected to the development of the fields (see the [South China Sea Regional Analysis Brief](#) for more information). Malaysia and Brunei have also disputed the maritime borders of their respective exclusive economic zones (EEZ), where there have been significant hydrocarbon finds in recent years (see the [Brunei Country Analysis Brief](#) for more information).

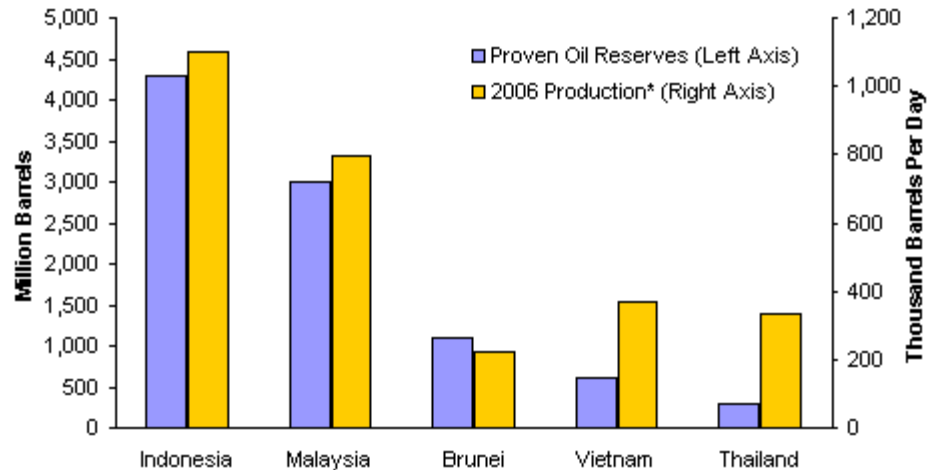
Oil

Despite new offshore developments, EIA forecasts that Malaysia's oil production will decline over the next two years.

According to *Oil & Gas Journal (OGJ)*, Malaysia held proven oil reserves of 3.0 billion barrels as of January 2007, down from a peak of 4.6 billion barrels in 1996. The majority of the country's oil reserves are located off the coast of peninsular Malaysia, and tend to be of high quality. Malaysia's benchmark crude stream, Tapis Blend, is very light and sweet with an API gravity of 44° and sulfur content of 0.08 percent by weight.

Several new oil production projects have come online during the last few years, although Malaysia's oil output declined somewhat in 2006. Average production for 2006 stood at 798,000 barrels per day (bbl/d), down 7 percent from 2005 levels. During 2006, Malaysia consumed an estimated 515,000 bbl/d of oil, with net exports of about 283,000 bbl/d.

Selected Southeast Asia Proven Oil Reserves and Production, 2006



Source: Oil & Gas Journal;
EIA Short-Term Energy Outlook (Feb. 2007)

*estimate

Sector Organization

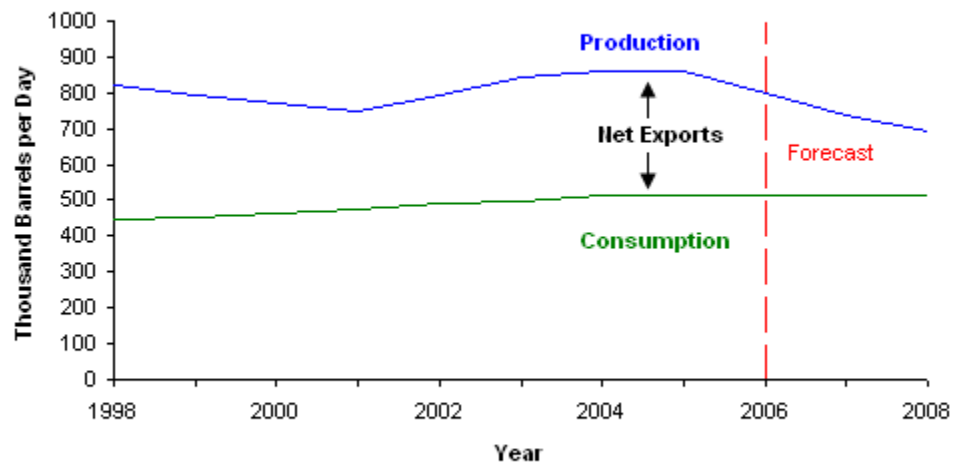
Malaysia's national oil company, Petroleam Nasional Berhad (Petronas), dominates upstream and downstream activities in the country's oil sector. Petronas is the only remaining wholly state-owned enterprise in Malaysia, and is the single-largest contributor of government revenues. Petronas holds exclusive ownership rights to all exploration and production projects in Malaysia, and all foreign and private companies must operate through Production Sharing Contracts (PSCs) with the national oil company. ExxonMobil (through its local subsidiary Esso Production Malaysia Inc.) is the largest oil company by production volume, and there are numerous other foreign companies operating in Malaysia via PSCs. Petronas is a major player in the retail and marketing sector, but faces competition from Shell, Chevron, and BP.

All energy policy in Malaysia is crafted and overseen by the Economic Planning Unit (EPU) and the Implementation and Coordination Unit (ICU), which report directly to the Prime Minister. In March 2004, the Ministry of Energy, Water, and Communications was formed to regulate the energy and electricity sectors, although this body does not have policymaking powers.

Exploration and Production

Malaysia's proven oil reserves have declined in recent years, despite growth in E&P activities. Petronas and its various PSC partners have been most active exploring offshore areas, especially in deepwater zones that pose high operating costs and require substantial technical expertise. Despite several new projects that are set to come onstream in the next several years, EIA forecasts that Malaysia's oil production will fall to 693,000 bbl/d in 2008, a 13 percent decrease from 2006 levels.

Malaysia's Oil Production and Consumption, 1990-2008*



Source: EIA International Energy Annual 2004;
Short-Term Energy Outlook (Feb 2007)

*2006 is estimate

Malaysia's new oil production projects include the Kikeh block, the country's first deepwater oil and natural gas discovery. Field operator Murphy Oil expects initial production of 40,000 bbl/d in January 2008, ramping up to 120,000 bbl/d later in the year. The Shell-operated Gumusut/Kakap deepwater fields are scheduled to begin production in 2010, possibly reaching 150,000 bbl/d by 2011. Shell also expects to begin oil production at the deepwater Malikai field by 2012, although no production timetable is set.

In February 2007, Petronas started construction of the new Sabah Oil and Gas Terminal (SOGT), which will have a capacity to handle 300,000 bbl/d of oil and 1 Bcf/d of natural gas. The construction of the SOGT terminal has led many analysts to believe that new deepwater oil and natural gas production slated to come onstream over the next several years in Sabah will be destined for export markets.

Overseas E&P

In an effort to offset declining domestic oil reserves, Petronas has initiated several overseas E&P projects. At present, Petronas is invested in 29 countries, with an upstream component in 23 of these countries. Much of the company's international involvement is conducted by its overseas investment arm, Petronas Carigali.

Downstream Activities

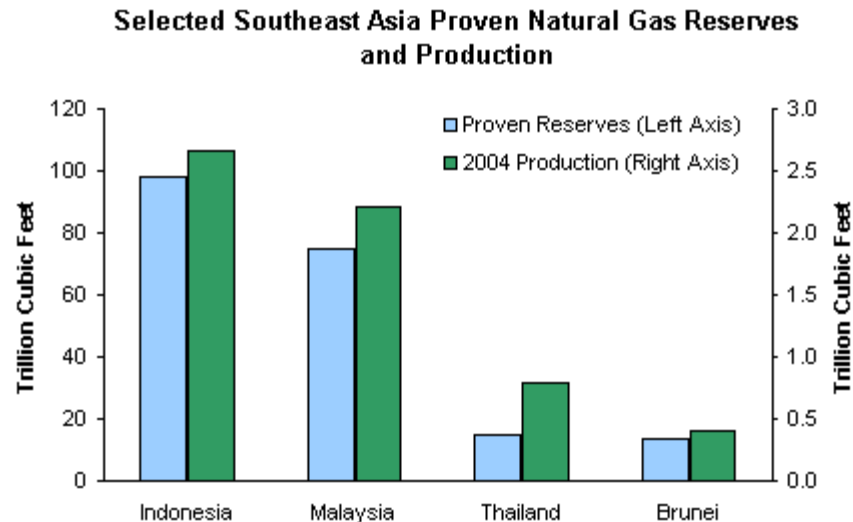
According to *OGJ*, Malaysia had about 545,000 bbl/d of refining capacity at six facilities as of January 2007. Petronas operates three refineries (259,000 bbl/d total capacity), while Shell operates two plants (200,000 bbl/d), and ExxonMobil one (86,000 bbl/d). Malaysia invested heavily in refining activities during the last two decades, and is now able to meet the country's demand for petroleum products domestically, after relying on the refining industry in Singapore for many years.

Natural Gas

Malaysia is one of the world's leading exporters of liquefied natural gas.

According to *OGJ*, Malaysia held 75 trillion cubic feet (Tcf) of proven natural gas reserves as of January 2007. While much of the country's oil reserves are found off Peninsular Malaysia, much of the country's natural gas production comes from Eastern Malaysia, especially offshore Sarawak.

Natural gas production has risen steadily in recent years, reaching 2.2 Tcf during 2004, up 47 percent since 2000. Domestic natural gas consumption has also increased substantially, with 2004 consumption at about 1.2 Tcf, or about 61 percent higher than 2000 levels. Malaysia is a significant net exporter of natural gas, primarily in the form of liquefied natural gas (LNG). In 2005, Malaysia exported just over 1 Tcf of LNG, mostly to Japan, South Korea, and Taiwan.



Source: Oil & Gas Journal; EIA International Energy Annual 2004

Sector Organization

As in the oil sector, Malaysia's state-owned Petronas dominates the natural gas sector. The company has a monopoly on all upstream natural gas developments, and also plays a leading role in downstream activities and LNG trade. Most natural gas production occurs from PSCs operated by foreign companies in conjunction with Petronas.

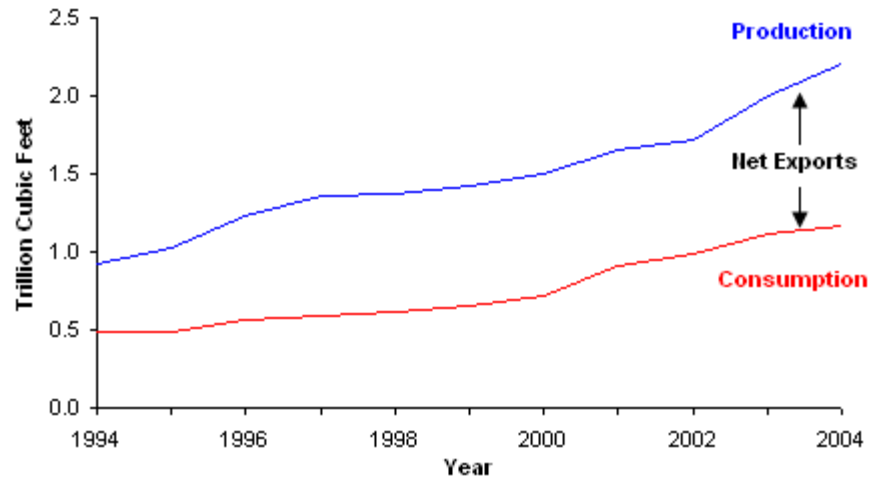
Exploration and Production

E&P activities in Malaysia continue to focus in offshore areas, especially in deepwater blocks. There are several ongoing PSC projects that are set to expand natural gas production in Malaysia. Some of the largest projects include Murphy Oil's deepwater Kikeh field in offshore Sabah, which is scheduled to start-up production in January 2008 at rate of 120 million cubic feet per day (MMcf/d), possibly expanding in the future. Another major new development are Petronas Carigali's Blocks SK-309 and SK-311 in offshore Sarawak, scheduled to begin producing a combined 130 MMcf/d in early 2009.

Malaysia-Thailand Joint Development Area

One of the most active areas for natural gas E&P continues to be the Malaysia-Thailand Joint Development Area (JDA), located in the lower part of the Gulf of Thailand. The area is divided into three blocks, Block A-18, Block B-17, and Block C-19, and is administered by the Malaysia-Thailand Joint Authority (MTJA), with each country owning 50 percent of the JDA's hydrocarbon resources ([for a map of the JDA, click here](#)). Sources estimate that the JDA holds 9.5 Tcf of proved plus probable natural gas reserves, and some analysts speculate that the area could hold as much as 24 Tcf total in-place reserves. The Carigali-Triton Operating Company (CTOC), a joint venture between Petronas Carigali and Hess, operates Block A-18, while the remaining two blocks are operated by the Carigali-PTTEP Operating Company (CPOC), a joint venture of the E&P arms of each country's national oil company (see the [Thailand Country Analysis Brief](#) for more information).

Malaysian Natural Gas Production and Consumption, 1990-2004



Source: EIA International Energy Annual 2004

In March 2005, the Carigali-Triton Operating Company (CTOC), a joint venture between Petronas Carigali and Hess, commenced the first production from the JDA at Block A-18, which holds estimated recoverable reserves of 2.8 Tcf. Phase one production at Block A-18 averages 390 MMcf/d, all of which currently flows to Malaysia. Production at Block A-18 is scheduled to increase to 590 MMcf/d in April 2007, at which point Thailand will begin taking 200 MMcf/d, when the pipeline connecting Thailand with the JDA is operational. CTOC expects to further ramp up production to 790 MMcf/d at A-18 in 2008.

The Carigali-PTTEP Operating Company (CPOC), a joint venture of the Malaysian and Thai national oil companies, is scheduled to start-up production at Block B-17 in the third quarter of 2009. Initial output is expected to be 270 MMcf/d, with the option to expand to 470 MMcf/d if additional reserves are located. CPOC also plans to begin production at the much smaller Block C-19 after 2009.

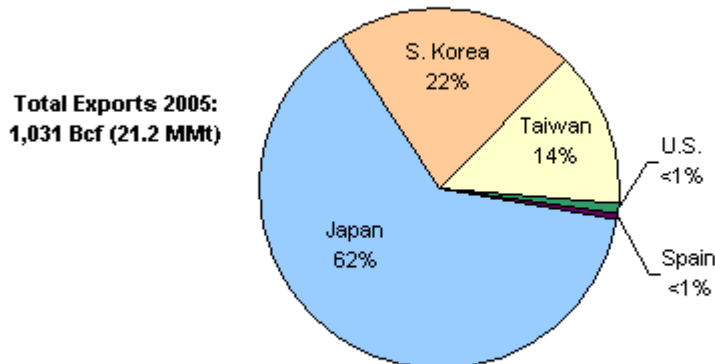
Pipelines

Malaysia has one of the most extensive natural gas pipeline networks in Asia, owing to the multi-phased Peninsular Gas Utilization (PGU) project that was completed in 1998. The goal of the PGU was to expand natural gas transmission infrastructure on Peninsular Malaysia. All told, the PGU system spans more than 880 miles and has the capacity to transport 2 billion cubic feet per day (Bcf/d) of natural gas. Not only has the PGU initiative helped boost domestic natural gas consumption, it has also helped expand regional natural gas trade. Malaysia already trades small amounts of piped natural gas with Singapore and Indonesia, and Petronas reports that in 2006 construction was completed on the Trans-Thailand-Malaysia Gas Pipeline System, which allows Malaysia to pipe natural gas from the Malaysia-Thailand JDA to its domestic pipeline system. This linkage marks a significant step toward the realization of the proposed "Trans-ASEAN Gas Pipeline" (TAGP) system, which envisions the establishment of a transnational pipeline network linking the major natural gas producers and consumers in Southeast Asia. On account of Malaysia's extensive natural gas infrastructure and its location, the country is a natural candidate to serve as a hub in the proposed TAGP project.

Liquefied Natural Gas

Malaysia is one of the world's leading exporters of LNG. In 2005, the country exported 21.2 million metric tons (MMt) of LNG, or about 1,031 Bcf of regasified natural gas, accounting for 15 percent of total world LNG exports. The majority of Malaysia's shipments went to Japan, South Korea, and Taiwan, although small amounts of LNG were also sent to the United States and Spain. LNG is primarily transported by Malaysia International Shipping Corporation (MISC), which owns and operates 23 LNG tankers, the single largest LNG tanker fleet in the world by volume of LNG carried. MISC is 62 percent-owned by Petronas and also has significant involvement in oil shipping activities.

Malaysia's LNG Exports by Destination, 2005



Sources: EIA Natural Gas Monthly (Aug. 2006); CEDIGAZ Natural Gas in the World, Trends and Figures in 2005; IEA Natural Gas Information 2006

Malaysia has three LNG processing plants, all located in a massive complex at Bintulu (East Malaysia) and supplied by the offshore natural gas fields at Sarawak. The Bintulu facility is the largest LNG complex in the world, with a total liquefaction capacity of 22.7 MMt (1.1 Tcf) per year. Petronas holds majority equity stakes in all three LNG plants at Bintulu: Malaysia LNG Sdn Bhd (MLNG), MLNG Dua, and MLNG Tiga.

Malaysia's LNG Infrastructure			
Plant	Ownership	Capacity (MMt/y)	Start-up
MLNG	Petronas (65%), Shell (15%), Mitsubishi (15%), Sarawak local government (5%)	8.1	1983
MLNG Dua	Petronas (60%), Shell (15%), Mitsubishi (15%), Sarawak local government (10%)	7.8	1996
MLNG Tiga	Petronas (60%), Shell (15%), Nippon Oil (10%), Sarawak local government (10%), Diamond Gas (5%)	6.8	2003
Total Liquefaction Capacity at Bintulu Complex		22.7	

Source: Petronas

International LNG Operations

Apart from LNG activities at home, Petronas is also involved in two LNG projects overseas. In late 2005, production started at the Egyptian LNG (ELNG) project on Egypt's Mediterranean coast. The ELNG plant has 7.2 MMt/y (350 Bcf/y) of total liquefaction capacity at two production trains, with Petronas holding a 36 percent stake in Train 1 and a 38 percent stake in Train 2 (see the [Egypt Country Analysis Brief](#) for more information). Petronas also holds a 30 percent interest in the Dragon LNG project in the United Kingdom, which consists of an LNG receiving and regasification terminal. The Dragon LNG facility is expected to be operational by the end of 2008, and may provide a future market for LNG cargoes from Malaysia (see the [United Kingdom Country Analysis Brief](#) for more information).

Profile

Country Overview

Prime Minister	Abdullah Ahmad Badawi (since 31 October 2003)
Location	Southeastern Asia, peninsula bordering Thailand and northern one-third of the island of Borneo, bordering Indonesia, Brunei, and the South China Sea, south of Vietnam
Independence	31 August 1957 (from UK)

Population (2006E)	24,385,858
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Economic Overview

Currency/Exchange Rate (March 1, 2007)	1 USD = 3.507 Malaysia Ringgit
Inflation Rate (2006E)	3.7%
Gross Domestic Product (2006E)	\$149.4 billion
Real GDP Growth Rate (2006E)	5.9%
Unemployment Rate (2006E)	3.6%
External Debt (2006E)	\$57.1 billion
Exports (2006E)	\$183.9 billion
Exports – Commodities	electronic equipment, petroleum and liquefied natural gas, wood and wood products, palm oil, rubber, textiles, chemicals
Exports - Partners (2005E)	US 19.7%, Singapore 15.6%, Japan 9.3%, China 6.6%, Hong Kong 5.8%, Thailand 5.4%
Imports (2006E)	\$148.9 billion
Imports – Commodities	electronics, machinery, petroleum products, plastics, vehicles, iron and steel products, chemicals
Imports - Partners (2005E)	Japan 14.6%, US 13%, Singapore 11.8%, China 11.6%, Taiwan 5.6%, Thailand 5.3%, South Korea 5%, Germany 4.5%
Current Account Balance (2006E)	\$23.5 billion

Energy Overview

Minister of Energy, Water, and Communications	Dr. Lim Keng Yaik
Proven Oil Reserves (January 1, 2007E)	3.0 billion barrels
Oil Production (2006E)	798,000 bbl/d, of which 86% was crude oil
Oil Consumption (2006E)	515,000 bbl/d
Crude Oil Distillation Capacity (January 1, 2007E)	545,000 bbl/d
Proven Natural Gas Reserves (January 1, 2007E)	75 trillion cubic feet
Natural Gas Production (2004E)	2.2 trillion cubic feet
Natural Gas Consumption (2004E)	1.2 trillion cubic feet
Recoverable Coal Reserves (2003E)	4.4 million short tons
Coal Production (2004E)	0.3 million short tons
Coal Consumption (2004E)	7.3 million short tons
Electricity Installed Capacity (2004E)	20.1 gigawatts
Electricity Production (2004E)	78.2 billion kilowatt hours
Electricity Consumption (2004E)	72.7 billion kilowatt hours
Total Energy Consumption (2004E)	2.5 quadrillion Btus*, of which Natural Gas (49%), Oil (41%), Coal (8%), Hydroelectricity (2%), Nuclear (0%), Other Renewables (0%)
Total Per Capita Energy Consumption ((Million Btu) 2004E)	107.1 million Btus
Energy Intensity (2004E)	9,635.5 Btu per \$2000-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2004E)	153.6 million metric tons, of which Oil (46%), Natural Gas (42%), Coal (11%)
Per-Capita, Energy-Related Carbon Dioxide Emissions ((Metric Tons of Carbon Dioxide) 2004E)	6.5 metric tons

Carbon Dioxide Intensity (2004E)	0.6 Metric tons per thousand \$2000-PPP**
Environmental Issues	air pollution from industrial and vehicular emissions; water pollution from raw sewage; deforestation; smoke/haze from Indonesian forest fires
Major Environmental Agreements	Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Life Conservation, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands

Oil and Gas Industry

Organization	Malaysia's state-owned Petroleam Nasional Berhad (Petronas) dominates all aspects of the country's oil and natural gas sector.
Major Oil/Gas Ports	Kerteh, Johor, Sepangar Bay, Bintulu, Kuching, Miri
Foreign Company Involvement	BP, ConocoPhillips, ExxonMobil (Esso), Hess, Mitsubishi, Murphy Oil, Newfield Exploration, Nippon Oil, Shell, Talisman Energy
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, Pilong, Resak, Telok, Tujoh
Major Refineries (capacity, bbl/d)	Shell: Port Dickson (155,000); Petronas: Melaka I (92,832), Melaka II (126,000); ExxonMobil: Port Dickson (86,000)

* 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

U.S. Government

[CIA World Factbook - Malaysia](#)

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

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

Foreign Government Agencies

[Economic Planning Unit \(EPU\), Prime Minister's Department, Malaysia](#)

[Implementation and Coordination Unit \(ICU\), Prime Minister's Department, Malaysia](#)

[Ministry of Energy, Water, and Communications, Malaysia](#)

[Office of the Prime Minister of Malaysia](#)

Oil and Natural Gas

[ExxonMobil \(Esso\) in Malaysia](#)

[Murphy Oil in Malaysia](#)

[Petroleam Nasional Berhad \(Petronas\)](#)

[Shell in Malaysia](#)

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Esso Production Malaysia Inc. (EPMI)

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International Oil Daily
Malaysia-Thailand Joint Authority
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