

# COUNTRY ANALYSIS BRIEFS

## Malaysia

Last Updated: Dec. 14, 2011

### Background

**Malaysia is a significant oil and natural gas producer and is strategically located amid important routes for the seaborne energy trade.**

The Malaysian government is focused on efforts to enhance output from existing oil and natural gas fields and to advance exploration in deepwater areas. New tax and investment incentives introduced in 2010 aim to promote oil and natural gas exploration and development. Their target is to increase aggregate production capacity by 5 percent per year up to 2020 to meet domestic demand growth and to sustain crude oil and LNG exports to overseas markets. Malaysia also aims to become a regional oil storage and trading hub, taking advantage of its strategic location in the center of the Asia-Pacific region astride key shipping lanes.

Malaysia's western coast runs alongside the [Strait of Malacca](#), an important route for the seaborne energy trade that links the Indian and Pacific Oceans. Malaysia's position in the South China Sea makes it a party to various disputes among neighboring countries over competing claims to the sea's resources. While it has bilaterally resolved competing claims with Vietnam, Brunei, and Thailand, an area of the Celebes basin remains in dispute with Indonesia. Potential risks of territorial disputes with China, Vietnam, and the Philippines could emerge as exploration initiatives move into the deepwater areas of the [South China Sea](#).

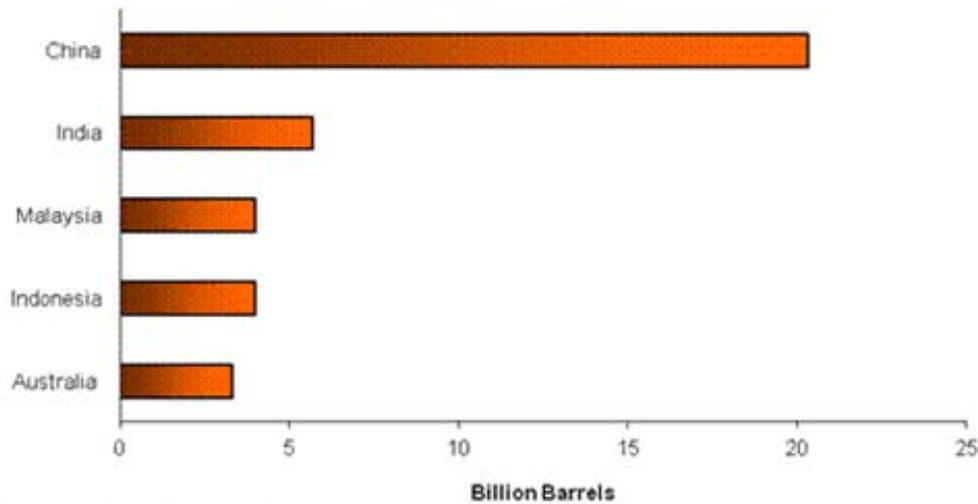


### Oil

**Malaysia's oil reserves are the third highest in the Asia-Pacific region after China and India**

According to the *Oil & Gas Journal (OGJ)*, Malaysia held proven oil reserves of 4 billion barrels as of January 2011. Nearly all of Malaysia's oil comes from offshore fields. The continental shelf is divided into 3 producing basins: the Malay basin offshore peninsular Malaysia in the west and the Sarawak and Sabah basins in the east. Most of the country's oil reserves are located in the Malay basin and tend to be of high quality. Malaysia's benchmark crude oil, Tapis Blend, is of the light and sweet variety with an API gravity of 44° and sulfur content of 0.08 percent by weight.

**Top 5 Asia-Pacific Proven Oil Reserve Holders, January 2011**



Source: Oil and Gas Journal

### Sector Organization

Energy policy in Malaysia is set and overseen by the Economic Planning Unit (EPU) and the Implementation and Coordination Unit (ICU), which report directly to the Prime Minister. Malaysia's national oil and gas company, Petroliaam Nasional Berhad (Petronas), holds exclusive ownership rights to all oil and gas exploration and production projects in Malaysia, is responsible for all licensing procedures, and is subject to only the Prime Minister, who also controls appointments to the company board. The company holds stakes in the majority of oil and gas blocks in Malaysia. It is the single largest contributor of Malaysian government revenues, (over 40 percent in 2010), by way of taxes and dividends. Since its incorporation in 1974, Petronas has grown to be an integrated international oil and gas company with business interests in over 30 countries. Under legislation enacted in 1985, a 15 percent minimum equity for Petronas is specified in production sharing contracts with all foreign and private companies. ExxonMobil, Shell, and Murphy Oil are the largest foreign oil companies by production volume.

Malaysia's oil and gas policy has historically focused on maintaining the reserve base to ensure long term supply security while providing affordable fuel to its population. In July 2010, the government introduced subsidy reductions for gasoline, diesel, and liquid petroleum gas (LPG) with the aim of gradually decreasing fuel subsidies to reduce expenditures. Further cuts in fuel subsidies are planned.

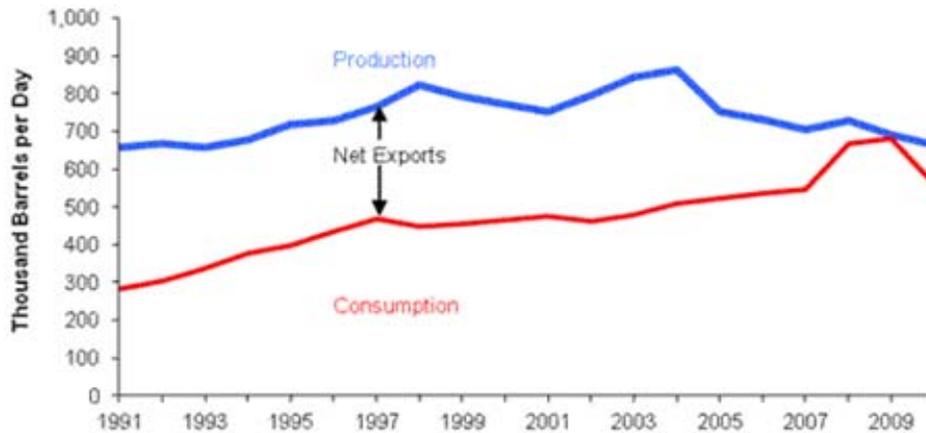
### Exploration and Production

Total oil production in 2011 was an estimated 630,000 barrels per day (bbl/d), compared with 665,000 in 2010, of which about 83 percent was crude oil. More than half of total Malaysian oil production currently comes from the Tapis field in the offshore Malay basin. Malaysian oil production has been gradually decreasing since reaching a peak of 862,000 bbl/d in 2004 due to its maturing reservoirs. Malaysia consumes the majority of its oil production and domestic consumption has been rising as production has been falling. The government is focused on opening up new investment opportunities by enhancing output from existing fields and developing new fields in deepwater areas offshore Sarawak and Sabah.

ExxonMobil's enhanced oil recovery project at the Tapis field, which lies 118 miles off Terengganu in 210 feet of water, is due for completion in 2013. Tapis is one of 7 mature fields offshore peninsular Malaysia that ExxonMobil and Petronas have agreed to develop as part of a 25-year production-sharing contract that was finalized in June 2010. Under the agreement, which includes provisions for the deployment of enhanced oil recovery and further drilling to boost output, work is being carried out on all 7 fields - Seligi, Guntong, Tapis, Semangkok, Irong Barat, Tebu, and Palas - with an estimated gross investment of more than \$1 billion.

The Commercial Arrangement Area (CAA) in the Malay Basin, which Malaysia shares with Vietnam, also contributes to the country's oil production. Talisman Energy (Canada) holds operating interests in the Northern and Southern oil fields in the CAA. While the Southern Fields are still under exploration, the Northern Fields development began producing 25,000 bbl/d in August 2009, reportedly rising to 50,000 bbl/d in 2010. Talisman holds a 41.4 percent interest, Petronas holds a 46 percent interest, and PetroVietnam has 12.5 percent. Exploration and development of fields in the area continues.

### Malaysia's Oil Production and Consumption, 1991-2010



Source: EIA

The 20-year dispute between Malaysia and Brunei over land and sea boundaries was resolved when the two countries signed a boundary agreement in April 2009. Blocks L and M were ceded to Brunei while Limbang, a popular tourist site on the Sarawak-Brunei border, was ceded to Malaysia. In 2010, Petronas and the Brunei government agreed to develop jointly the 2 blocks offshore Borneo Island, signing a 40-year production sharing agreement for newly named Blocks CA1 and CA2. The commencement of drilling was announced in September 2011, along with further joint investment plans.

#### *Deepwater oil production projects under development are all offshore Sabah:*

The Kikeh oil field is currently Malaysia's only producing deepwater oil field. Kikeh is offshore Sabah in 4,400 feet of water and was discovered and is operated by Murphy Oil in partnership with Petronas. It came onstream in 2007 at an initial rate of 20,000 bbl/d; estimated production in 2010 was 68,000 bbl/d of oil and 62 Mmcf/d of gas. However, in June 2011, output had dropped to 52,000 bbl/d due to sand being produced along with the oil. Murphy Oil has been carrying out workover operations to restore production, which is expected to peak at 120,000 bbl/d.

Offshore Sabah in 3,900 feet of water, the Gumusat/Kakap project will include the region's first deepwater floating production system from 19 subsea wells. Gumusat/Kakap is expected to be onstream in 2012 with production of 135,000 bbl/d, using reinjected associated gas to maintain pressure. Shareholders are Shell, the operator, at 33 percent; ConocoPhillips at 33 percent; Petronas at 20 percent; and Murphy Oil at 14 percent. The system will be connected via pipelines to the new Sabah Oil and Gas Terminal being built in Kimanis, which is expected to be completed by 2012.

Development is also underway at the Keabangan Northern Hub development project (KBB), to be brought online together with the Gumusat/Kakap and Malikai oil fields between 2012 and 2014. KBB, about 87 miles northeast of Kimanis, will be the hub for the development of deepwater oil and gas assets offshore Sabah. The KBB platform will be located in 460 feet of water and has a design capacity of 825 MMcf/d of gas and 22,000 bbl/d of condensate. It consists of 4 contiguous fields being developed by the Keabangan Petroleum Operating Company (KPOC), consisting of Petronas, at 40 percent; ConocoPhillips, at 30 percent; and Shell, the operator, at 30 percent.

The Malikai oil and gas field is located nearby and will be tied into the KBB via liquids and dry gas pipelines shortly after first gas comes from KBB. It will supply the Sabah Oil and Gas Terminal. The field was discovered in 2004 at 1,854 feet and field development began in 2009. Malikai is expected to come online by 2014, with production capacity of 60,000 bbl/d. Shell is the operator, with 35 percent interest; in partnership with ConocoPhillips, at 35 percent; and Petronas, with 30 percent.

#### **Oil Pipelines**

Malaysia has a relatively limited oil pipeline network because of its island geography, which has increased the importance of tankers for transportation and trucks for distribution of products onshore. Malaysia's main oil pipelines connect oil fields offshore Peninsular Malaysia to onshore storage and terminal facilities. From the Tapis oil field runs the 124-mile Tapis pipeline, which terminates at the Kerteh plant in Terengganu, as does the 145-mile Jerneh condensate pipeline. The oil pipeline network for Sabah connects offshore oil fields with the onshore Labuan oil

terminal. This network is currently expanding following the launch of development projects including the Kebabangan cluster, the Malikai, Gemusat/Kekap, and Kikeh oil fields. For Sarawak, there are a few other oil pipelines connecting offshore fields with the onshore Bintulu terminal. The majority of pipelines are operated by Petronas, although ExxonMobil also operates a number of pipelines connected with its significant upstream holdings located offshore Peninsular Malaysia.

An international oil products pipeline runs from the Dumai oil refinery in Indonesia to the Melaka oil refinery in Melaka City, Malaysia. An interconnecting pipeline runs from this refinery via Port Dickenson to the Klang Valley airport and to the Klang oil distribution center.

### Exports

Malaysia exported 234,000 bbl/d of crude oil in 2010, down slightly from the 236,000 bbl/d exported in 2009. This was about 35 percent of Malaysia's crude oil production. The Tapis blend is Malaysia's major exported crude oil because its high quality and low sulfur content commands premium prices. In 2010, Malaysia imported 205,000 bbl/d of lower-cost crude oil for processing at its oil refineries.

### Downstream Activities

According to *OGJ*, Malaysia had about 538,580 barrels per calendar day (b/cd) of refining capacity at seven facilities as of January 2011. Malaysia invested heavily in refining activities during the last two decades and is now able to meet most of its demand for petroleum products domestically, after relying on the refining industry in Singapore for many years. Petronas operates three refineries (259,000 b/cd total capacity), while Shell operates two (170,000 b/cd total capacity), ExxonMobil operates one (86,000 b/cd), and Kemanan Bitumen Co. operates another (23,750 b/cd). Kemanan Bitumen refinery largely produces bitumen from heavy crudes.

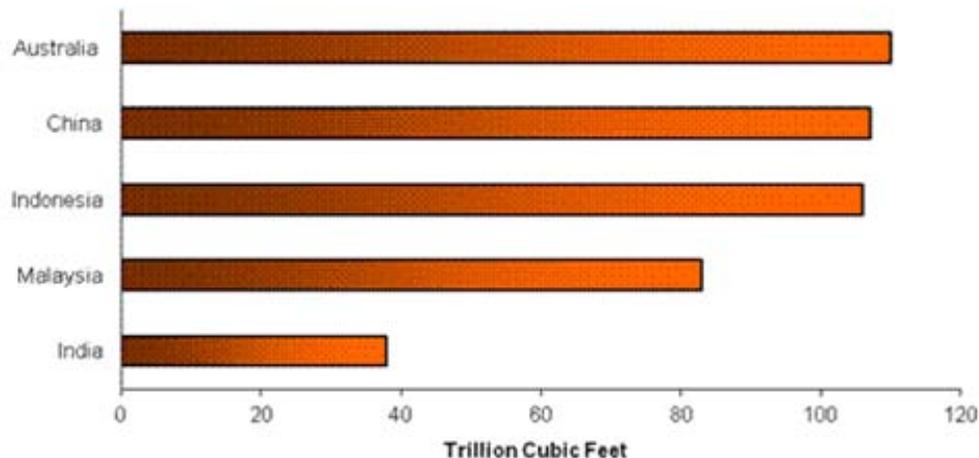
The Sabah Oil and Gas Terminal, under construction in Kimanis, Sabah, is expected to be completed by the end of 2013. It will receive crude from offshore fields, process and distribute the products via a planned 310-mile pipeline linking Sabah with Bintulu, Sarawak. The terminal will have a processing capacity of 300,000 bbl/d of crude and condensate.

## Natural Gas

According to the *Oil and Gas Journal*, Malaysia held 83 trillion cubic feet (Tcf) of proven natural gas reserves as of January 2011, and was the fourth largest natural gas reserves holder in the Asia-Pacific region. Most of the country's natural gas reserves are in its eastern areas, predominantly offshore Sarawak.

**Malaysia was the world's third largest exporter of liquefied natural gas after Qatar and Indonesia in 2010**

**Top 5 Asia-Pacific Proven Natural Gas Reserve Holders, 2011**



Source: *Oil and Gas Journal*

### 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 the LNG trade. Most natural gas production comes from production-sharing agreements operated by foreign companies in conjunction with Petronas.

### Exploration and Production

Gross natural gas production has been rising steadily, reaching 2.7 Tcf in 2010, while domestic natural gas consumption has also increased steadily, reaching 1.1 Tcf in 2010, 42 percent of production. There are several important ongoing projects that will expand natural gas production in Malaysia over the near term. Exploration and development activities in Malaysia continue to focus on offshore Sarawak and Sabah.

#### *Malaysia-Thailand Joint Development Area*

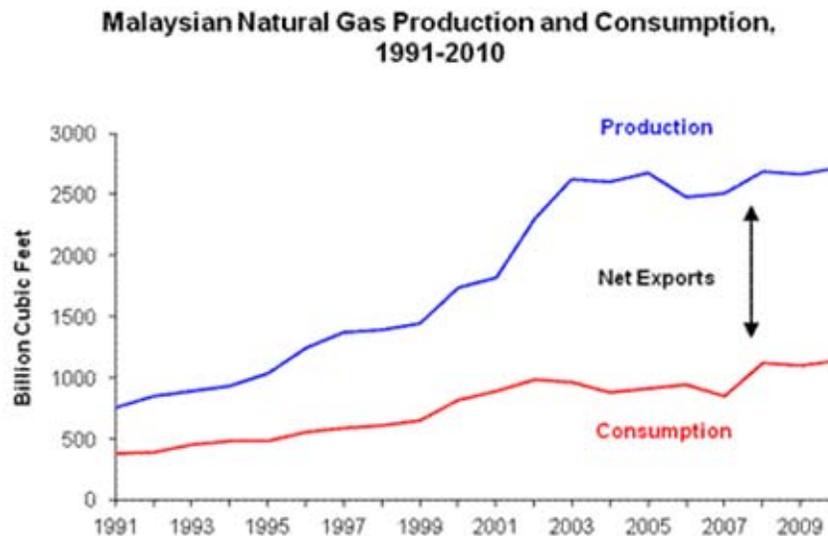
One of the most active areas for natural gas exploration and production is the Malaysia-Thailand Joint Development Area (JDA), located in the lower part of the Gulf of Thailand. The JDA reportedly holds 9.5 Tcf of proven plus probable natural gas reserves. The area is divided into three blocks, A-18, B-17, and C-19, and is administered by the Malaysia-Thailand Joint Authority (MTJA), with each country owning 50 percent of the JDA's hydrocarbon resources ([map of the JDA](#)). The Carigali-Triton Operating Company (CTOC), a joint venture between Petronas Carigali and Hess, operates Block A-18, while Blocks B-17 and C-19 are operated by the Carigali-PTTEP Operating Company (CPOC), a joint venture of each country's national oil company. Block B18 phase 1 came online in 2005, and in September 2009, production was reported to have reached 1 Bcf/d. According to the MTJA, 10 million barrels of condensate were sold in May 2010, and 1 Tcf of natural gas was sold in September 2010. Block B17 came online in 2009. In October 2010, Block B17 natural gas shipments reportedly reached 335 MMcf/d, with half going to Thailand and half to Malaysia. In September 2011, 5 million barrels of condensate from this field were reported sold by the MTJA.

#### *New Sarawak Natural Gas Projects*

Murphy Oil announced in September 2009 the startup of several smaller new gas fields located in Blocks SK309 and SK311. The first phase of this project, located 137 miles offshore Sarawak, is to produce gas from the Golok, Golok Barat, Serampeng, and Merapuh gas fields, which are being developed in a cluster and will supply the Bintulu LNG Terminal. It was reported in fourth quarter 2010 that gross production had reached 250 MMcf/d and is expected to remain at that level for 5 years. Murphy Oil holds an 85 percent interest and Petronas holds 15 percent. Murphy Oil projects that Phase 2 could produce 350 MMcf/d for another 10-year period when additional fields in SK311 are brought online.

The Kumang Cluster in Block SK306, Central Luconia province, a major gas field offshore Sarawak, is being developed by Petronas. Phase 1 is expected to provide 500 MMcf/d and 22,000 bbl/d of condensate to the Bintulu Terminal when it goes online at end-2012.

Three new gas fields in Block SK 308, 124 miles offshore Sarawak, are being jointly developed by Shell and Petronas. They are projected to produce 90 MMcf/d in 2012.



Source: EIA

#### **Pipelines**

Malaysia has one of the most extensive natural gas pipeline networks in Asia. The Peninsular Gas Utilization (PGU) project, completed in 1998, expanded the natural gas transmission infrastructure on Peninsular Malaysia. 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. Other gas pipelines run from offshore gas fields to gas processing facilities at Kertih.

A number of pipelines link Sarawak's offshore gas fields to the Bintulu facility. Petronas is building the 310-mile Sabah-Sarawak Gas Pipeline to transport gas from Sabah's offshore fields to Bintulu for liquefaction and export. Some of the gas will be used for downstream projects in Sabah. This pipeline is expected to be completed by the end of 2013. Other pipelines link the gas fields offshore Sabah to Labuan Gas Terminal.

The Association of South East Asian Nations (ASEAN) is promoting the development of a trans-ASEAN gas pipeline system (TACP) aimed at linking ASEAN's major gas production and consumption centers by 2020. Because of Malaysia's extensive natural gas infrastructure and its location, the country is a natural candidate to serve as a hub in the ongoing TACP project. The first pipeline connected Malaysia with Singapore and was commissioned in 1991. This was followed by gas pipeline links between West Natuna, Indonesia and Duyong, Malaysia, commissioned in 2002, and the Trans-Thailand-Malaysia gas pipeline, commissioned in 2005, which allows Malaysia to pipe natural gas from the Malaysia-Thailand JDA to its domestic pipeline system.

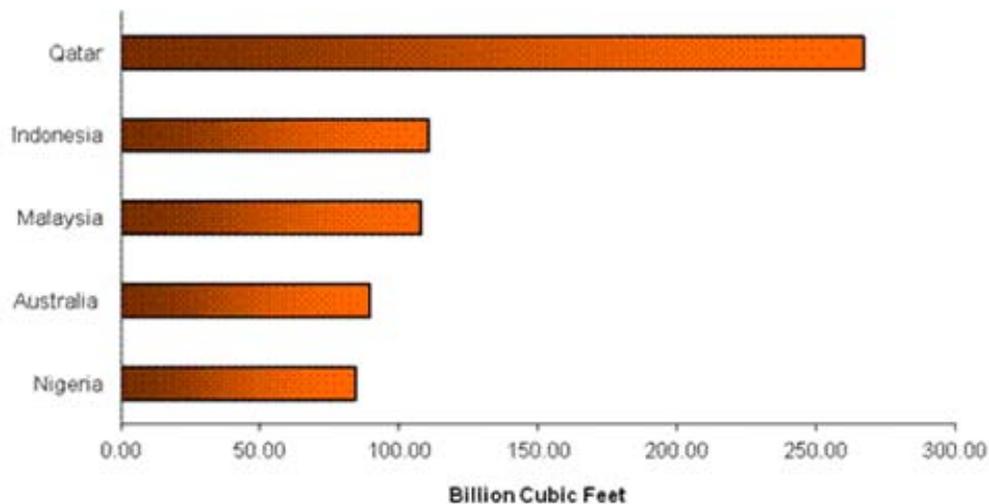
### Exports

Malaysia was the third largest exporter of LNG in the world after Qatar and Indonesia in 2010, exporting over 1 Tcf of LNG, which accounted for 10 percent of total world LNG exports. Japan, South Korea, Taiwan, and China have supply contracts with Malaysia, and are the largest purchasers. LNG is primarily transported by Malaysia International Shipping Corporation (MISC), which owns and operates 27 LNG tankers, the single largest LNG tanker fleet in the world by volume of LNG carried. MISC is 62-percent owned by Petronas.

The Bintulu LNG complex on Sarawak is the main hub for Malaysia's natural gas industry. Petronas owns majority interests in Bintulu's three LNG processing plants, which are supplied by offshore natural gas fields. The Bintulu facility is the largest LNG complex in the world, with 8 production trains and a total liquefaction capacity of 1.7 Tcf per year following the debottlenecking completed at end-2010, which raised overall capacity by 0.6 Tcf per year. Japanese financing has been critical to the development of Malaysia's LNG facilities. Also in Bintulu is Shell's gas to liquids (GTL) project which has a production capacity of 14,700 bbl/d.

Construction began on Petronas' Sabah Oil and Gas Terminal (SOGT) in Kimanis, Sabah in 2011 and is expected to be completed by the end of 2013. It will have a handling capacity of 1.3 Bcf/d of natural gas per day from the Gumusat-Kakap, Malikai, and Knabalu offshore fields. It will supply gas for domestic use in Sabah, largely for a new electric power plant slated for completion in 2014. A reported 500,000 cubic feet per day will be piped to the Bintulu complex to be exported as LNG. The Sabah-Sarawak Gas Pipeline project is part of this development.

**Top World LNG Exporters, 2010**



Source: Cedigaz

## Links

### EIA Links

[EIA - Malaysia Country Energy Profile](#)

### U.S. Government

[CIA World Factbook - Malaysia](#)

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

## **Foreign Government Agencies**

[Malaysia Economic Planning Unit](#)

[Malaysia Energy Commission](#)

[Malaysia Implementation Coordination Unit](#)

[Malaysia-Thailand Joint Authority](#)

## **Corporations**

[ConocoPhillips](#)

[ExxonMobil](#)

[Murphy Oil in Malaysia](#)

[PETRONAS](#)

[Shell Oil](#)

## **Sources**

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Oil Daily

Oil & Gas Journal

Petronas

Shell

Talisman Energy

World Gas Intelligence

## **Contact Info**

[cabs@eia.gov](mailto:cabs@eia.gov)

(202) 586-8800

[cabs@eia.gov](mailto:cabs@eia.gov)