

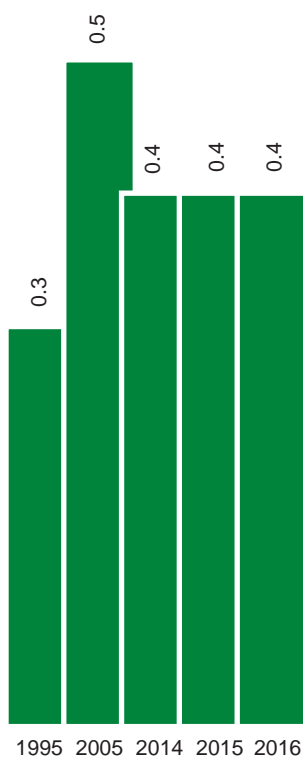
ENERGY COUNTRY REVIEW

Thailand

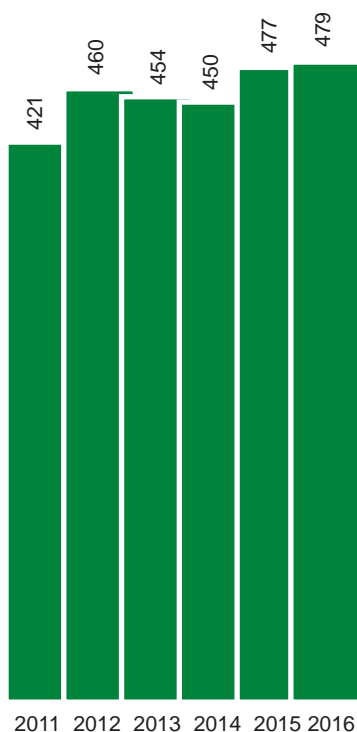
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Country Review Thailand

Thailand's Year End Proved Oil Reserves
Billion barrels



Thailand Oil Production
Thousand barrels per day



Source: BP Statistical Review

Inhabited for 40,000 years, the Indianised Funan Kingdom ruled from around 100 AD, replaced in the 9th century by the Khmer Empire. With Hinduism losing out to Buddhism, the Sukhothai Kingdom, founded in 1238, defeated the Khmer, in turn falling to the trading Kingdom of Ayutthaya in the 14th century. The Lanna Kingdom dominated northern valleys. Ayutthaya fell to Burma (now Myanmar) in 1767 and, in 1782, the Chakri dynasty took over with Bangkok as its capital. Europeans, who had arrived in 1511, were unable to colonise, but Siam lost territory to the UK and France from 1893 to 1904 while acting as a buffer state.

The Kingdom of Thailand became a constitutional monarchy in 1932. It was known as Siam until 1939 and was the only country free from colonial takeover in South East Asia.

Numerous military coups have occurred throughout the country's modern history. The most recent coup ousted Prime Minister Thaksin Shinawatra in 2006. Since then, lengthy and violent street protests from supporters and opponents of the Thai Government have sporadically paralysed the capital, Bangkok. Despite this political unrest, and major flooding of large areas of Thailand in 2011, it remains one of the more advanced economies in South East Asia.

Thai oil production has risen in the last few years, although production remains well below consumption levels. About 80 percent of the country's crude oil production comes from offshore fields in the Gulf of Thailand. Chevron is the largest oil producer in Thailand, accounting for nearly 70 percent of the country's crude oil and condensate production in 2011. The largest oilfield is Chevron's Benjamas located in the north Pattani Trough. The field's production peaked in 2006 and declined to less than 30,000 bbl/d in 2010. Chevron is developing satellite fields to sustain production around Benjamas.

Country Key Facts

Official name:	Kingdom of Thailand
Capital:	Bangkok
Population:	68,146,609 (2016)
Area:	513,115 square kilometers (198,115 square miles)
Form of government:	Constitutional Monarchy
Language:	Arabic, Kurdish
Religions:	Thai, English, ethnic and regional dialects
Currency:	Baht
Calling code:	+66

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Government

Thailand has had 17 constitutions since 1932 reflecting its political instability. Before 2014 it was a constitutional monarchy with a revered monarch as head of state and a prime minister and cabinet as head of government. The bicameral National Assembly included a 150-seat, partly elected Senate and a 500-member, elected House of Representatives.

After the coup the 2007 constitution was revoked and the National Assembly was abolished. The country has been ruled by a military organization called the National Council for Peace and Order (NCPO) since then.

The Department of Mineral Fuels within the Ministry of Energy is the agency that oversees the oil and gas industry. State companies include PTT, established in 1978 and responsible for all aspects of the oil and gas industry, and The Electricity Generating Authority (EGAT), established in 1969 and responsible for power generation.

PTTEP and various foreign companies continue to aggressively explore for oil reserves throughout Thailand, although companies have had much more success locating additional natural gas reserves in recent years. Thailand wants to attract more investment in the upstream to meet rising demand for hydrocarbons while trying to boost reserves and production.

Geography

Thailand comprises a number of geographic regions. The north is mountainous with the highest point being Doi Inthanon in the Thanon Thong Chai Range at 2,565m. The northeast is covered by the Khorat Plateau and bordered by the Mekong River. The central south of the country is dominated by the flat Chao Phraya river valley, which runs into the Gulf of Thailand. The Mekong and Chao Phraya river plains are sites of large scale crop production, especially rice.

Southern Thailand comprises the long and narrow Kra Isthmus that widens to the south into the Malay Peninsula. In the south numerous islands lie along the coast of the Andaman Sea. There are plans to build a canal between the Andaman Sea and Gulf of Thailand to help Thailand become a logistics hub for Southeast Asia.

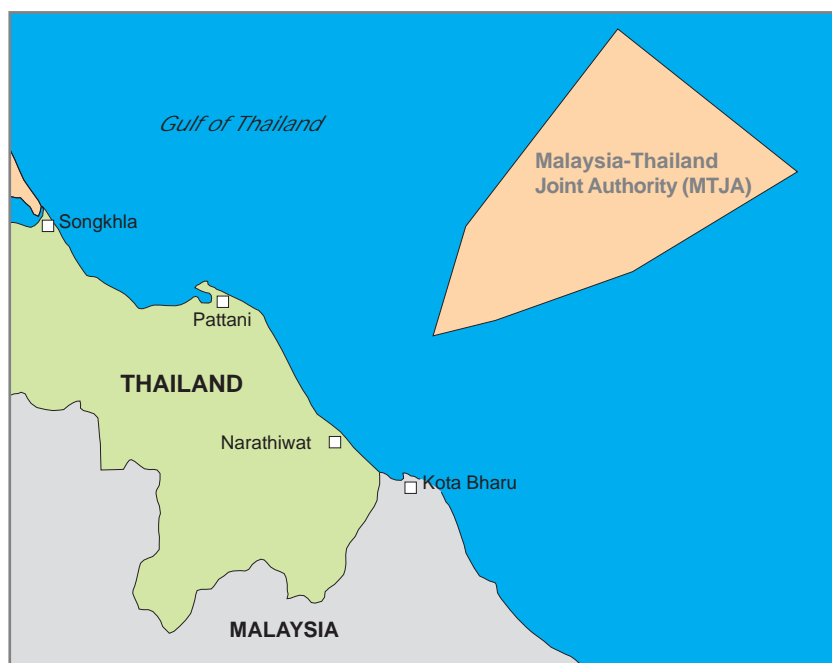
Malaysia-Thailand Joint Development

The Malaysia-Thailand Joint Development Area (JDA), located in the lower part of the Gulf of Thailand and northern part of the Malay Basin, is a large contributor to natural gas supplies to 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. Production at Block A-18 started in 2005 at the Cakerwala field, and the project's second phase brought on the Bumi, Suriya, and Bulan fields in 2008. Total gas production from Block A-18 is estimated to be 390 MMcf/d. Block B-17 came online in 2009 and was producing 335 MMcf/d in 2010. MTJA plans to sustain this production rate until 2020.

There are several ongoing projects that will increase production over the next few years. The consortium at Bongkot began producing gas and condensates at the new Bongkot South field in early 2012. Peak production from the project is expected to add 320 MMcf/d to the original field. Chevron's Platong II project came online in late 2011 and should ramp up to 330 MMcf/d of peak production. The IOC is also part of a consortium developing the Ubon gas and condensate project which could produce hydrocarbons starting in 2016. Estimated production from the project is 130 MMcf/d. There are still some undeveloped fields in

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the Pattani Trough which could provide more opportunities for exploration.



Thailand's thirst for natural gas is prompting the government to enter political discussions with Cambodia to resolve claims over the overlapping territory between the two countries. According to industry estimates, the overlapping region could hold over 6 Tcf of gas and over 350 million barrels of condensate, but there are no official reserves yet reported. The countries held informal talks in September 2012. The negotiations could take several years.

Source: GlobalShift, Oil & Gas Journal, Mondaq Ltd

Thailand Petroleum Industry

Thai Petroleum Act and Thai Petroleum Tax Act

For the purpose of promoting petroleum exploration and production and to attract more investors, Thailand enacted the Petroleum Act (Thailand) and Petroleum Income Tax Act (Thailand) in 1971.

Petroleum exploration and production grants to private investors are in the form of concessionary contracts wherein the concessionaire pays to the government royalties, special remuneratory benefits and tax in consideration for the concession granted. Petroleum concession agreements (each a "PCA") are modelled on a draft contained in a ministerial regulation and contain two periods, an Exploration Period and a Production Period.

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Exploration Period

The exploration period can be up to six years in duration from the date of granting of such PCA, upon application, three year extensions to the initial six year period are possible. The Exploration Period is divided into three obligation periods. The first is comprised of the first three years of the term, the second is comprised of years four through six and the third is the period of the renewal of the petroleum exploration period, if such period has been renewed.

The concessionaire is required to fulfil certain work and expenditure obligations within the exploration period. During the exploration period, the concessionaire may produce petroleum with approval.

Production Period

The initial production period must not exceed twenty years from the day following the end of the exploration period, notwithstanding any petroleum production undertaken during the exploration period. The initial production period may be extended for a further period of not more than ten years.

Fiscal Regime

Since the last amendment to the Petroleum Act (Thailand) and the Petroleum Income Tax Act (Thailand), the Thai fiscal terms have become more attractive. Three main pillars in the fiscal regime are:

- royalties, on a sliding scale of 5-15% of production;
- petroleum income tax, presently at the rate of 50% of net income; and
- special remuneratory benefits.

Foreign Ownership

There are no foreign ownership restrictions imposed on the petroleum industry.

Source: Oil Optimization Inc.

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MAJOR FIELDS

1. Arthit offshore Gas and Condensate Field

Project Type: Gas and Condensate Field
Location: Gulf of Thailand
Water Depth: 80m
Discovered: 1999
Start of Production: 2008
Operator: PTTEP (80%)
Partners: Chevron Thailand (16%) and Mitsui Oil (4%)
Estimated recoverable reserves: 1.9 tcf
Investment: \$1.4bn

2. Bualuang offshore Oil Project

Project Type: Oil Project
Location: Gulf of Thailand (block B8 / 38)
Water Depth: 60m
Discovered: 1992
Start of Production: 2008
Operator: Ophir Energy (100%)
Estimated recoverable reserves: 24.9 mmbo (2P)

3. Greater Bongkot South (GBS) Gas and Condensate Field, offshore

Project Type: Gas and condensate field
Location: Gulf of Thailand, Songkhla
Start of Production: 2012
Processing Capacity: 350 million cubic feet of gas and 15,000 barrels of condensate in a day
Operator: PTTEP (44.45%)
Partners: BG Group (22.22%) and Total (33.33%)

4. Joint Development Area Blocks B-17 & C-19 and B-17-01 Integrated Development Project, offshore

Project Type: Integrated gas fields development
Location: South of the Gulf of Thailand
Water Depth: 55m - 65m
Discovered: 1995
Start of Production: 2009
Production Capacity: Approximately 335 million standard cubic feet per day (Mmscfd)
Phase III Completion Expected: 2017
Operator: PTTEP (50%)
Partners: Petronas (50%)

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5. Manora Oil Field, offshore Thailand

Project Type: G1/48 concession in the Gulf of Thailand

Location: Gulf of Thailand

Water Depth: 44m

Discovered: 2009

Start of Production:

Operator: Mubadala Petroleum (60%)

Partners: Tap Energy (30%) and Northern Gulf Petroleum (10%)

Estimated recoverable reserves: 20 million bbls

6. Nong Yao Oil Field, offshore

Project Type: Oil field

Location: Gulf of Thailand

Water Depth: 75m

Discovered: 2009

Start of Production: 2015

Production capacity: up to 15,000 bopd and 30,000 barrels of fluids per day (bfpd)

Operator: Mubadala Petroleum (67.5%)

Partners: KrisEnergy (22.5%) and Palang Sophon (10%)

Estimated recoverable reserves: 12.4 million bbls

7. Wassana Oilfield Development, offshore

Project Type: Oilfield Development

Location: Gulf of Thailand G10/48

Start of Production: 2015

Peak Production Capacity: 10,000 bopd

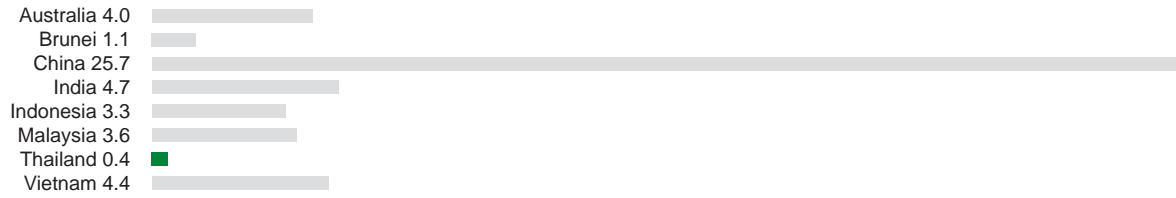
Operator: KrisEnergy (89%)

Partners: Palang Sophon (11%)

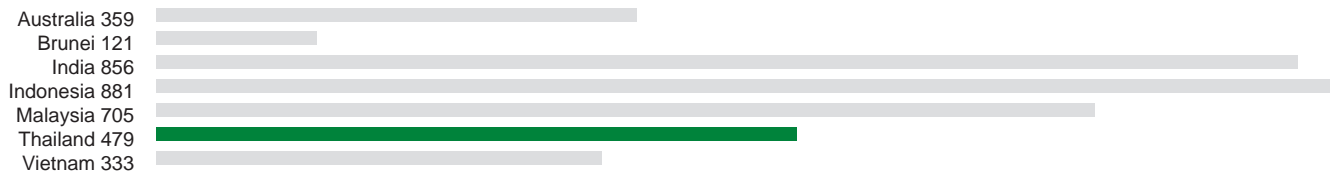
Estimated recoverable reserves: 13.6 million bbls

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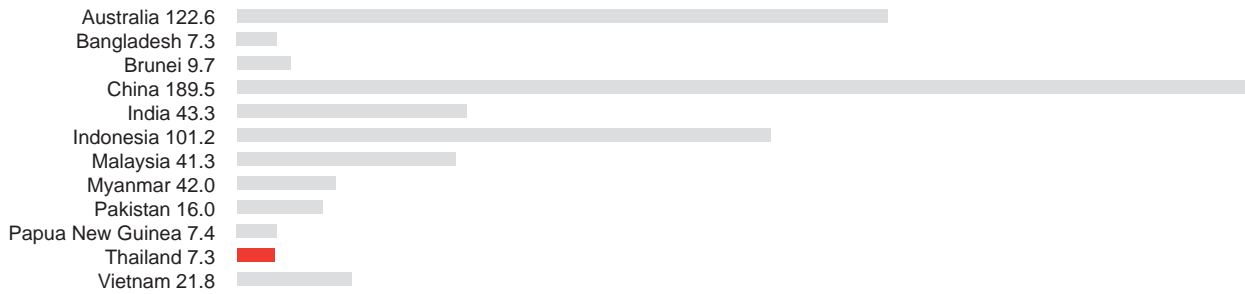
Proved oil reserves at 2016 year end (Thousand million barrels)



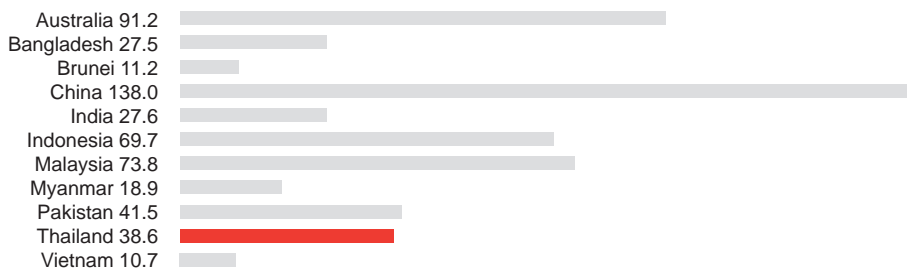
2016 Oil production (Thousand barrels daily)



Proved natural gas reserves at 2016 year end (Trillion cubic feet)



2016 Natural gas production (Billion cubic metres)



Source: BP Statistical Review