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## East China Sea

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### Overview

*Unresolved territorial and maritime claims continue to hinder exploration and development in the East China Sea.*

The East China Sea is a semi-closed sea bordered by the Yellow Sea to the north, the South China Sea and Taiwan to the south, Japan's Ryukyu and Kyushu islands to the east, and the Chinese mainland to the west. Studies identifying potentially abundant oil and natural gas deposits have made the sea a source of contention between Japan and China, the two largest energy consumers in Asia.

The East China Sea has a total area of approximately 482,000 square miles, consisting mostly of the continental shelf and the Okinawa Trough, a back-arc basin formed about 300 miles southeast of Shanghai between China and Japan. The disputed eight Senkaku islands are to the northeast of Taiwan. The largest of the islands is two miles long and less than a mile wide.

Though barren, the islands are important for strategic and political reasons, as sovereignty over land is the basis for claims to the surrounding sea and its resources under the United Nations Convention on the Law of the Sea. China and Japan both claim sovereignty over the islands, which are under Japanese administration, preventing wide-scale exploration and development of oil and natural gas in the East China Sea.

In 2013, China was the second-largest net oil importer in the world, behind the United States, and the world's largest global energy consumer. Natural gas imports have also risen in recent years, and China became a net natural gas importer for the first time in almost two decades in 2007. The U.S. Energy Information Administration (EIA) forecasts China's oil and natural gas consumption to continue growing in the coming years, putting pressure on the Chinese government to seek new supplies to meet domestic demand (see [China country analysis brief](#)).

Japan is the third-largest net importer of crude oil behind the United States and China, as well as the world's largest importer of liquefied natural gas (LNG), owing to the country having few domestic energy resources. Although EIA projects oil consumption in Japan to decline in the coming years, Japan will continue to rely heavily on imports to meet consumption needs (see [Japan country analysis brief](#)).

Both China and Japan are interested in extracting hydrocarbon resources from the East China Sea to help meet domestic demand. However, the unresolved territorial and maritime

claims and limited evidence of hydrocarbon reserves make it unlikely that the region will become a major new source of hydrocarbon production.



## Petroleum and other liquids

Hydrocarbon reserves in the East China Sea are difficult to estimate. The area is underexplored, and the territorial and maritime claims in the area of potentially rich oil and natural gas deposits precluded further development.

EIA estimates that the East China Sea has about 200 million barrels of oil (MMbbl) in proved and probable reserves. Chinese sources claim that undiscovered resources can be as high as 70 to 160 billion barrels of oil for the entire East China Sea, mostly in the Okinawa trough. Other sources have not corroborated these reports. Moreover, undiscovered resources do not take into account economic factors relevant to bring them into production, unlike proved and probable reserves.

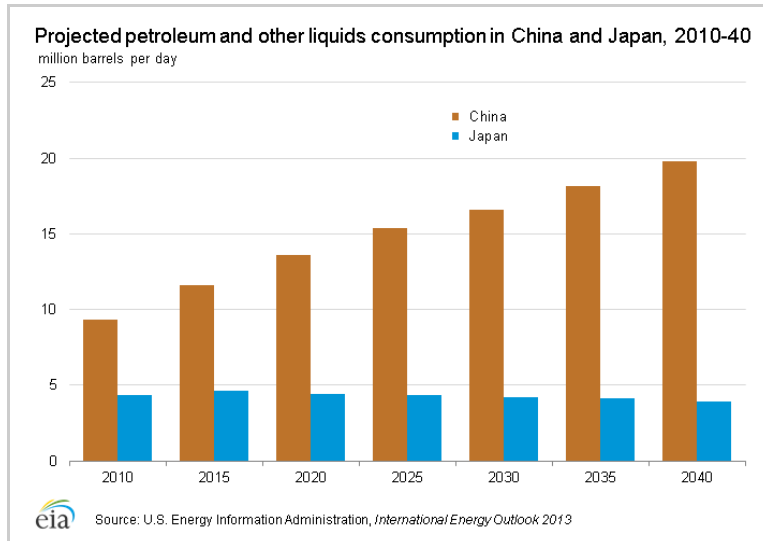
China had a total of 24,400 million barrels of oil in proved reserves as of January 2014, according to the Oil & Gas Journal. Japan had a total of 44 million barrels of oil in proved reserves as of January 2014.

China began exploration activities in the East China Sea in the 1980s, discovering the Pinghu oil and gas field in 1983. Japan cofinanced two oil and gas pipelines running from the Pinghu field to Shanghai and the Ningbo onshore terminal on the Chinese mainland through the Asian Development Bank and the Japanese Bank of International Cooperation (JBIC).

More recently, both China and Japan have concentrated their oil and gas extraction efforts in the Okinawa trough. Most fields are operated as a joint venture (JV) between the Chinese

National Offshore Oil Corporation (CNOOC) and the China Petroleum & Chemical Corporation (Sinopec) with support from foreign firms and other partners, such as the Shanghai government. CNOOC listed its East China Sea proved oil reserves at 20 million barrels in 2013, according to an annual report, while other partners have not publicly released their reserve figures.

Only the Pinghu field, operational since 1998, has produced oil in significant quantities to date. Pinghu's production peaked at around 8,000 barrels per day (bbl/d) to 10,000 bbl/d of oil and condensate in the late 1990s, and leveled off at about 400 bbl/d in recent years, according to data from IHS Energy. In the medium term, EIA does not forecast the East China Sea to become a significant supplier of oil.



## Natural gas

*The East China Sea basin, particularly the Okinawa Trough, is a potentially rich source of natural gas that could help meet Chinese and Japanese domestic demand.*

EIA estimates that the East China Sea has between 1 and 2 trillion cubic feet (Tcf) of proved and probable natural gas reserves. The region may also have significant upside potential in terms of natural gas. Chinese sources point to as much as 250 Tcf in undiscovered natural gas resources, mostly in the Okinawa trough, although these have not been independently verified.

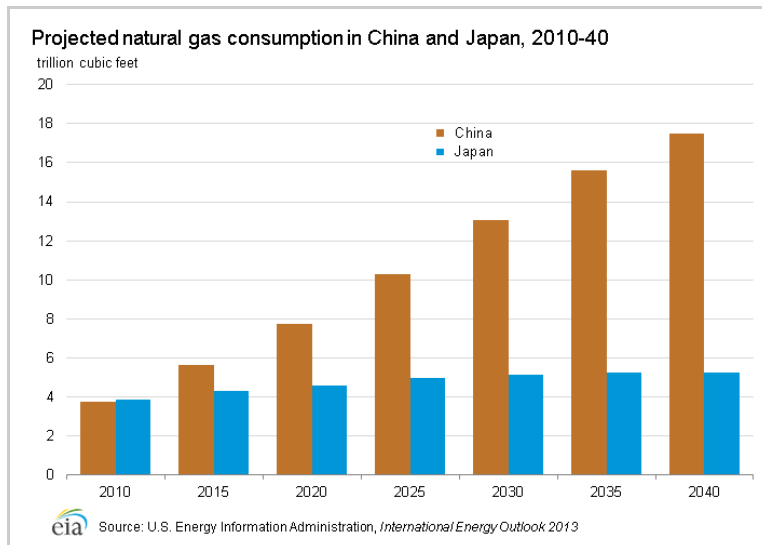
China had a total of about 155,400 billion cubic feet (Bcf) of natural gas in proved reserves as of January 2014, according to the *Oil & Gas Journal*. Japan had a total of about 740 Bcf of natural gas proved reserves as of January 2014.

CNOOC listed its East China Sea proved gas reserves at 303 Bcf in 2013, according to an annual report. In 2012, an independent evaluation estimated probable reserves of 119 Bcf of natural gas in LS 36-1, a promising gas field north of Taiwan currently being developed as a joint venture between CNOOC and the UK firm Primeline Petroleum Corp.

The uncontested Pinghu field began producing in 1998 and reached a peak of approximately 60 million cubic feet per day (MMcf/d) in 2005, according to IHS Energy. The field's output has declined in recent years to around 40 MMcf/d.

In 1995, Chinese companies discovered a significant group of oil and gas fields in the Okinawa trough. Chunxiao/Shirabaka is the largest gas field in this group and is used on occasion to reference the entire group of fields. China began producing at the contested Tianwaitian/Kashi field in 2006, claiming it as part of its Exclusive Economic Zone. China has not released production data from the Chunxiao/Shirabaka field, citing concerns about the unresolved territorial and maritime claims.

The Chinese government prioritizes increasing natural gas consumption to alleviate high pollution from the country's heavy coal use. To that end, Chinese authorities intend to ramp up production and increase East China Sea gas to flow into the Yangtze River delta region, which includes Shanghai and Hangzhou, two large cities with growing natural gas demand.



## Foreign ventures

Foreign energy companies have had mixed success in the East China Sea. In the 1990s, several foreign companies drilled a series of dry holes in uncontested waters. In 2003, Unocal and Royal Dutch Shell announced a joint venture with CNOOC and Sinopec to explore gas reserves in the Okinawa trough. However, Unocal and Shell withdrew from exploration projects in late 2004, citing doubts over the commercial viability of developing energy resources in the disputed area.

Primeline Petroleum Corp. discovered the LS 36-1 gas field near Taiwan in 1997, and signed an agreement to develop the field with CNOOC. Primeline's subsidiaries assume all exploration costs in the contract, and CNOOC is the field's operator. In 2014, the companies completed pipelines to link the field to an onshore processing terminal at Wenzhou, China to accept the future gas supplies. LS 36-1 has an estimated 173 Bcf of natural gas proved reserves and is set to begin natural gas production in the second half of 2014, according to IHS Energy.

Husky Oil China, a subsidiary of Canadian Husky Energy, holds an exploration block in East China Sea but has had more success with oil production in the South China Sea.

In August 2012, CNOOC opened three new offshore blocks for joint development with foreign companies in the East China Sea but has not awarded any contracts to date.

## Unresolved territorial and maritime claims

*China and Japan have two separate but interlinked claims: where to delimit the sea boundary between each country and sovereignty over the Senkaku Islands (China calls them Diaoyu, Taiwan calls them Diaoyutai).*

China and Japan have long been unable to resolve territorial and maritime issues related to the East China Sea. Taiwan's claim parallels China's with regard to the islands, although Taiwan has not actively pursued resource rights in the region. Until these claims are resolved, it is likely that the East China Sea will remain underexplored, and its energy resources will not be fully developed.

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### Senkaku Islands

The Senkaku Islands consist of five uninhabited islets (small islands) and three barren rocks. Approximately 120 nautical miles southwest of Okinawa, Japan, the islands are situated on a continental shelf with the Okinawa trough to the south separating them from the nearby Ryukyu Islands.

Japan assumed control of Taiwan and the Senkaku Islands in 1895. For several decades after 1945, the United States administered the islands as part of the post-war occupation of Okinawa. The islands generated little attention during this time, although U.S. oil companies conducted minimal exploration in the area. In 1969, a report by the United Nations Committee for Coordination of Joint Prospecting for Mineral Resources in Asian Offshore Areas (CCOP) indicated possible large hydrocarbon deposits in the waters around the Senkaku islands, reigniting interest in the area. When the United States and Japan signed the Okinawa Reversion Treaty returning the Senkaku islands, Okinawa and other islands to Japanese administration, both the PRC and Taiwan protested the conclusion of the treaty.

The Japanese government began to lease the islands from their private Japanese owners in 2002, sparking protest from China. The Japanese government officially announced a deal to purchase the islands in September 2012, prompting a wave of protests throughout China.

Under Article 121 (3) of the Law of the Sea Convention, "Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf". Japan has claimed that the disputed islands are not "rocks" in this sense and so generate an EEZ and continental shelf. China has not taken an official position on the status of the Senkakus in this regard.

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### Disputed maritime boundary in the East China Sea

China and Japan apply different approaches to the sea boundary in the East China Sea. Japan defines its boundary as the limit of its Exclusive Economic Zone (EEZ) extending westward from its southern Kyushyu Island and Ryukyu Islands. China defines its boundary based on the natural extension of its continental shelf. The overlapping claims amount to nearly 81,000 square miles, an area slightly smaller than the state of Kansas. Japan has proposed a median line (a line drawn equidistant between both countries' uncontested EEZs) as a means to resolve the issue, but China rejected that proposal.

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## Mediation efforts

China and Japan began holding bilateral talks about the East China Sea issues in October 2004, although Taiwan did not participate. Japan has repeatedly requested seismic data from China on Okinawa trough fields and has asked China to stop production until both sides reach an agreement. China has consistently rejected this request, insisting that the trough and its associated fields are within its jurisdiction.

The two sides have considered joint development of the resources as a means of moving forward with energy exploration but have not yet agreed on what area such development would cover.

In 2008, China and Japan agreed to explore four gas fields in the East China Sea and halt development in other contested parts of the regions. Both sides agreed to conduct joint surveys, with equal investment in an area north of the Chunxiao/Shirakaba gas field and south of the Longjing/Asunaro gas field. However, China began to develop the Tianwaitian/Kashi gas field unilaterally, eliciting a protest from Japan in January 2009. To date, no joint development has actually occurred.

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## Other regional actors

The PRC and Taiwan have strengthened their energy relationship in the East China Sea through a joint venture between Taiwan's CPC and China's CNOOC. In September 2009, the JV drilled a second well in what was previously a contested area between China and Taiwan. Both sides have been conducting exploration and production activities in the Taiwan Strait, although no major fields have been discovered in the Tainan Basin.

South Korea reached an agreement with Japan on a partial continental shelf boundary south of the disputed Liancourt Rocks and a Joint Development Zone in the East China Sea, but has not reached any such similar agreement with China. The United States has not taken an official position on the issue of sovereignty over the Senkaku islands or on the maritime boundary between Japan and China in the East China Sea, and has urged both sides to reach a peaceful settlement.

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## Notes

- Data presented in the text are the most recent available as of September 17, 2014
  - Data are EIA estimates unless otherwise noted.
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## Sources

- Asia Times
- Brookings Institution
- Chemical News and Intelligence
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