



Regional Analysis Brief: East China Sea

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Overview

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. It has a total area of approximately 290,000 square miles, consisting of mostly shallow waters; three-fourths of the sea is less than 500 feet deep. In the Okinawa Trough, the depths exceed 6,500 feet.¹

Along the southern edge of the East China Sea and northeast of Taiwan are the disputed Senkaku islands. Although barren, the islands are important for strategic and political reasons because 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, Taiwan, and Japan all 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.²

Approximately 35% of global petroleum and petroleum product shipments traveled through the East China Sea in 2023. Over 95% of those shipments were destined for the Asia Pacific region, and the top three destinations were China, South Korea, and Japan.³

In 2023, [China](#) was the top importer of liquefied natural gas (LNG) and oil in the world.⁴ China was the world's top energy producer and consumer in 2022. We expect China's oil and natural gas consumption to continue growing through 2035.⁵

[South Korea](#) was the third-highest importer of both LNG and oil in 2023. Since 2018, LNG imports have fluctuated between 1.9 trillion cubic feet (Tcf) and 2.2 Tcf, and oil imports have varied between 2.6 barrels per day (b/d) and 2.9 million b/d.⁶

[Japan's](#) LNG imports have been declining since 2018, and the electric power sector is the main driver of this decline. Japan, displaced by China as the top importer of LNG, was the second-highest LNG importer in 2023.⁷ Japan was the fourth-highest crude oil importer behind China, India, and South Korea in 2023.⁸

China, Japan, and South Korea are interested in extracting hydrocarbon resources from the East China Sea to help meet domestic demand. However, the unresolved territorial and maritime claims have hindered exploration and production projects in the sea.

Map 1. East China Sea



Data source: U.S. Energy Information Administration, Marine Regions, and World Bank

Reserves and Resources

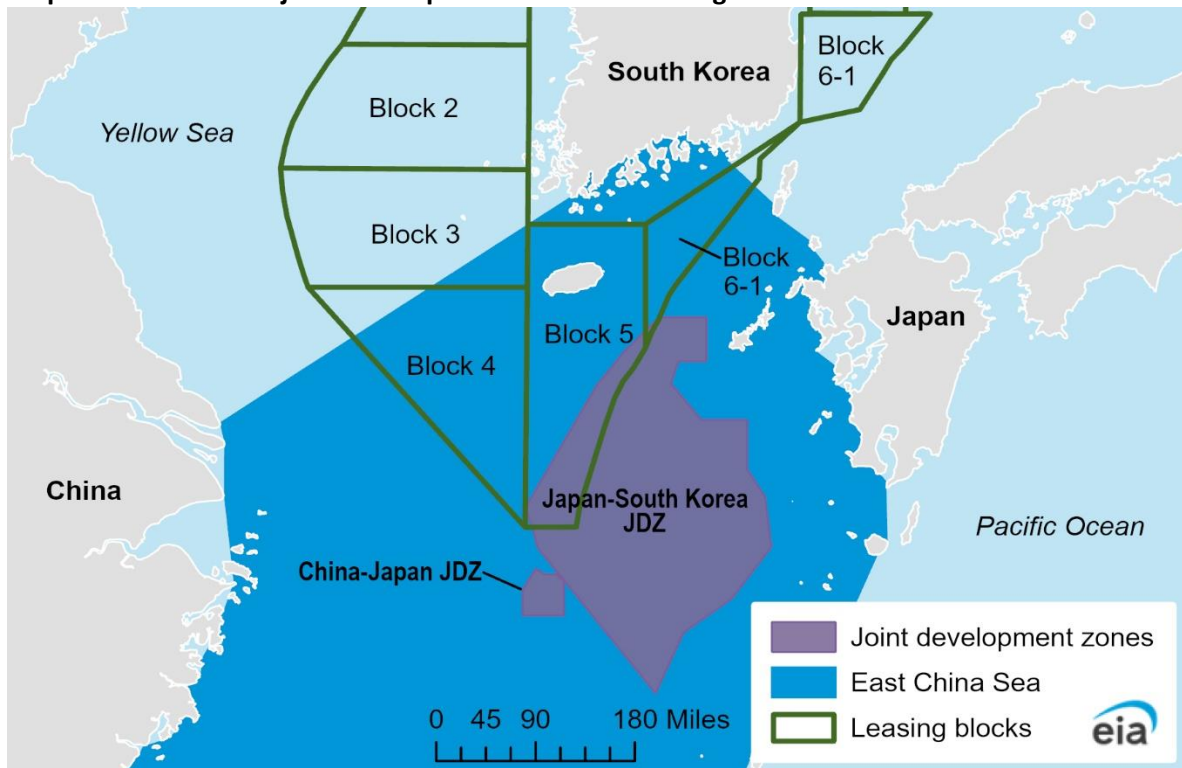
In the East China Sea, similar to the [South China Sea](#), territorial disputes make it difficult to assess reserves and parts of the sea remain underexplored. Approximately 22 million barrels (b) of petroleum and other liquids and 482 billion cubic feet (Bcf) of natural gas in proved and probable reserves are in the East China Sea, according to Rystad.⁹

In 2020, the U.S. Geological Survey (USGS) analyzed the potential for undiscovered conventional oil and natural gas fields as part of its National and Global Petroleum Assessment project. It estimated the East China Sea has potentially 1 to 160 oil fields, which may contain resources of anywhere between 310 million and 1.7 billion barrels of petroleum liquids. It also estimated the sea has potentially 1 to 10 natural gas fields, which may contain resources of between 1.3 Tcf and 7.3 Tcf of natural gas.¹⁰ There are indications that the East China Sea also has gas hydrates, particularly around the Okinawa trough, which are unconventional gas resources.¹¹

Exploration and Production

South Korea and Japan agreed on a joint development zone (JDZ) in 1974. It went into effect in 1978 and was to be maintained for 50-years. Because the agreement requires all projects to be joint ventures, exploration of the area has been slow compared with other blocks. In 2020, the Korean National Oil Corporation (KNOC) received exploration licenses for areas within the JDZ but is waiting on a Japanese company to be licensed before it can begin.

Map 2. East China Sea joint development zones and leasing blocks



Data source: U.S. Energy Information Administration, Marine Regions, and World Bank

Note: JDZ=joint development zone

The Jeju Basin, which encompasses most of South Korea and Japan's JDZ and its surrounding area, has potential oil and natural gas reserves in the East China Sea. KNOC received licenses for blocks 4 and 5 to evaluate the Jeju Basin's potential for hydrocarbons that includes the JDZ zone.¹² All blocks either have portions that run outside the East China Sea or overlap their joint development zone (JDZ) with Japan. Western companies started exploring blocks 4, 5, and 6-2 in the 1970s and discovered three oil and natural gas shows, which are wells that show indications of oil and/or natural gas while drilling.¹³

Japan established diplomatic relations with China in 1978. The two countries agreed to temporarily set aside their disputes over the Senkaku Islands. The China National Offshore Oil Corporation (CNOOC) and Japan's Teikoko Oil Company were picked to negotiate the potential joint projects in the East China Sea in 1985, but no projects have materialized.¹⁴

China began exploration activities in the East China Sea in the 1980s, discovering the Pinghu oil and natural gas field in 1983. The Pinghu field became fully operational in 1998. China was also successful in drilling in the East China Sea's Chunxiao area, starting in 1995. Despite Japan's protests, the Chunxiao project went into production in 2005.¹⁵

CNOOC stated it had 12.3 million barrels of proved reserves of petroleum and other liquids and 1.2 Tcf of proved natural gas reserves in the East China Sea at the end of 2023.¹⁶

CNOOC produced about 5,200 b/d of petroleum and other liquids and 58 billion cubic feet (Bcf) of natural gas from the East China Sea in 2023, according to CNOOC. Although production of petroleum and other liquids in the sea decreased 12% from the previous year, 2023's natural gas production increased over 90% from 2022.¹⁷

Territorial Claims

The Senkaku Islands, which China calls the Diaoyu Islands, consist of five uninhabited islets (small islands)—Uotsuri Island, Kitakojima Island, Minamikojima Island, Kuba Island, Taisho Island—and three barren rocks—Okinokitaiwa, Okinominamiwa, and Tobise. Uotsuri, the largest island, covers only 1.4 square miles. The islands sit approximately 120 nautical miles southwest of Okinawa, Japan, and are situated on a continental shelf. The Okinawa trough to the south separates them from the nearby Ryukyu Islands.

Japan assumed control of Taiwan and the Senkaku Islands in 1895. After World War II, the United States administered the islands as the result of the 1951 Treaty of Peace with Japan. The islands generated little attention during this time, and U.S. oil companies conducted only 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 potential hydrocarbon deposits in the waters around the Senkaku Islands, reigniting interest in the area. The United States and Japan signed the Okinawa Reversion Agreement in 1971, which returned the Senkaku Islands and Okinawa to Japanese administration. China and Taiwan both protested treaty.¹⁸

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.¹⁹

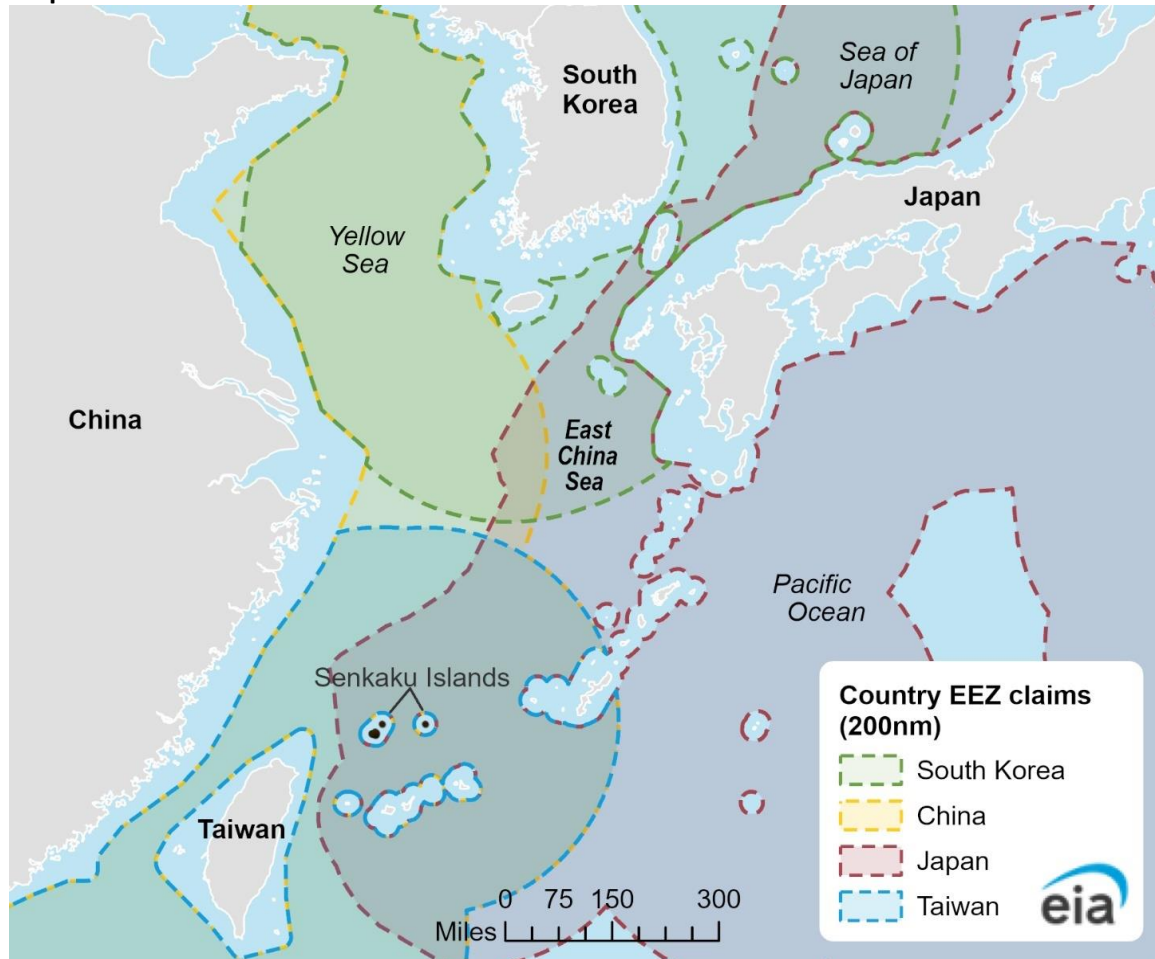
Under [Article 121 \(3\)](#) of the Law of the Sea Convention, "Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone [EEZ] or continental shelf." Japan has claimed that the disputed islands are not "rocks" in this sense and so generate an [EEZ](#)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

Disputed Maritime Boundaries

In the East China Sea, the EEZs of China, South Korea, and Japan overlap. South Korea and China define their boundaries based on the natural extension of the continental shelf, which extends beyond 200 nautical miles of South Korea's and China's territorial sea. Both countries have made submissions to the Commission on the Limits of the Continental Shelf.

Japan uses a different approach than China to define its EEZ. Because the sea between the two countries is only 360 nautical miles, Japan applies a median line (a line drawn equidistant between both countries' uncontested EEZs) to determine its boundary.

Map 3. Estimate East China Sea exclusive economic zones



Data source: U.S. Energy Information Administration, Marine Regions, and World Bank

Note: The zones are meant as an estimation to show potential overlapping and are not authoritative.

Regional Conflicts and Mediation Efforts—Timeline

- 1995—Chinese companies discovered the Chunxiao oil and natural gas field near the Okinawa trough on China's side of the EEZ based on Japan's median line claim. Japan claims China shouldn't develop the field due to its location.²⁰
- 2003—Japan leases three of the Senkaku Islands from their private owner. China and Taiwan protest the move by stating the contract is invalid.²¹
- 2005—China's Chunxiao project starts production despite protests from Japan.²²
- 2008—China and Japan approve a Joint Development Agreement in the East China Sea after years of maritime disputes in the area. The agreement includes the exploration of four fields in disputed waters.²³

- 2009—China decides to unilaterally develop the Tianwaitian natural gas field in the East China Sea. Japan protests the development by stating the field is near a disputed area of the East China Sea and should be under negotiation.²⁴
- 2010—Chinese vessels collide with a Japanese Coast Guard vessel by the Senkaku Islands. Japan arrests the crew of the fishing vessels, causing China to protest the arrests, initiate an unofficial embargo on rare earth minerals, and arrest four Japanese businessmen.²⁵
- 2012—Japan purchases the Senkaku Islands from a private landowner causing widespread protests in China in over 85 cities.
- 2012—China announces territorial baselines around the Senkaku Islands and declares itself administrator of the islands in response to Japan purchasing them.²⁶
- 2013—China creates the East China Sea Air Defense Identification Zone, which requires non-commercial aircraft to submit flight plans before entering the area that encompasses much of the East China Sea and the Senkaku Islands.²⁷
- 2014—China and Japan reached a four-point agreement to improve diplomatic relations. Part of the agreement established a crisis management mechanism to prevent conflict and conflict escalation in the East China Sea.²⁸
- 2018—A Panamanian-flagged tanker (Iranian-owned) carrying one million barrels of condensate collided with a Hong Kong flagged ship carrying grain 160 nautical miles from Shanghai in the East China Sea. The tanker exploded, killing all 32 crew members and creating the largest condensate spill on record.²⁹
- 2018—China and Japan created a hotline, as part of the Maritime and Aerial Communication Mechanism (MACM), to prevent accidents in the sea and air and agreed to hold regular meetings to maintain communications.³⁰
- 2023—Chinese Coast Guard vessels entering into the contiguous waters around the Senkaku Islands, which Japan has territorial sovereignty over, is the highest on record (1,127 vessels), according to Japan’s Ministry of Foreign Affairs. This record includes a continuous 134-day presence.³¹

Global Trade

In 2023, 76 million b/d of petroleum and petroleum product was shipped globally via maritime transport. Approximately 27 million b/d (35%) of those shipments traversed the East China Sea. Most of the maritime trade through the East China Sea passes through the South China Sea and Sea of Japan.³²

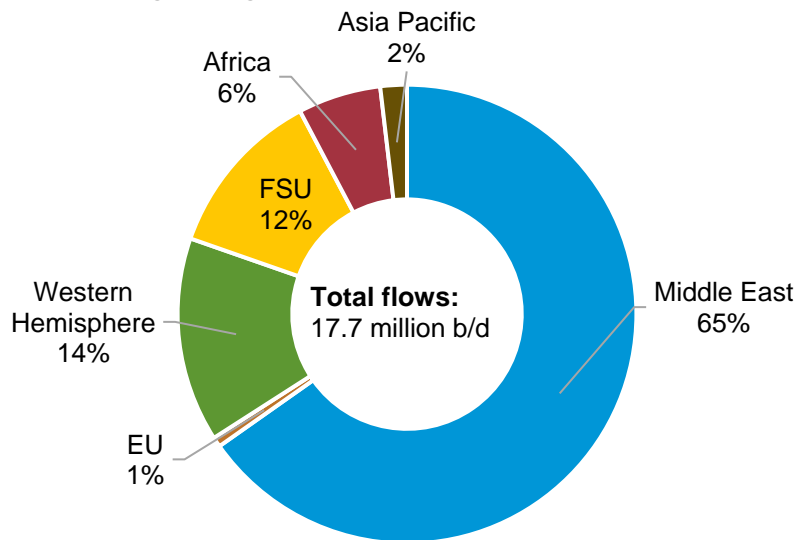
Over 95% of the petroleum and petroleum product shipments that go through the East China Sea are destined for the Asia Pacific region. The top three destinations are China (53%, 14.2 million b/d), South Korea (19%, 5.1 million b/d), and Japan (13%, 3.5 million b/d). The United States (1%, 0.4 million b/d) is the only country outside of the region that falls within the top 10 destinations.³³

Crude oil and condensate trade

Approximately 17.7 million b/d of crude oil and condensate passed through the East China Sea in 2023, which was 43% of global oil maritime shipments. Most of these shipments went to China (61%), followed by South Korea (19%) and Japan (16%). China was the top importer of oil globally in 2023. South Korea and Japan, both lacking in petroleum resources, were the world’s fourth and fifth highest importers.³⁴

Most of the crude oil and condensate shipments that passed through the East China Sea in 2023 originated in the Middle East (65%) (Figure 1). Saudi Arabia (24%) was the top source of crude oil and condensate exports, followed by the United Arab Emirates (12%), Russia (11%), Iraq (9%), and Iran (7%). The United States (5%), Brazil (5%), and Angola (3%) were only countries not in the Middle East in the top 10 sources (Figure 2).³⁵

Figure 1. Share of crude oil and condensate flows in the East China Sea by origin region, 2023



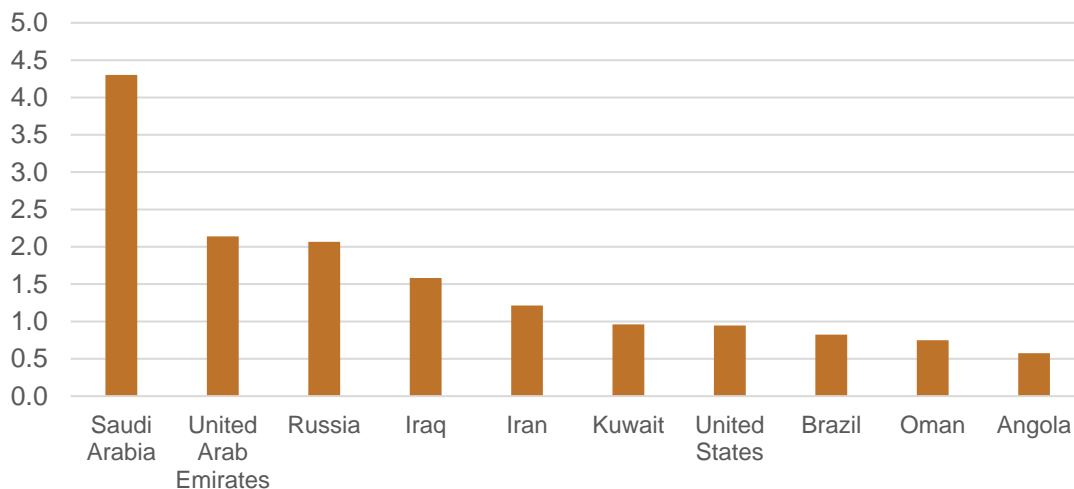
Data source: Vortexa

Note: EU=European Union, FSU=Former Soviet Union, b/d=barrels per day



Figure 2. Top 10 origins of crude oil and condensate in the East China Sea, 2023

barrels per day



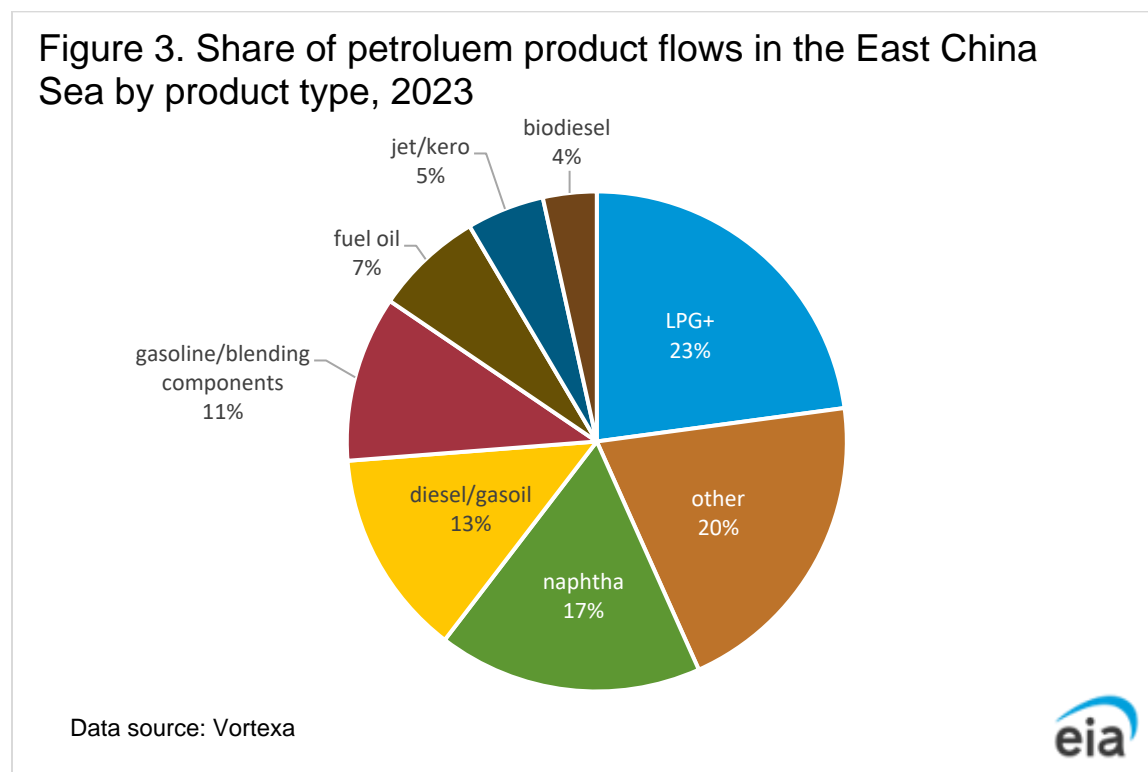
Data source: Vortexa



Petroleum product trade

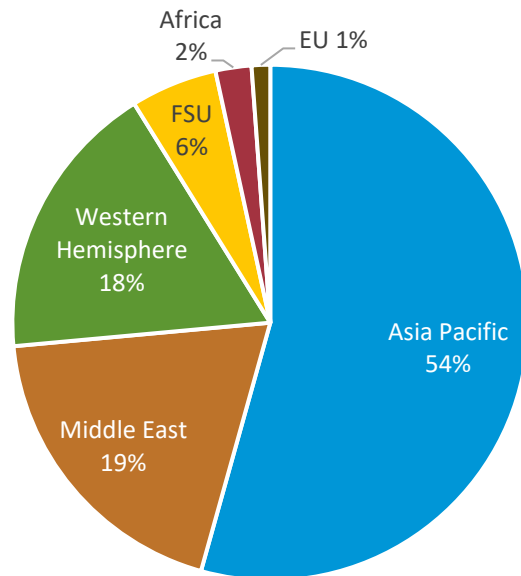
In 2023, close to 9 million b/d of petroleum products, nearly one-third of global petroleum products trade, went through the East China Sea. China (38%), South Korea (19%), Japan (8%), and Singapore (6%) were the top importers of petroleum products that went through the East China Sea.³⁶

Liquefied petroleum gas (LPG) represents 23% of the petroleum products that went through the East China Sea in 2023, followed by naphtha (17%), diesel (13%), and gasoline (11%) (Figure 3). China was the top importer of LPG globally in 2023 (1.4 million b/d), mainly because of its petrochemical sector and growing propane dehydrogenation capacity.³⁷ Japan (0.4 million b/d) and South Korea (0.3 million b/d) were the third- and fourth-highest importers, respectively. South Korea (first), Japan (second), and China (fourth) were also in the top five importers of naphtha.³⁸



The Asia Pacific region was responsible for 54% of petroleum product maritime shipments in the East China Sea in 2023 (Figure 4). Although the western hemisphere produced 18% of the petroleum products that passed through the East China Sea, the United States (1.3 million b/d) was responsible for most of those petroleum products (Figure 5)³⁹ in 2023.⁴⁰

Figure 4. Share of petroleum product flows in the East China Sea by origin region, 2023

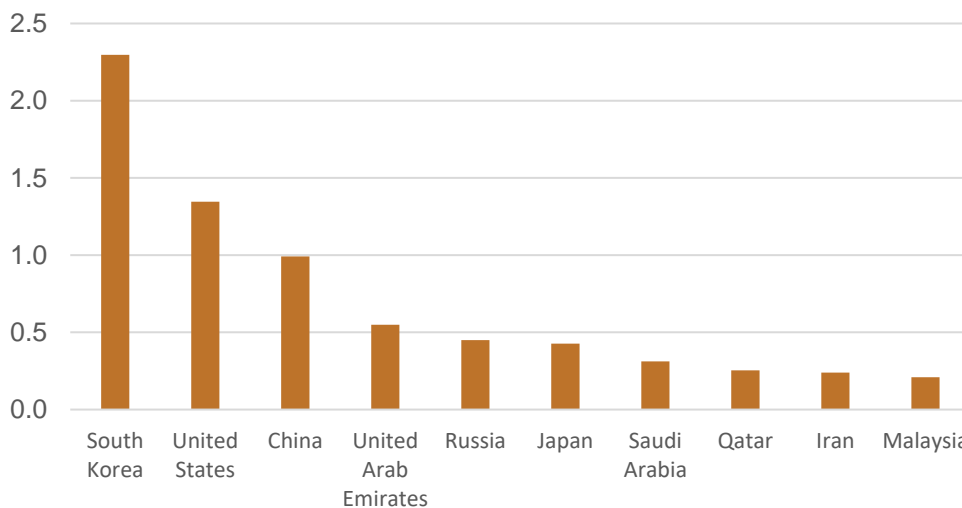


Data source: Vortexa
 Note: EU=European Union, FSU=Former Soviet Union



Figure 5. Top 10 origins of petroleum product in the East China Sea, 2023

million barrels per day



Data source: Vortexa

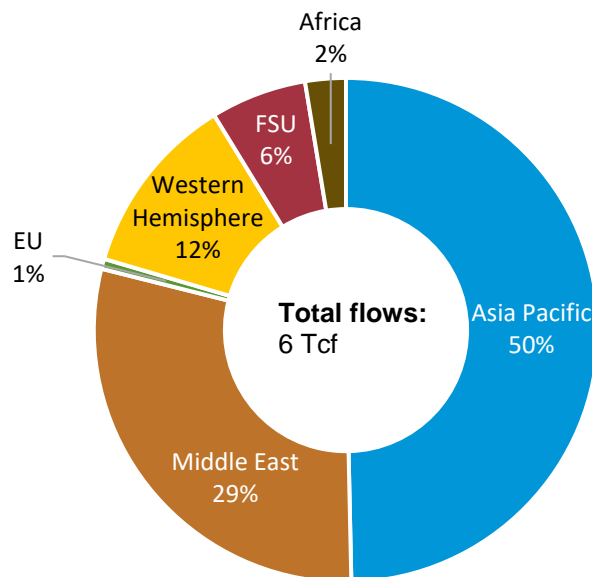


Liquefied natural gas trade

In 2023, 6.0 Tcf of LNG passed through the East China Sea, which was over 31% of global LNG trade. China was the destination for most of the LNG (2.3 Tcf) that went through the East China Sea, followed closely by South Korea (2.1 Tcf) and Japan (1.2 Tcf). China, Japan, and South Korea were also the three top importers of LNG in the world in 2023.⁴¹

The Asia Pacific region and Middle East were responsible for 79% of LNG exports that went through the South China Sea in 2023 (Figure 6). Australia, Qatar, and Malaysia were the sources for 64% of LNG that entered the East China Sea (Figure 7). Australia (second), Qatar (third), and Malaysia (fifth) are in the top five highest exporters of LNG in the world.⁴²

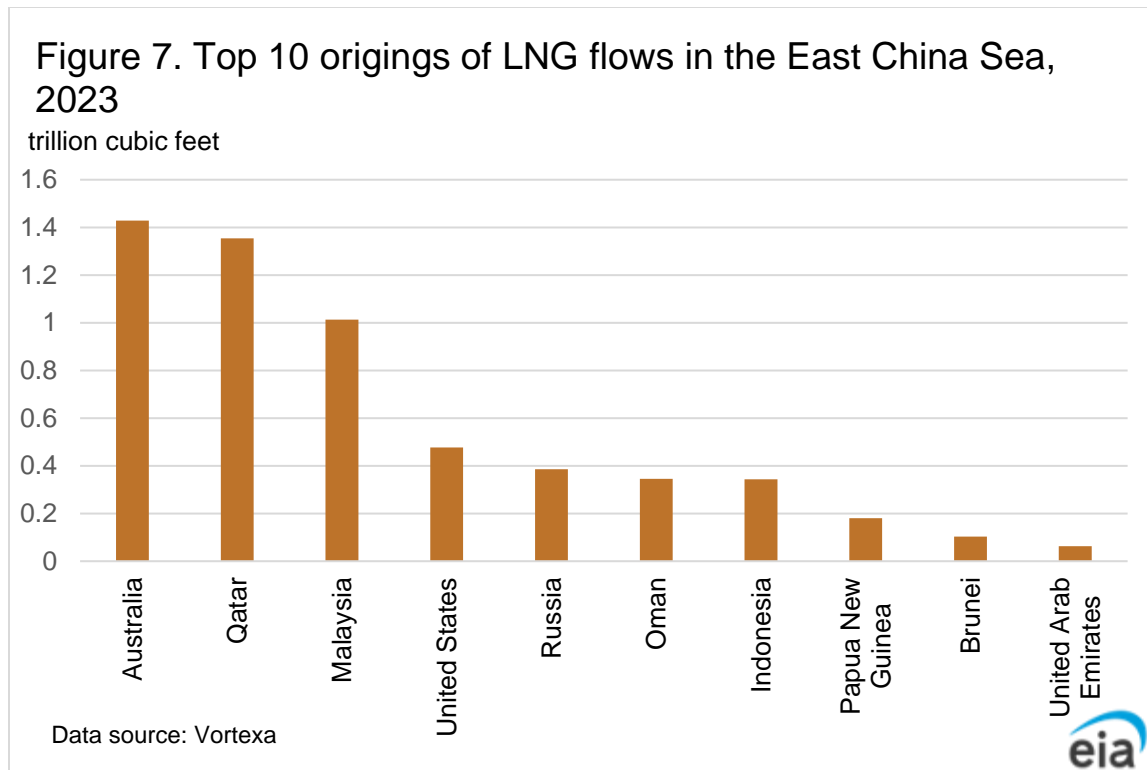
Figure 6. Share of LNG flows in the East China Sea by region, 2023



Data source: Vortexa

Note: FSU=Former Soviet Union, EU=European Union, Tcf=trillion cubic feet





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