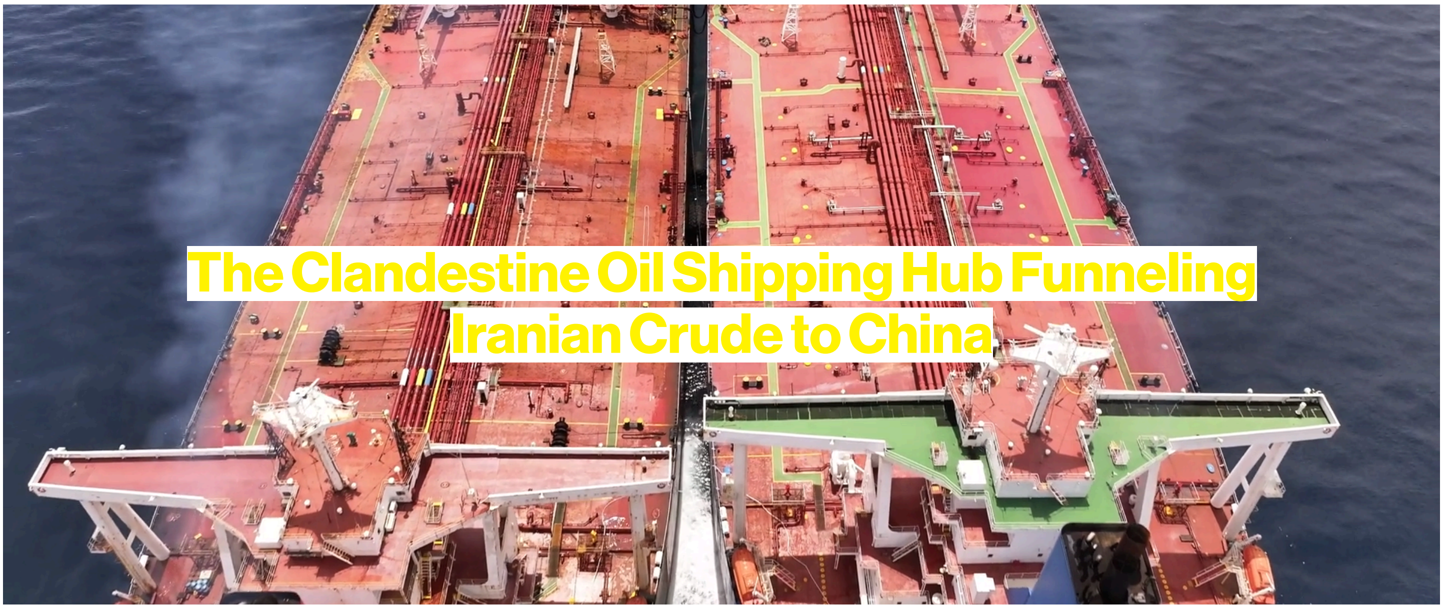


The Clandestine Oil Shipping Hub Funneling Iranian Crude to China

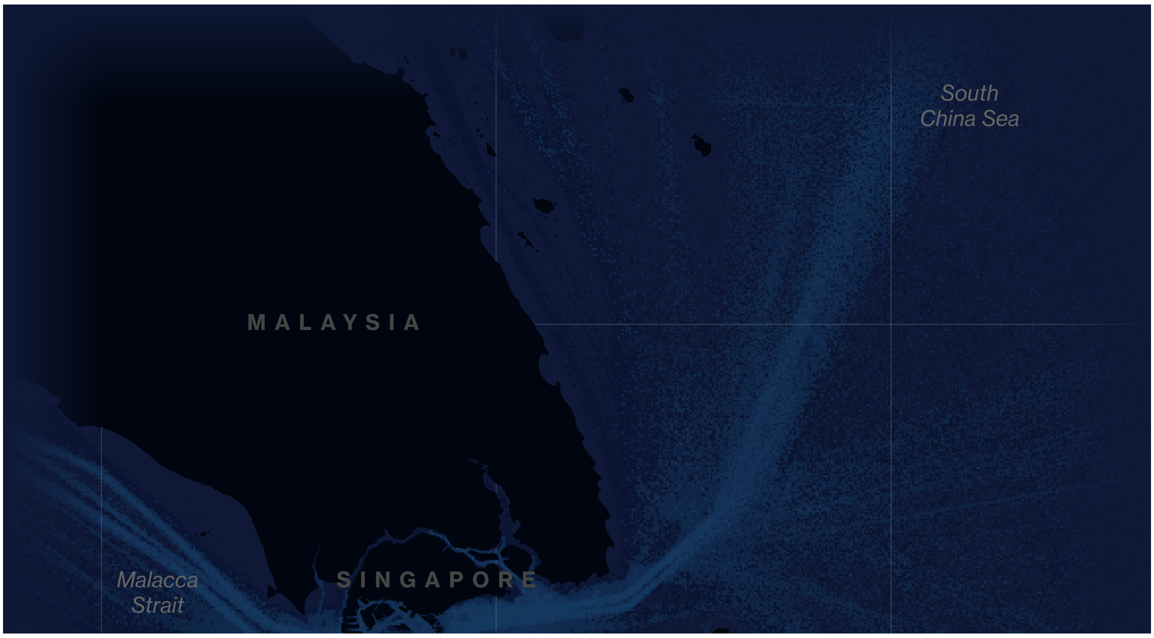
Tankers Titan and Win Win off the coast of Malaysia on Oct. 4. Videographer: Joshua Paul/Bloomberg

A burgeoning group of dark fleet vessels operating with impunity on the edge of a major maritime thoroughfare is moving hundreds of millions of barrels of sanctioned oil — and risking an environmental catastrophe.

By Serene Cheong, Clara Ferreira Marques, Weilun Soon, Krishna Karra and Yasufumi Saito for **The Big Take**

Forty miles east of the Malaysian peninsula sits the world's largest gathering point for dark fleet tankers. Aging ships, often operating under flags of convenience and without insurance, come here daily to transfer cargo away from prying eyes. It's how billions of dollars of sanctioned Iranian oil finds its way to China annually – even though the country, officially, hasn't imported a drop in more than two years.

A Bloomberg analysis of nearly five years of satellite images from the hotspot shows the vast size of the shadow industry that's developed as the US has tightened its sanctions on Iran.



Source: Bloomberg analysis of satellite imagery
Note: Sampling research conducted Jan. 1, 2020 to Oct. 4, 2024

Operators are likely transferring oil between ships in this area at least twice as often as they were in 2020, according to a Bloomberg News analysis of ship proximity on days with readily-available satellite images. On the busiest days, more than a dozen such separate rendezvous were spotted.

It’s impossible to gauge precisely how much oil is moving via this channel. But even making conservative assumptions about tanker size, the data suggest some 350 million barrels of oil changed hands in this hotspot in the first nine months of this year.

Taking into account the average oil price for 2024 and the discount applied to sanctioned crude, that amounts to more than $20 billion. The true value is likely far higher.

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Most is Iranian in origin, according to seven people familiar with the matter working in the oil industry, shipping or maritime security. Vessels checked by Bloomberg linked back to Iranian cargoes. (The route from Russia would make little economic sense.)

All data is based on days where the satellites passed over the site which occurred about a third of the time. Bloomberg applied a custom ship-detection algorithm to these images to classify vessels as single ship or side-by-side based on the unique shape formed during transfers.

Read our methodology at the end of the story

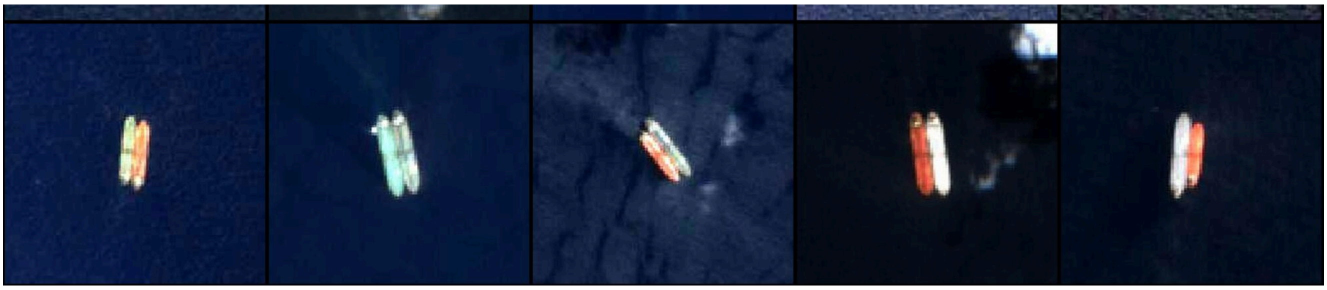

Photo collage of satellite images depicting ships in the side-by-side position that usually indicates a ship-to-ship transfer. Source: European Space Agency

It's possible some of the ships operating in this area are unconnected to the dark fleet. But multiple maritime security experts and ship brokers said there was no clear reason why legitimate operators would conduct transfers so far from the coast where risks and logistical costs are high.

For Tehran, in need of revenue and desperately short of willing buyers, the South China Sea gambit is a means of survival. For China, which isn't bound by and doesn't recognize US-imposed curbs on Iran, the gymnastics of this network of intermediaries and shell company-owned vessels offers a way for its small refineries to access cheap oil. It also conveniently shields key Chinese corporations from secondary sanctions. (The US can restrict or exclude entirely access to its financial system for any company or person found trading with Iran.)

"All of this does give China plausible deniability," said Erica Downs, Senior Research Scholar at the Center on Global Energy Policy at Columbia University, who specializes in Chinese energy markets and geopolitics. "If they want to say they don't import Iranian oil, they can."

The maritime hub is a direct threat to Western efforts to curb revenue going to Tehran, Moscow and Caracas and an illustration of why sanctions are so hard to enforce. US President-elect Donald Trump has said he plans to increase pressure on Iran upon returning to office, but these extensive networks that move dark oil around the globe typically operate without the overt involvement of large entities. The situation was a source of frustration even for the current US administration, which called on Malaysia to do more to tackle gaps such as this one, with little success.

The Growing Flotilla

Source: Bloomberg analysis of satellite imagery

The Chinese Ministry of Foreign Affairs, without commenting specifically on the oil transfers, said its trade with Iran is reasonable and legal, and should be respected and protected.

Iran's foreign and oil ministries, the US Department of the Treasury, Malaysia's Ministry of Foreign Affairs and the Prime Minister's Office did not respond to requests for comment.

There are other associated, and no-less-urgent, concerns, too. Maritime security experts say this motley group of vessels, moving oil with minimal checks, means a potentially devastating spill is only a matter of time. Legitimate shipowners, meanwhile, fret over the risks to their fleet from vast numbers of uninsured dark ships transiting through busy waterways with their transponders not infrequently switched off. That makes them hard to detect, say at night or in a storm, and increases the risk of a collision.

"The scope and scale of the illicit ship-to-ship transfers here is much larger than in other locations," said Charlie Brown, a Singapore-based maritime security expert who serves as senior advisor at advocacy group United Against Nuclear Iran. "There's the geographic advantage, the generally good weather – and the ability to do it without the authorities intervening."

Tankers at sea in the waters east of Malaysia. Photographer: Ore Huiying/Bloomberg

The Strait of Malacca is the world's busiest fuel transport artery. The waters around it have long been packed with extensive, legitimate, passing trade, from oil tankers to container vessels and fishing boats.

But since the invasion of Ukraine and subsequent Western measures to limit Russia's energy revenues, the global dark fleet has expanded dramatically. Activity has surged in key offshore transfer points, including along the Greek coast, the Gulf of Oman and just beyond this thin strip of water between Malaysia and Indonesia.

Here, the grouping serving Iran has swollen. Like their compatriots elsewhere, they seek to avoid ports and territorial waters where oversight or monitoring are more aggressive.

The South China Sea cluster is just far enough from Singapore, Malaysia and Indonesia, that tankers can skirt the enforcement capacity of all three coastal nations. They loiter instead in Malaysia's exclusive economic zone or EEZ – an area where the country has jurisdiction over natural resources, but limited control beyond that.

Legal vessels can and do also use the area. But much of the tight cluster bears the hallmarks of the dark fleet. They are operating at 20 years old or more – an age at which most legitimate vessels would have been scrapped – and with insurance from unknown entities or even Russia's Ingosstrakh.

Flag states include landlocked Eswatini and Mongolia, or others listed as concerning by the International Maritime Organization (IMO).

Over the month of October there were an average 114 tankers in the heart of the group, according to data on Starboard Maritime Intelligence. On the busiest days, there were seven vessels in the cluster that had been at sea for over a year, a red flag, and at least 10 under US sanctions, including several listed in early October.

Titan and Win Win side-by-side in waters east of Malaysia on Oct. 4, preparing for a ship-to-ship transfer. Photographer: Ore Huiying/Bloomberg

The Titan and The Win Win

When Bloomberg reporters arrived on site in early October, on a supply vessel chartered for the seven-hour journey from Singapore, the huge scale of the operation was clear. Dozens of huge ships, some more than 1,000 feet long, loomed out of the haze.

Close to the tip of the cluster, two dark fleet tankers sat side-by-side, preparing for oil to be transferred from one hold to the other. Sitting low in the water, laden with crude, was the 21-year-old Titan, a Cameroon-flagged vessel known to have transported Iranian oil. The Titan is infamous within shipping circles. At a major inspection in Qingdao, China in April 2023, it was detained after more than 20 deficiencies were found, in areas ranging from lifeboats and fire safety to documentation and pollution prevention, according to the Equasis shipping database.

It has no known insurer, no known beneficial owner, and the only listed contact details for its registered owner are a PO box address in Seychelles. A Bloomberg letter requesting comment was returned with the address not found.

A review of the ship’s public digital record shows that it was around the Strait of Hormuz on Sept. 5. It stopped short of entering the waterway and instead began to sail for more than a week in circles, a maneuver that’s often the tell-tale sign that the vessel is engaging in ship-to-ship transfer.

Commodity analyst Kpler said it believes the vessel had in fact received a cargo from another tanker, which had previously loaded at Kharg Island, the site of Iran’s main export terminal.

Titan then reappeared loaded with oil, and made its way towards Southeast Asia, often making impossibly straight lines of navigation in the open seas. By early October it was traversing the Strait of Singapore eastward. Ship-tracking data and satellite images analyzed by Bloomberg show the vessel has repeatedly plied the same route from the waters near Iran to the South China Sea.

Satellite images show it alongside the Win Win by Oct. 3. Win Win's route provides the other half of the puzzle, traveling between Shandong province and the South China Sea. On Sept. 19, the 22-year-old Panama-flagged vessel was anchored at a terminal in the bustling port of Qingdao.

Sources: IHS Markit & Woodmac, Bloomberg reporting
Note: Routes are approximate

Win Win's signals showed it made an impossible linear journey to end up in the waters off northeast Taiwan by late September – and eventually heading south. Such tracks occur when a ship switches off its transponder and sails dark, before turning it on again much further away. After its Malaysian interlude, Win Win headed toward Dongjiakou, just south of Qingdao, a port used by China's private refiners.

An official at its owner's registered London address, which houses multiple companies, declined to comment on clients or to provide contact details.

Titan, empty after that maneuver, later received another cargo from an Iranian vessel, according to Kpler. As of early November, it was off the coast of northern China.

Officially, none of this sort of thing happens. According to customs data, China hasn't imported a drop of oil from Iran since mid 2022. Volumes that dropped steeply after US restrictions were reintroduced in 2018 supposedly petered out entirely, those records show. In reality, analyst and academic estimates and ship tracking data suggest Chinese entities buy about 90% of Iran's exports. That amounts to about 10% of China's imports.

Escalating Risk

Other evidence backs up this picture of escalation and scale. For the first nine months of this year, China's imports from Malaysia – as much of this siphoned oil ends up categorized – were close to eight times what they were for the same period in 2018, just before US sanctions were fully reimposed. In 2023, China imported more than 1.1 million barrels a day from Malaysia, customs data show, far in excess of the Southeast Asian country's entire crude production of 508,000 barrels a day that same year, according to the Energy Institute Statistical Review of World Energy.

TankerTrackers.com, which closely monitors all ship-to-ship activity, counts 409 ship-to-ship sightings in the Riau Island area – a bigger region than the waters analyzed by Bloomberg – from January to the end of October. That compares to 279 for the whole of 2023, says Samir Madani, co-founder of the vessel-tracking outfit.

"It's quite remarkable that the numbers are up so much this year," said Madani. "That they are out there doing this unassisted, without tugboats, without protection, is a red flag."

The transfer of oil between vessels at sea is not in itself illegal. There are above-board reasons to engage in the practice and companies use them sometimes to avoid port congestion, to access local and shallower harbors, or to cope with a tight schedule. But most of these activities tend to take place in or near ports or in designated areas and authorities are notified in advance, as required by the IMO and by international rules to prevent pollution at sea. Skilled personnel, oversight and checks are required.

Source: Bloomberg reporting

None of that transparency is apparent here. Only the usual, basic hose and fenders are in evidence. (Oil slicks of varying sizes are frequently spotted in the waters around southern Malaysia, though it is unclear specifically what has caused them.)

A substantial spill could be catastrophic for the coastal nations whose economies rely on tourism and fishing. For context, a small accident in Singapore – after a collision between two legitimate vessels inside the harbor in June led to 400 tons of fuel leaking – took the wealthy city-state months to clear. One very large crude carrier alone can ferry 700 times that much crude.

According to the Centre for Research on Energy and Clean Air, a non-profit think tank focused on energy and air pollution, the cost of a cleanup in Southeast Asia could reach more than $16,000 per metric ton – and a very large crude carrier, or VLCC, one of the most commonly used tankers, can carry some 300,000 tons.

The lack of controls has already had major consequences. An explosion in May last year aboard the Pablo, a dark vessel which had been observed in Iranian waters, killed three crew members. The wreckage then sat for months off the coast of Malaysia, burnt and unclaimed. Salvage was eventually arranged, at a multi-million dollar loss. The owner's agent appeared long enough to make a partial payment in cash, according to one shipping source who asked not to be named because the matter was private. But the agent later vanished.

Maritime law requires vessels engaging in ship-to-ship transfers to notify coastal countries of their intent and follow agreed procedures. Photographer: Ore Huiying/Bloomberg

There was another incident in July this year between an oil products tanker and a dark fleet crude tanker, resulting in fires on both. Satellite images then showed the partly charred dark fleet ship moving away from Malaysia. It was eventually detained by Malaysian authorities, though it has since been spotted moving north toward China.

More incidents in the crowded waters off Malaysia's Johor state are only a question of time, say ship brokers, maritime insurance and legal experts. For legitimate shipowners, the question of what happens should they get into an accident involving a shadow vessel is a major concern, said Khalid Moinuddin Hashim, managing director at Precious Shipping Pcl, a Thai-listed shipping company with 40 vessels.

"The dark fleet vessels are carrying out their sanctioned trades with impunity," said Hashim, a veteran shipowner with more than four decades of experience. "It puts at risk other owners, including dry-bulk owners like us, who face untold misery should our ships be involved with these uninsured tankers plying the sanctioned trades, especially in the event of an oil spill."

Mutual-insurance associations are also girding themselves for an incident involving one of the ships that operate outside existing protection and indemnity insurance, and of the International Group of P&I Clubs that covers the majority of marine vessels globally.

Tony Paulson, West of England P&I's head of Asia, says the clubs used to insure about 95% of the world's blue water tanker fleet. But, in an unintended consequence of the sanctions regime against the transport of Russian oil, around 800 tankers have left in recent years and they now cover about 80%.

"To see several hundred tankers carrying crude oil potentially operating in an ecosystem outside the accepted norms of the industry should be a concern for states," said Paulson.

Lines of Responsibility

Exactly what can be done about the fleet is a fraught question. Malaysia is active in detaining illegally anchored vessels close to the coast, and particularly to the west of peninsular Malaysia, at the entrance to the Strait of Malacca. Beyond that, though, a combination of alternative priorities, insufficient capacity and all-too-real restrictions on its enforcement rights beyond territorial waters means the monitoring rapidly drops off.

Malaysia, like many countries in Southeast Asia, is reluctant to apply restrictions they have not signed up for, and has little interest in moralizing arguments. The result has been public exasperation from Washington, which is eager to restrict cash flowing back to Tehran, even if it doesn't want to choke supply to the point of pushing global prices higher.

On a visit to Kuala Lumpur in May, US Treasury officials said Iran's capacity to move oil was dependent on Malaysian service providers, and vowed to raise the issue with the government. Last month, again the message was conveyed that coastal nations should consider the risks.

Yet there is little evidence that the message is being acted on. Malaysia has close ties with Iran and important trade links to China. It also has competing maritime concerns that matter more domestically – including combating fuel smuggling and people trafficking. Prime Minister Anwar Ibrahim, in response to Washington's envoys, denied earlier this year that any transshipment of Iranian oil took place at all. There was "not one shred of evidence," he said, adding Malaysia also had limited monitoring capacity.

That's partly true. "Malaysia has arguably one of the most poorly resourced navies of any of the coastal states in the region," said Greg Poling, director of the Southeast Asia Program and Asia Maritime Transparency Initiative at the Center for Strategic & International Studies. But it's not the whole story. "Anwar's narrative is also that Malaysia is friends with everyone."

There's not much appetite for getting tangled up in what is seen as someone else's fight, Kuala Lumpur officials and academics agree. (Like China, Malaysia isn't bound by US sanctions.) Its neighbors, who are also at risk from any accident, have likewise shown limited desire to get involved.

The Singapore Maritime and Port Authority said in a statement it had strict regulations on activities that take place in its waters and it implements all UN Security Council resolutions in full. A spokesman added that there was no requirement for it to be informed of STS transfers conducted outside its waters.

The Indonesian Maritime Security Agency and the Coordinating Minister for Political, Legal and Security Affairs didn't respond to requests for comment.

In the EEZ, jurisdiction is also complicated. While Malaysia's coast guard does have the right to approach – to ask questions, or check papers – actually boarding vessels generally requires either provable environmental damage, say a spill actually underway, or cooperation from the flag state. "Its enforcement capacity is somewhat limited under international law, particularly outside its territorial waters," said Jeremy Joseph, managing partner at law firm Joseph & Partners in Kuala Lumpur.

And then there's the question of whether there is really a financial incentive to act. In the early 2000s there was a notable rise in piracy in the Malacca Strait. But it was only after Lloyd's Joint War Committee classified the area as a "high-risk war zone" in 2005, impacting insurance costs and image, that regional powers were galvanized to take meaningful action. The Malacca Strait Patrol, a coordinated policing exercise, were formalized the year after. These were successful enough in reducing incidents of piracy that Lloyd's removed its ultra-high risk classification the same year.

The threat of secondary sanctions is not yet perceived to be sufficient. Nor is the risk that in the event of a spill or a collision there is unlikely to be an insurer liable to pay compensation.

Legitimate shipowners fret over the risks to their fleet from vast numbers of uninsured dark ships transiting through busy waterways with their transponders not-infrequently switched off. Photographer: Ore Huiying/Bloomberg

The dark fleet flotilla takes full advantage of the ambiguities. Vessels ferry oil, transfer cargo and, when necessary, receive supplies and crew, aided by middlemen and fixers. There are suspicions also of other, criminal, exploitation in the same maritime gray zone and using the same dark fleet tactics. A Chinese-flagged vessel was detained last year over the suspected illegal scavenging of two World War Two wrecks, the HMS Prince of Wales and the HMS Repulse. The vessel was detained again in July before later being released. Its owners did not respond to a request for comment.

The closest coordinating body is the International Fusion Centre in Singapore, a maritime security network hosted by the Singapore navy since 2009 and supported by a range of Southeast Asian countries and Western nations, including the United Kingdom and the US. It gathers information on the clandestine trade from regular reports provided by its liaison officers and the media. As a consensus-led, diplomatic body that relies on its links to partner nations, the IFC cannot act without being invited to do so by Malaysia. Its victories, therefore, have been in far less politically charged areas – including piracy, illegal migration and smuggling. A spokesperson for the IFC declined to comment.

To get any traction on its side, the US will almost certainly have to shift from chastising statements to spending, said CSIS' Poling. "Make this cheap and easy for coastal states, with capacity building and by sharing the burden – not by naming and shaming."

The US would also need to be prepared to grapple with what impact any meaningful reduction in supply would have on the overall price of oil. While Iran has said that the US presidential election outcome has "no clear relevance" and sees no cause for concern from Trump's reelection, pressure on Tehran is expected to increase. Harsher sanctions for Iran and anyone doing business with them would drive up costs, raise hurdles and push more trade to older, shadow vessels – but it is unlikely to stop oil heading to China.

Trung Nguyen, research fellow with the National University of Singapore's Centre for International Law, said that there are things which can be done. "Dark ships have evolved from an economic loss to a security and safety threat for coastal states."

The place to start would be increased monitoring: Maritime law requires vessels engaging in ship-to-ship transfers to notify coastal countries of their intent and follow agreed procedures. It's also a breach to engage in pollution. So the authorities could start policing more strictly – if they choose.

Absent any action, a region of millions that depends on tourism, sea-going trade and fishing – and one of the world's busiest maritime highways – will be left to wait for the worst to happen. Nations typically respond only when there's been a disaster, as seen in the case of piracy or marine pollution, Nguyen said. When it comes to dark ships and the potential risks they pose, countries "don't have to repeat that mistake."

With assistance from Kok Leong Chan, Alex Longley, Golnar Motevalli, Chandra Asmara, Sarah Chen, Ben Bartenstein, Adrian Leung and Julian Lee

Edited by Emily Cadman and Jane Pong

Methodology

Bloomberg's analysis of the changing nature of the oil trade in the South China Sea has concentrated on a 3,670 square kilometer (1,417 square miles) sector of Malaysia's exclusive economic zone, east of the southernmost point of the Malaysian peninsula. The coordinates of the area of interest were defined based on initial data from TankerTrackers.com, an independent online service that tracks and reports dark-fleet activity, and Bloomberg ship-tracking data.

To analyze vessel traffic and oil transfers, Bloomberg News extracted 566 days of satellite imagery between Jan. 1, 2020 and Oct. 4, 2024, from open-access images captured by Sentinel-1 and Sentinel-2 satellites, operated by the European Space Agency. We then applied a custom ship-detection algorithm to these images and classified images of ships into "single ship" or "side-by-side ships" based on their unique shape. The ships' locations and timestamps were captured and used in the sampling analysis.

Not all days were captured, as either the satellites did not pass over the area of interest or despite their combination of optical and radar imaging, the pictures weren't clear. Over the entire period, the analysis covered 566 days out of 1,739.

On those days, the analysis captured 2,006 ships that were in a side-by-side formation — the positioning indicative of a ship-to-ship oil transfer — out of a total of 25,699 ships moving through the area. Out of 566 days for which we have imagery, we confirmed at least one ship-to-ship shape in 319 days.

The busiest day in our analysis, July 15, 2024, added up to 20 potential transfers. Out of the ten busiest days, six were in 2024.

In the period between Jan. 1 and Oct. 4, 2024, we identified 570 side-by-side ships, equating to 285 ship-to-ship transfers. While we cannot exclude the possibility that some were legitimate ships, maritime experts say there is little to no reason for regular businesses to operate like this given the extra costs associated with carrying out such operations outside a port.

Iranian oil often moves on very large crude carriers. Taking a conservative composition of the fleet — assuming it is one-third each VLCCs, Suezmax and Aframax, a credible mix — that would imply some 350 million barrels of oil moving.

Multiplied by the average oil price for 2024, once the discount for sanctioned crude has been applied, that adds up to over $20 billion.

While it does happen that Iranian oil is moved more than once from one vessel to another and ship-to-ship transfers can last 48 hours, raising the risk of double-counting, the size of vessels, the scale of the actual cluster and the cloud-covered days mean this figure is likely to be an underestimate.

It is not possible to fully ascertain the origin of every cargo being transferred in this region, but maritime security and ship-broking sources say the vast majority is from Iran, supplemented by small volumes of Venezuelan and occasional Russian loads. Vessels checked by Bloomberg linked back to Iranian cargoes.

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