Dan-Bunkering
Ride the Next Wave

Port of Singapore

Summer, 2025

Latitude
N 55°30'23.8458"
Longitude
E 9°43'44.7468"

The port of Singapore

In the next few issues, we explore developments in biofuels and LNG from key sourcing centres worldwide. In this edition, our specialist shares insights from the Port of Singapore — a vital global hub for maritime fuel.

As one of the world's busiest flow ports, Singapore plays a central role in international shipping, offering advanced infrastructure and a growing focus on alternative fuels.

I. LNG

The LNG bunkering market in Singapore and Malaysia continues to develop steadily, although infrastructure constraints and supplier consolidation have kept the market relatively tight. As alternative fuel adoption grows, both countries are working to expand their capacity, improve operational flexibility and support long-term LNG-fueled vessel strategies.

1. Infrastructure

Singapore's primary LNG infrastructure is anchored by the SLNG Terminal, commissioned in 2013. While it plays a crucial role in national energy security, supplying approximately 50% of Singapore's natural gas demand (primarily for power generation), only a small fraction of its throughput is used for marine bunkering. Loading LNG Bunker vessels (LBV or small scale LNGC) at this terminal is limited by berth availability, particularly when larger LNG carriers (LNGCs) are unloading cargo, which takes priority over LBV loading operations.

LNG bunkering in Singapore is currently supported by three key vessels: the FuelLNG Venosa (Shell/Keppel joint venture), FueLNG Bellina and the Brassavola, which is shared between Shell and TotalEnergies on an alternating daily basis. Additional flexibility is provided through ship-to-ship transfers from Shell's passing LNG carriers, mitigating loading bottlenecks at the terminal.

Malaysia supports LNG bunkering via Petco, currently using two bunker barges (Paolina Cosulich, Avenir Advantage), which are generally loaded at a Floating Storage Unit (FSU) located at Kukup Anchorage. This floating storage setup was introduced due to congestion at onshore terminals and enables more flexible loading operations near Singapore's western maritime corridor.

Looking ahead, Singapore plans to commission a second LNG terminal by 2030 near Jurong Port. This offshore floating storage and regasification unit (FSRU) is expected to add 5 million metric tons/year in throughput capacity and provide one additional loading berth—though again, the primary focus will be shore-based demand.

2. Availability

LNG for bunkering is available, but with logistical constraints. The physical supply of LNG is generally not a limitation; however, berth access and terminal schedules are tightly controlled and prioritized for industrial or power generation needs. Bunker suppliers must carefully align loading and delivery schedules to avoid costly boil-off losses and optimize barge utilization.

LNG supplies are typically lifted in larger volumes to minimize operational risk and reduce cost per unit, given the high fixed costs associated with each terminal loading . As such, bunkering tends to occur in pre-agreed windows with a strong preference for firm scheduling and compatibility vetting ahead of time.

3. Supply Chain

LNG supplied in Singapore and Malaysia is largely imported from Australia, Qatar, and the United States. There is also limited pipeline gas supply from Indonesia and Malaysia, though this is primarily used for shore-based infrastructure, not bunkering.

In Singapore, LNG supply to bunker barges is handled via ship-to-ship transfers, direct terminal loading, or loading from floating storage (in Malaysia). While the original terminals were built to service national power and industrial demand—not bunkering—the supply chain has adapted in recent years with the use of offshore FSUs and ship-based transfers to support the maritime sector.

4. Pricing and Indexing

LNG bunker pricing in the region is generally indexed to JKM (Japan-Korea Marker) with a premium in USD per MMBtu, reflecting logistics, infrastructure, and handling costs. Pricing across Singapore and Malaysia is relatively consistent due to competitive tension between the ports and suppliers.

Unlike conventional marine fuels, LNG prices across Asia and Europe are broadly aligned, driven by global gas market balances rather than regional arbitrage. As such, there is little price-based "bunker shopping" between regions, and cost differentiation mainly arises from supplier-specific logistics and credit terms.

The LNG bunker market remains somewhat rigid in pricing structure, due to limited competition and infrastructure access. However, as more suppliers enter the market and as the chartering of LNG-fueled vessels becomes more common among smaller players, spot market activity is expected to grow, potentially introducing more pricing flexibility in the future.

5. Operational Handling

Operationally, LNG bunkering in Singapore and Malaysia follows strict procedures involving compatibility checks, tank cooldown planning, and prior approval from port authorities (e.g., MPA in Singapore). While no unique procedures exist beyond global LNG best practices, the need for coordination is high due to the relative novelty of LNG as a marine fuel in these ports.

Suppliers must be notified in advance, and both the supplying and receiving vessels must be vetted for compatibility. Failures to follow procedure—such as tank cooldown mismanagement—can lead to delays, demurrage charges, or safety issues.

Bunker barges can operate on a milk-run basis, supplying multiple vessels from a single loading, provided the logistics and cooldowns are properly managed. However, LNG retention losses (boil-off gas) are a commercial concern, which further pressures suppliers to maintain firm supply schedules.

6. Market Access

Access to the LNG bunkering market remains restricted. Infrastructure constraints, high entry costs, and limited berth availability make it difficult for new players to enter. Furthermore, existing suppliers like Shell (via FuelLNG) and Petco have established significant control over the market, with some preferring to deal directly with major vessel operators rather than through brokers or traders.

Despite this, new players are entering. Singapore is seeing the arrival of new suppliers such as Singfar, Equatorial, and Vitol. However, these entrants must also bring their own bunker barges and LNG supply arrangements to gain MPA approval—highlighting the bundled nature of market access: infrastructure, supply, and vessel all need to align.

Conclusion

Singapore and Malaysia remain at the forefront of LNG bunkering in Asia, but infrastructure bottlenecks and market consolidation have constrained rapid growth. While demand is rising, especially among container lines and dual-fuel vessels, supply-side limitations—particularly berth availability and LNG carrier scheduling—continue to cap expansion.

As regulatory and environmental pressures mount, LNG will remain a key part of the marine fuel mix in the years ahead. However, clients seeking to use LNG should plan well in advance, ensure technical readiness, and be aware of the structured nature of supply windows and pricing mechanics in this market.

II. Biofuels

The biofuels landscape in Singapore is evolving rapidly as the industry adapts to regulatory shifts and growing demand for lower-emission solutions. Singapore has positioned itself as a regional leader in marine biofuels supply, offering a mix of established products and niche solutions across vessel types and operational needs.

1. Availability of Marine Biofuels

In Singapore, the current marine biofuel landscape includes B24 and limited B30 blends with very-low-sulphur fuel oil (VLSFO), alongside a small number of high-sulphur fuel oil (HSFO) options. B100 products—comprising both FAME and HVO—are also available.

It's important to note that HVO does not blend effectively with fuel oil. Due to its chemical characteristics and premium pricing, HVO is primarily offered either as a pure B100 product or in blends with marine gas oil (MGO), where it is more technically compatible. As such, HVO/VLSFO blends are rarely seen in the market.

While regulatory approval now permits Type 1 barges to handle FAME blends of up to B30, the shift toward B30 has been gradual. Most current supply contracts continue to lift B24, and demand for B30 in the spot market remains limited. As a result, few suppliers have adopted B30 as a standard offering, and B24 continues to dominate both term and spot business for the time being.

2. Feedstock and Origin – Singapore

Singapore does not have domestic biofuel production and relies on imports from Malaysia, China, and other Southeast Asian countries. The dominant feedstocks are second-generation waste-based materials, primarily used cooking oil and tallow. POME (palm oil mill effluent), categorized as an advanced waste stream, is also used. POME is less common in Singapore as the Biofuel suppliers state they only use UCOME for now.

However, palm oil itself is not permitted as a marine biofuel feedstock under the FuelEU Maritime or IMO frameworks due to its classification as a first-generation crop-based fuel, which fails to meet the required minimum GHG savings thresholds (65%).

Blending is carried out locally in onshore tanks or floaters approved by MPA. Barge blending is not permitted, and there is no current use of pre-blended imports.

3. Certification, Specifications, and GHG Savings

All marine biofuels supplied in Singapore are certified under ISCC or equivalent sustainability schemes. Deliveries include a Proof of Sustainability (PoS), with the ISCC blue certificate being the standard documentation provided.

In terms of product specifications, most bio-components meet the EN 14214 standard, though this is not always necessary for ISO 8217:2017 compliance. Under ISO 8217:2024, however, EN 14214 becomes mandatory for biodiesel components. HVO, when supplied, aligns with EN 15940 specifications.

GHG savings for biofuels are similar to the default values under the EU Renewable Energy Directive (RED II), typically around 84% for FAME products and 83% for HVO. Certain alternative blendstocks can achieve even higher savings, in the range of 90–95%, enabling more favorable compliance profiles under FuelEU Maritime.

Some FAME products that do not meet the full EN 14214 specification may still be used by the marine sector, assuming they meet critical parameters of that specification. Some Original Engine Manufacturers (OEMs) are becoming increasingly open to such products, provided they are fit-for-purpose and perform well under operational conditions.

4. Storage and Bunkering Logistics

Biofuels are stored and blended in onshore tanks certified under ISCC, with each batch tested and finalized prior to bunkering. These tanks are typically dedicated for B24 or B30 blends, and in some cases for B100 FAME.

Bunkering is conducted via conventional physical barge operators, using the same infrastructure and procedures as for conventional fuels. Biofuels are drop-in solutions, so operational handling remains consistent.

5. Operational Compatibility and Supply Areas

Operationally, marine biofuels are supplied using existing bunker infrastructure. Type 1 barges are used for blends up to 30% FAME, with no significant operational constraints compared to conventional fuels. Offshore vessels have shown interest in B100, particularly HVO, due to its clean-burning characteristics and compatibility with net-zero compliance strategies.

6. Market Structure, Pricing, and Demand Trends

Container vessels and car carriers are currently the most active buyers of marine biofuels in Singapore, with limited involvement from cruise lines. Most contracts are structured on a spot basis, though some larger buyers have secured short- to mid-term agreements of up to three quarters. Long-term contracts beyond one year remain uncommon due to pricing volatility.

Spot market premiums have risen significantly in recent months. B24 premiums, for example, have increased from around $110/MT at the end of 2024 to more than $220/MT in mid-2025. This reflects growing demand, especially from competing sectors such as road and aviation, which often have stronger financial incentives and regulatory mandates. While biodiesel meeting EN 14214 no longer commands a significant price premium relative to FAME that does not meet EN 14214—due to the increased availability of on-spec product—biofuels offering higher GHG savings can command premium prices. This emerging trend reflects the growing awareness of FuelEU Maritime compliance strategies among buyers.

7. Outlook and Strategic Considerations

As IMO targets tighten and FuelEU Maritime ramps up, demand for higher GHG savings and advanced feedstocks is expected to increase. Strategic procurement of fuels with high emission savings could allow operators to reduce their compliance burden or even generate surplus compliance credits.

To stay competitive, the marine sector in Singapore must remain open to using alternative blendstocks that are not only fit-for-purpose but also more cost-effective and environmentally beneficial than conventional EN 14214-compliant biodiesels. Understanding the balance between quality, certification, and compliance value will be key to successful biofuel adoption going forward.