

Platts[®]

S&P Global

Commodity Insights

Asian Methanol Outlook:

Green Methanol's March Towards Lower Carbon Emissions

Esther Ng

Senior Editor

S&P Global Commodity Insights

March 28, 2023



Green Methanol's March Towards Lower Carbon Emissions

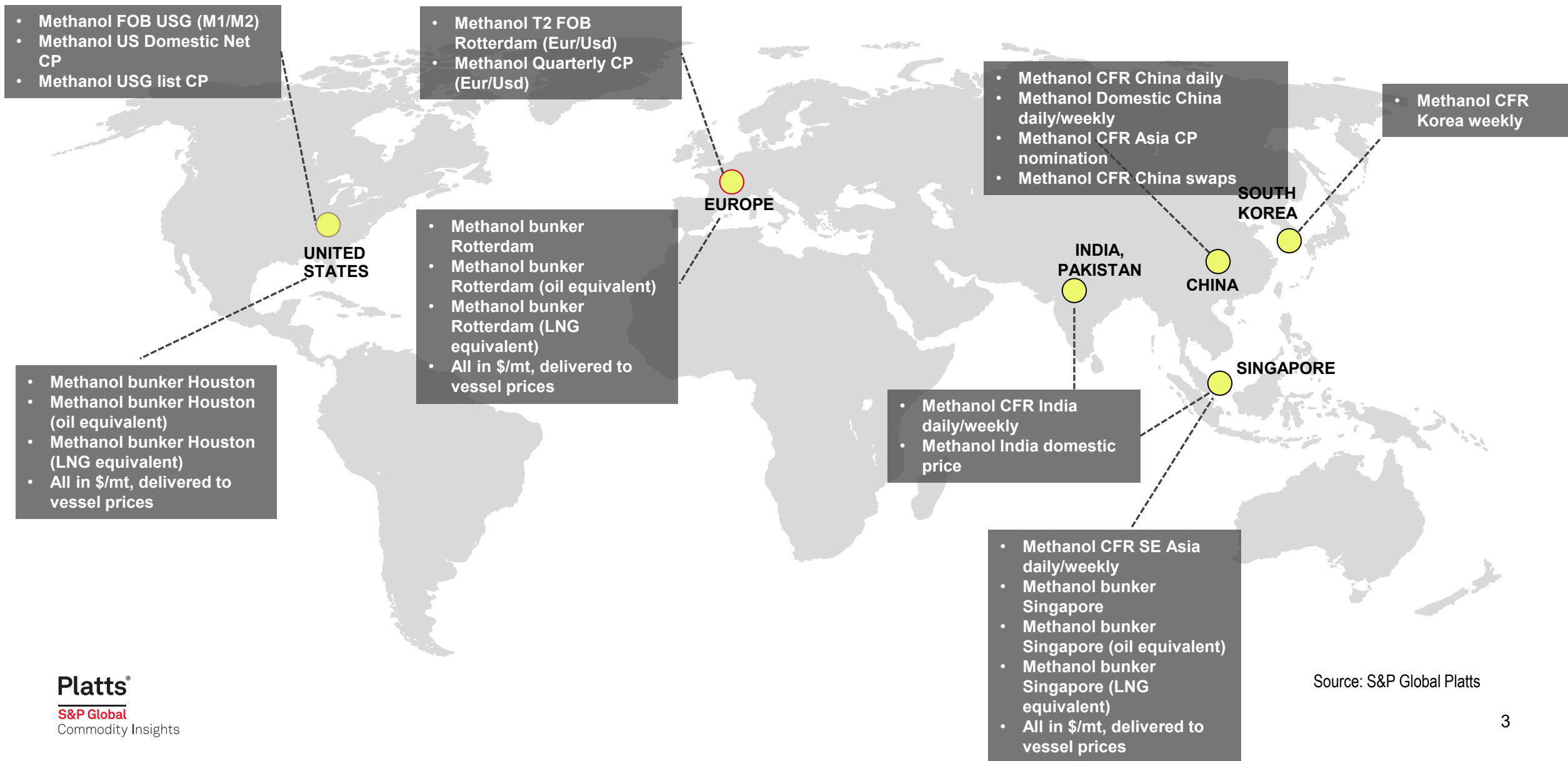
**Ship owners' dilemma: Which one will they use?

**Green methanol developments

**Impact of green methanol on conventional methanol supply demand



Platts Global Methanol Assessments



Platts Asia Methanol Pricing Methodology

	CFR China Physical and swaps	CFR Korea	CFR Taiwan	CFR SE Asia	CFR India and India domestic	China domestic
Assessment window:	Daily physical and swaps assessment at 4:30 pm Singapore time (0830 GMT)	Weekly assessment at 4:30 pm Singapore time (0830 GMT) on Fridays		Daily physical assessment at 4:30 pm Singapore time (0830 GMT)	Daily physical assessment at 4:30 pm Singapore time (0830 GMT)	Daily physical assessment at 4:30 pm Singapore time (0830 GMT)
Cargo size:	5,000-10,000 mt	3,000-5,000 mt	2,000-5,000 mt	2,000-5,000 mt	5,000-10,000 mt and 100-300 mt (domestic)	200-500 mt
Ports	Nantong, Taicang, Jiangyin, Zhangjiagang, Ningbo	Ulsan, Yeosu, Pyeongtaek	Mailiao, Kaohsiung, Taichung	Indonesia (Dumai); Malaysia (Port Klang, Kuantan); Singapore (...)	Kandla, Mumbai, Mangalore, Cochin and Ex-tank Kandla port (domestic)	Ex-tank Nantong, Taicang, Jiangyin, Zhangjiagang, Ningbo
Credit terms	L/C 60-90 days	up to L/C 30 days	up to L/C 30 days	L/C 30 days		at-sight basis with cash payment
Quality Specification	Minimum purity of 99.85%; maximum water content of 0.1% by total weight; maximum ethanol content of 50 ppm					Minimum purity of 99.85%; maximum water content of 0.1% by total weight, maximum ethanol content of 100 ppm

Renewable marine fuels

Ship owners' dilemma:
Which one will they use?



Conundrum of choice

- Ammonia
- Methanol
- LNG
- Hydrogen



Methanol: a promising decarbonizing bunkering fuel

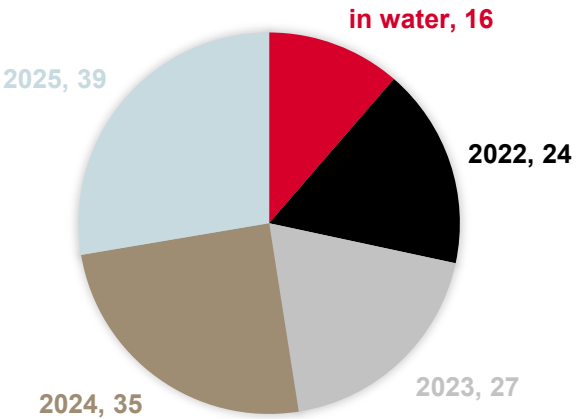


Opportunities for methanol bunkering

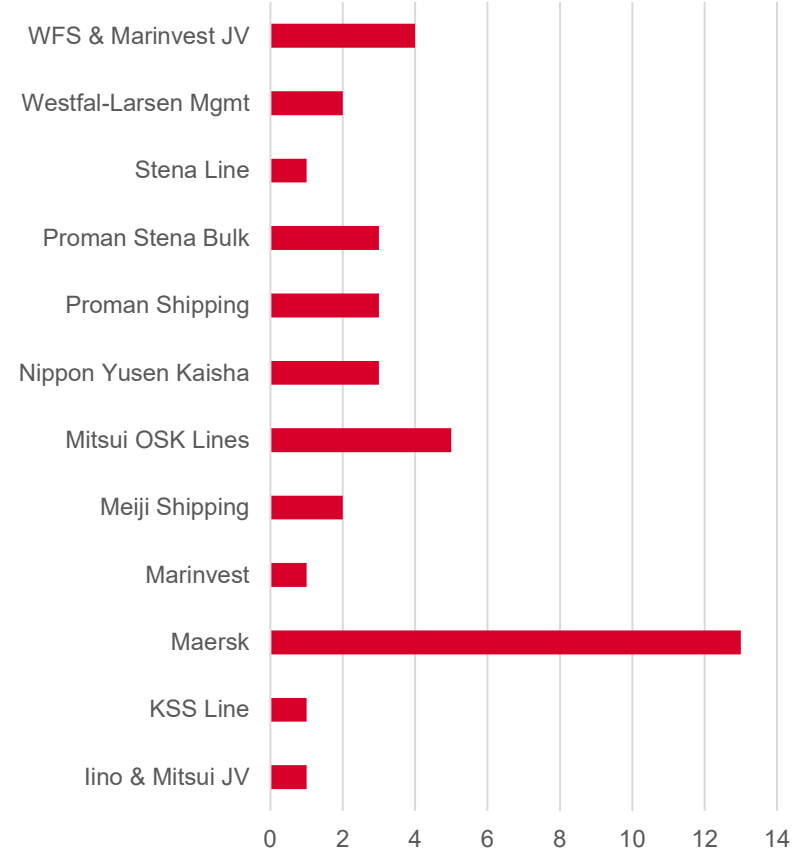
- Proven marine fuel – 16 vessels in service; many more vessels on order. Waterfront Shipping, Maersk, Proman, Stena leading the way
- Low storage tank costs, add-on methanol components to 2-stroke engine
- IMO 2050 regulations, approved interim guidelines for use of methanol in ships in Nov '20
- Renewable and bio-methanol provide a pathway to reduce GHG emissions up to 95% over the lifecycle.
- Methanol has remained cost-competitive with marine gasoil (MGO) over the past 10 years on an energy equivalent basis.



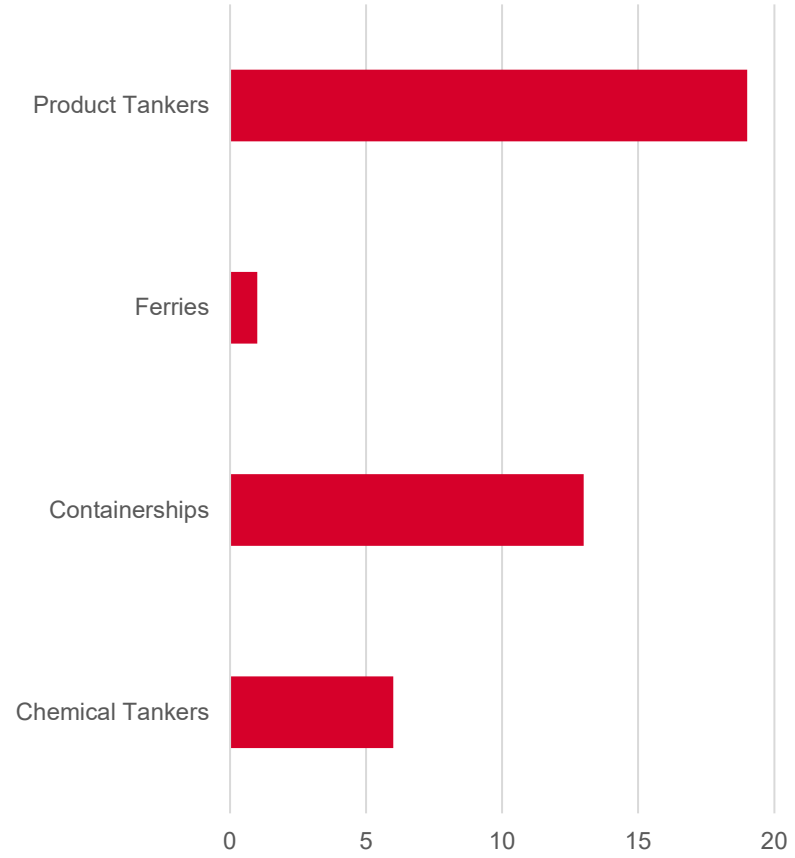
Methanol fuelled vessels



Count by Owners



Fleet Type



Source: S&P Global Commodity Insights Data

Limited infrastructure hampers fuel transition, but it shouldn't...

LNG bunkering port

- ⚠️ Planned
- ⚠️ Operational

Methanol bunkering port

- ⚠️ Planned

LPG bunkering port

- ⚠️ Operational

Hydrogen bunkering port

- ⚠️ Planned
- ⚠️ Operational



- Potentially available at over 100 ports as a marine fuel

- 47 ports have methanol storage of 50,000 mt

- 90 methanol plants globally, with combined production capacity of 110 million mt/yr

Source: Platts, Sea-LNG, WLPGA and Offshore Energy

Green methanol developments

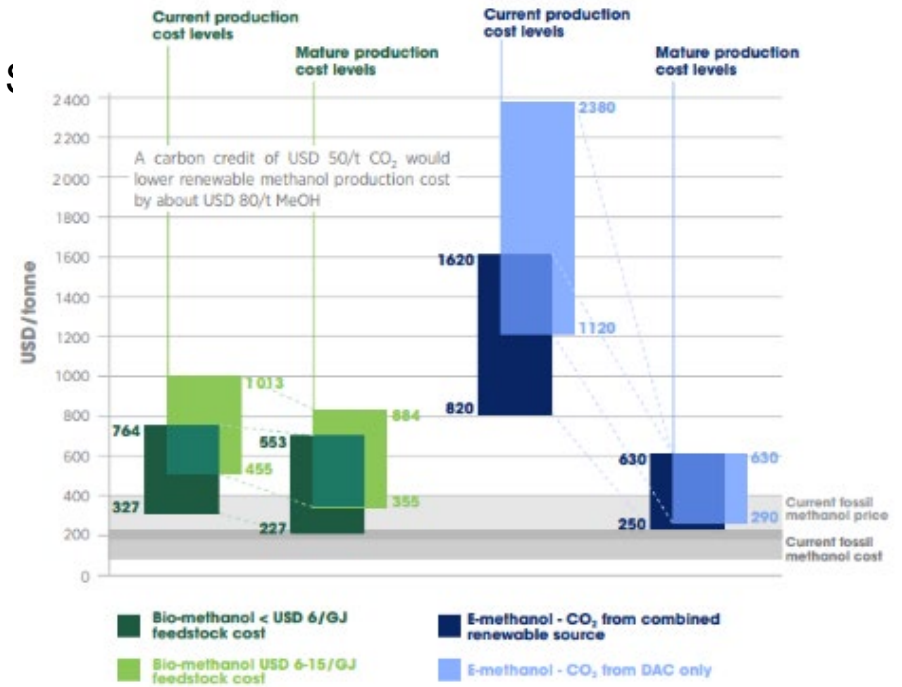
Impact on conventional
methanol supply demand



Renewable Methanol

- General unaffordability of green methanol given high green electricity/hydrogen costs
- Costs of green methanol in 'mature' scenario likely more competitive once hydrogen infrastructure scaled up and green electricity costs are reduced
- Green methanol favoured for bunkering
- Grey methanol as a transition fuel
- Currently, not enough grey methanol to serve the needs of petrochemical users and shipping sector
- Two-tier pricing structure could emerge – petrochemical users compete with shipowners for grey methanol

Figure 3. Current and future production costs of bio- and e-methanol

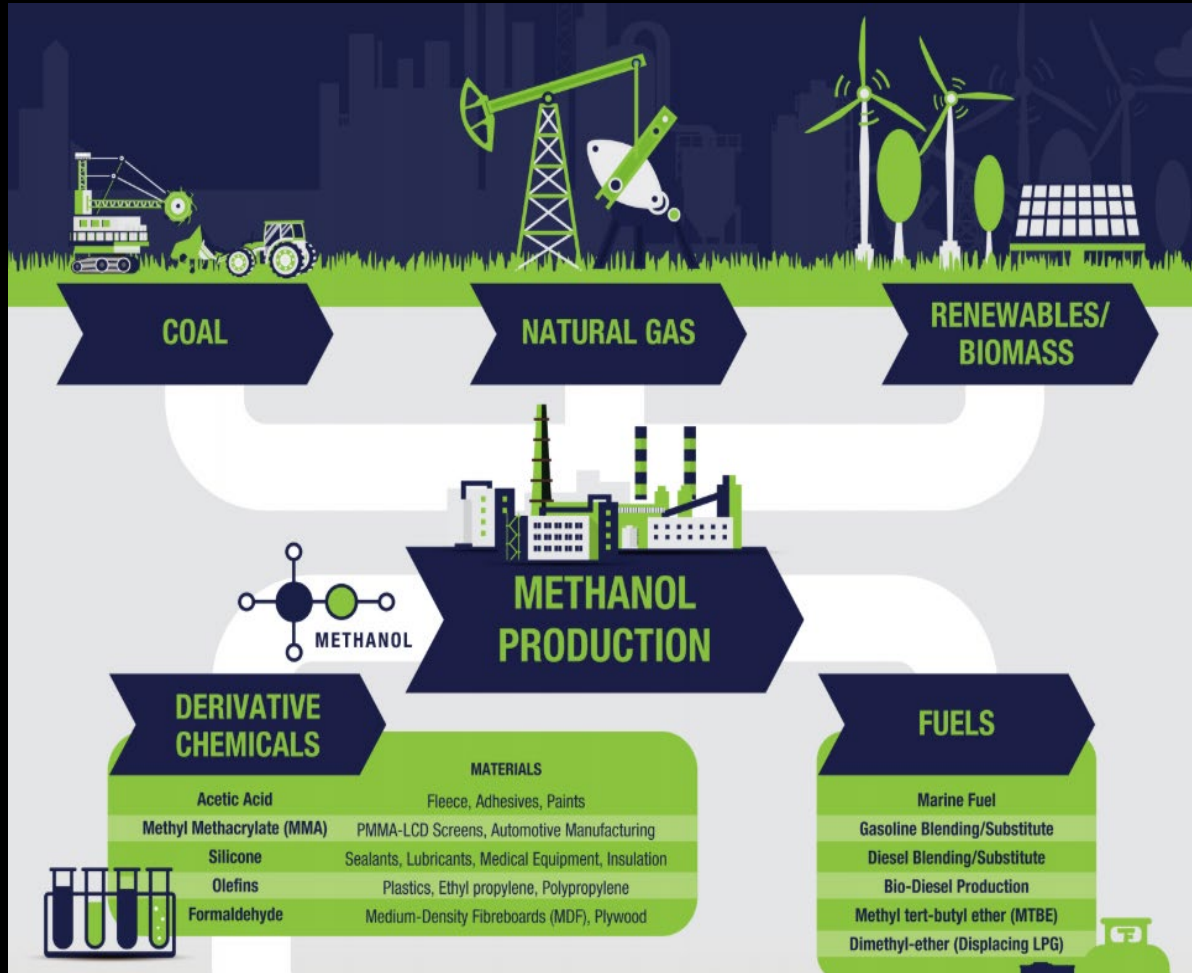


Source: MI-IRENA

- Source: IRENA

Introduction to global methanol

Methanol value chain



Final applications:

- Construction and home insulation
- Automotive manufacturing
 - Paints and coatings
 - Medical equipment
- Plastics (CTO, MTO route)
 - Boilers and cook stoves
 - Fuel in ships and cars

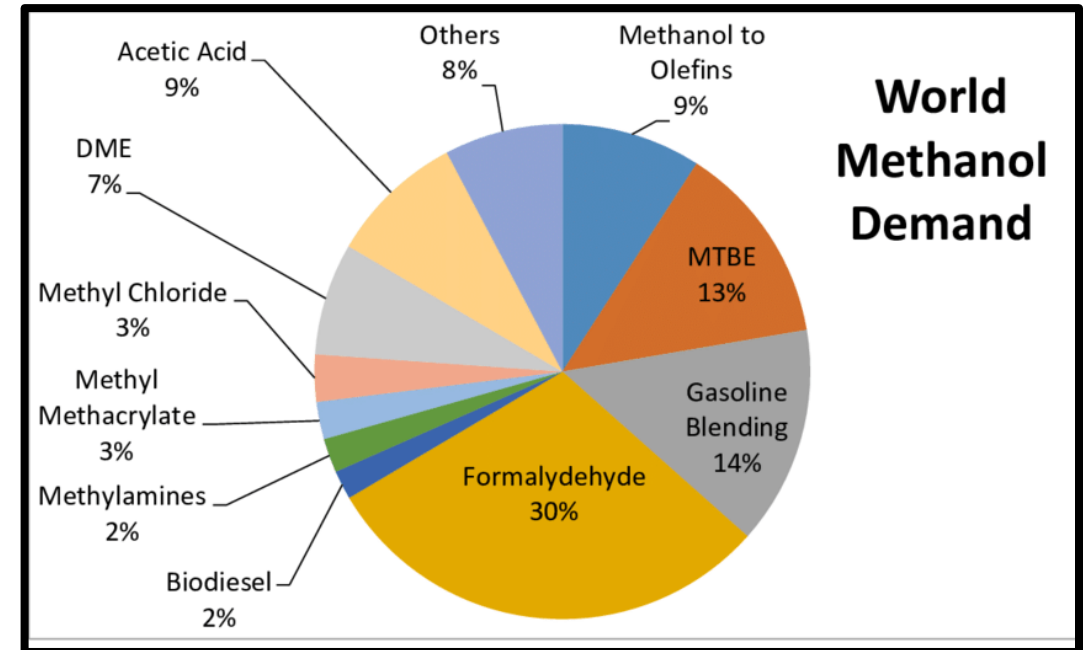
Source: Methanol Institute - <https://www.methanol.org/essential-methanol-infographic/>

Platts

S&P Global
Commodity Insights

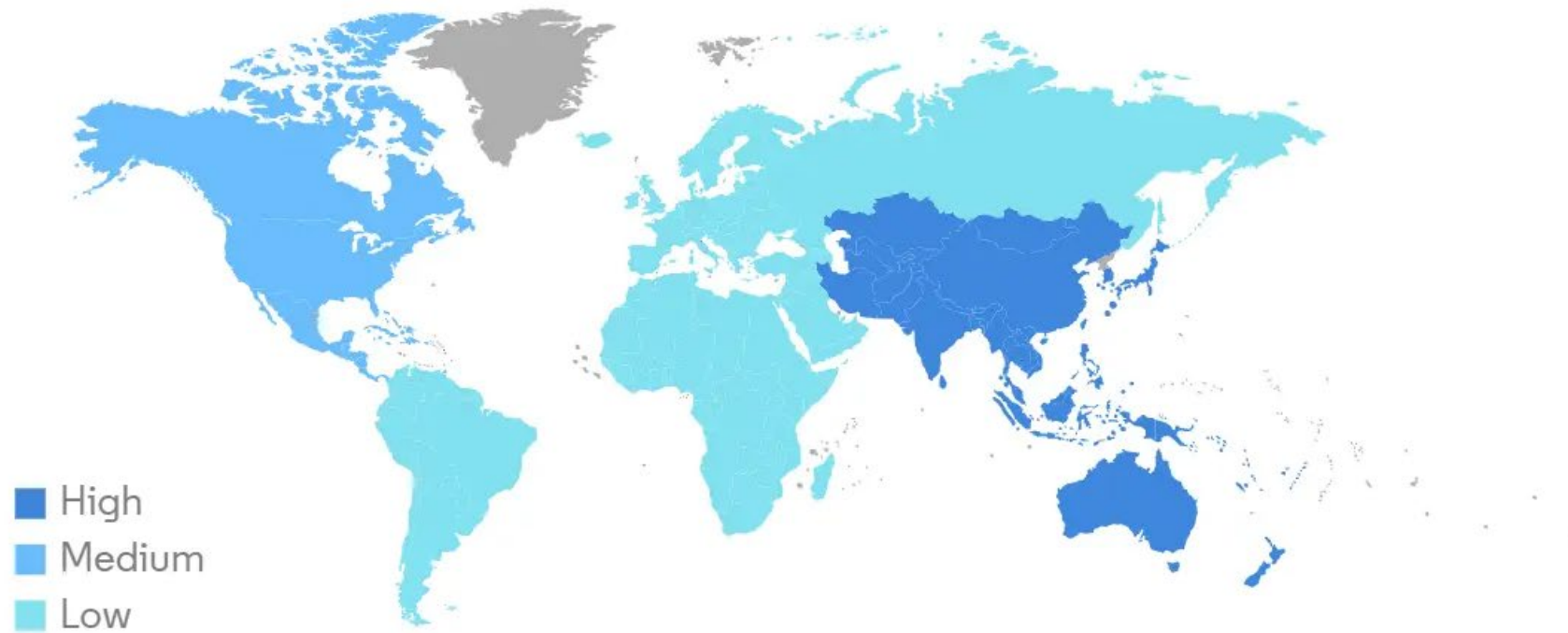
Industry snapshot: most plants in low-cost natural gas locations

- Worldwide, over 90 methanol plants have a combined production capacity of about 110 million metric tons (almost 36.6 billion gallons)
- In 2019, the United States produced around 5.7 million metric tons of methanol. 1.7 million metric tons new capacity started up in 2021.
- Methanex is the world's largest producer and supplier of methanol to major international markets in North America, Asia Pacific, Europe and Latin America. SABIC, Proman, Koch Group are notable players
- Over 35.4 million metric tons installed capacity in China, the biggest supplier and biggest consumer



Source: S&P Global Commodity Insights Analytics

Methanol Market - Growth Rate by Region, 2022-2027

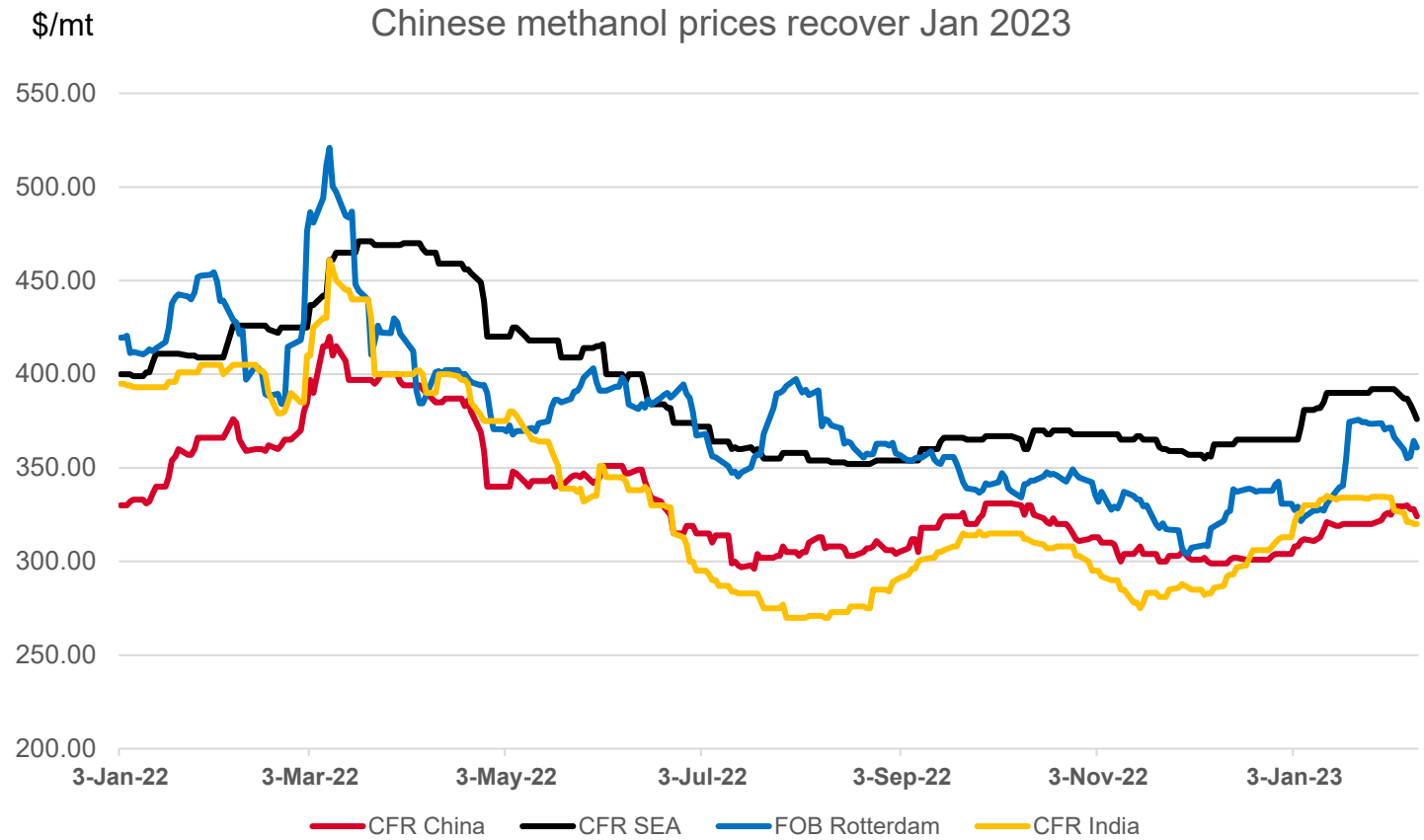


Source: Mordor Intelligence



Global methanol prices in Q2 2023

- Chinese methanol prices slowly recover after pandemic restrictions ease
- SEA well-supplied
- Indian methanol prices dip below China
- European methanol plants offline or on reduced O/R
- EU supply dependent on the Americas



Source: S&P Global Platts

Platts Singapore, Rotterdam methanol bunker prices

654--Platts Asia Methanol Bunker Daily Assessments - 22Mar23

Yesterday, 4:46 PM • PCA

(Platts)--22Mar2023/446 am EST/0846 GMT

Methanol Bunker Singapore

	Symbol	Price	Change
\$/mt	<MLBSG00>	414.000	+0.000
\$/mt (Oil)	<MLBSO00>	789.488	+0.000
\$/mt (LNG)	<MLBSL00>	1001.302	+0.000

Methodology: <http://plts.co/8GJa30rEfrF>

Platts Petrochemical Master Page Index <PCA0010>

Feedback or questions? Please email pca@spglobal.com
--Platts Petrochemical Alert--

1159--Platts European Methanol Bunker Daily Assessments - 22Mar23

12:54 AM • PGB

(Platts)--22Mar2023/1254 pm EST/1654 GMT

Methanol Bunker Fuel Rotterdam

	Symbol	Price	Change
\$/mt	<MLBRT00>	395.450	+0.460
\$/mt (Oil)	<MLBRO00>	754.114	+0.877
\$/mt (LNG)	<MLBRL00>	956.437	+1.112

Methodology: <http://plts.co/KAsr30nmrkT>

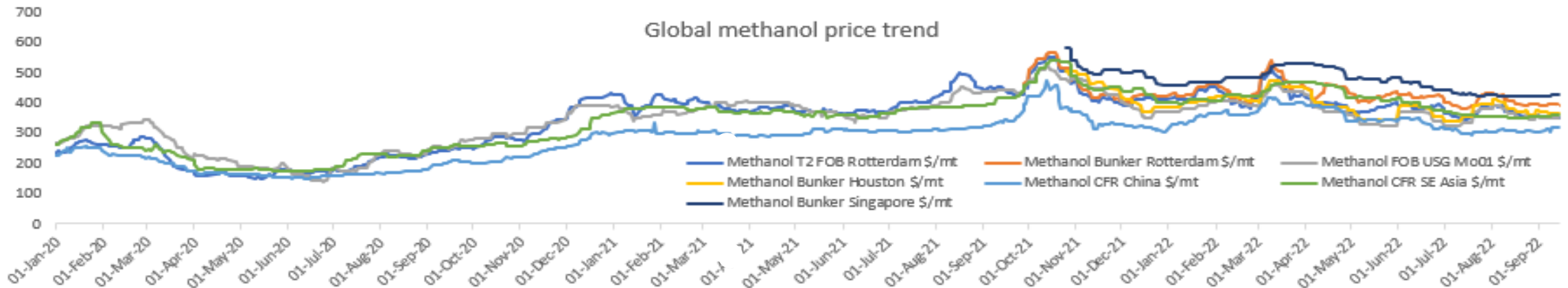
Platts Bunker page index <PGB0850>

Feedback or questions? Please email pca@spglobal.com
--Platts Bunker Alert--

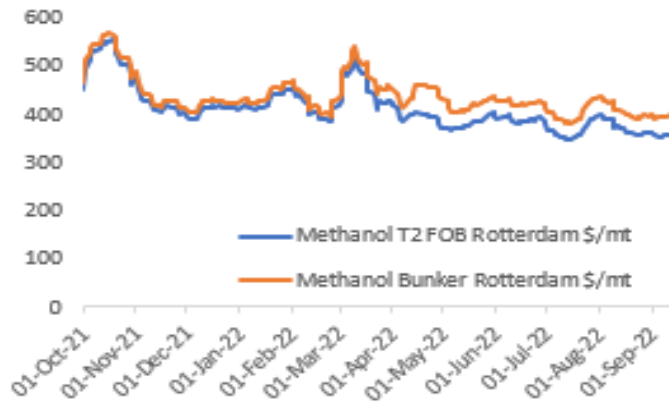
Source: S&P Global Platts

Platts methanol bunker prices since 2021

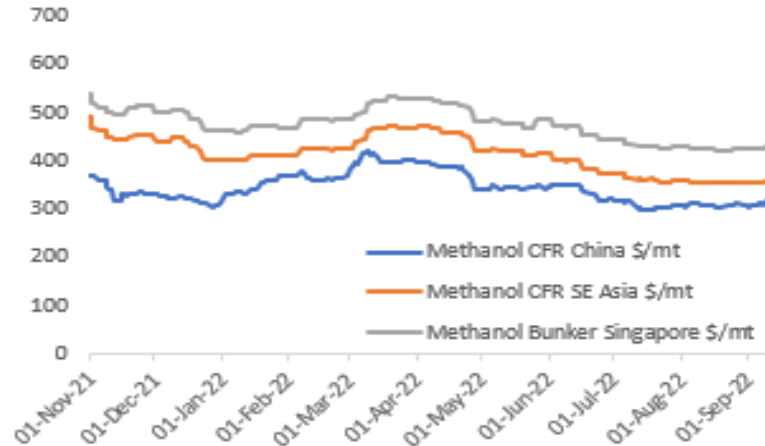
Methanol bunker prices elevated amid wider methanol firmness



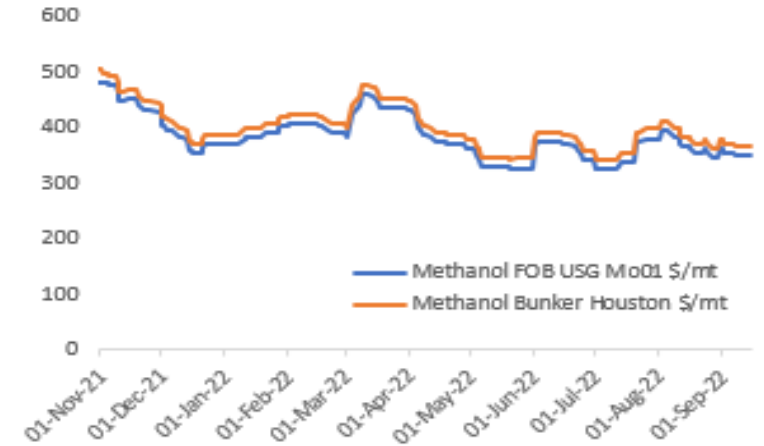
Europe methanol chemical vs bunker



Asia methanol chemical vs bunker



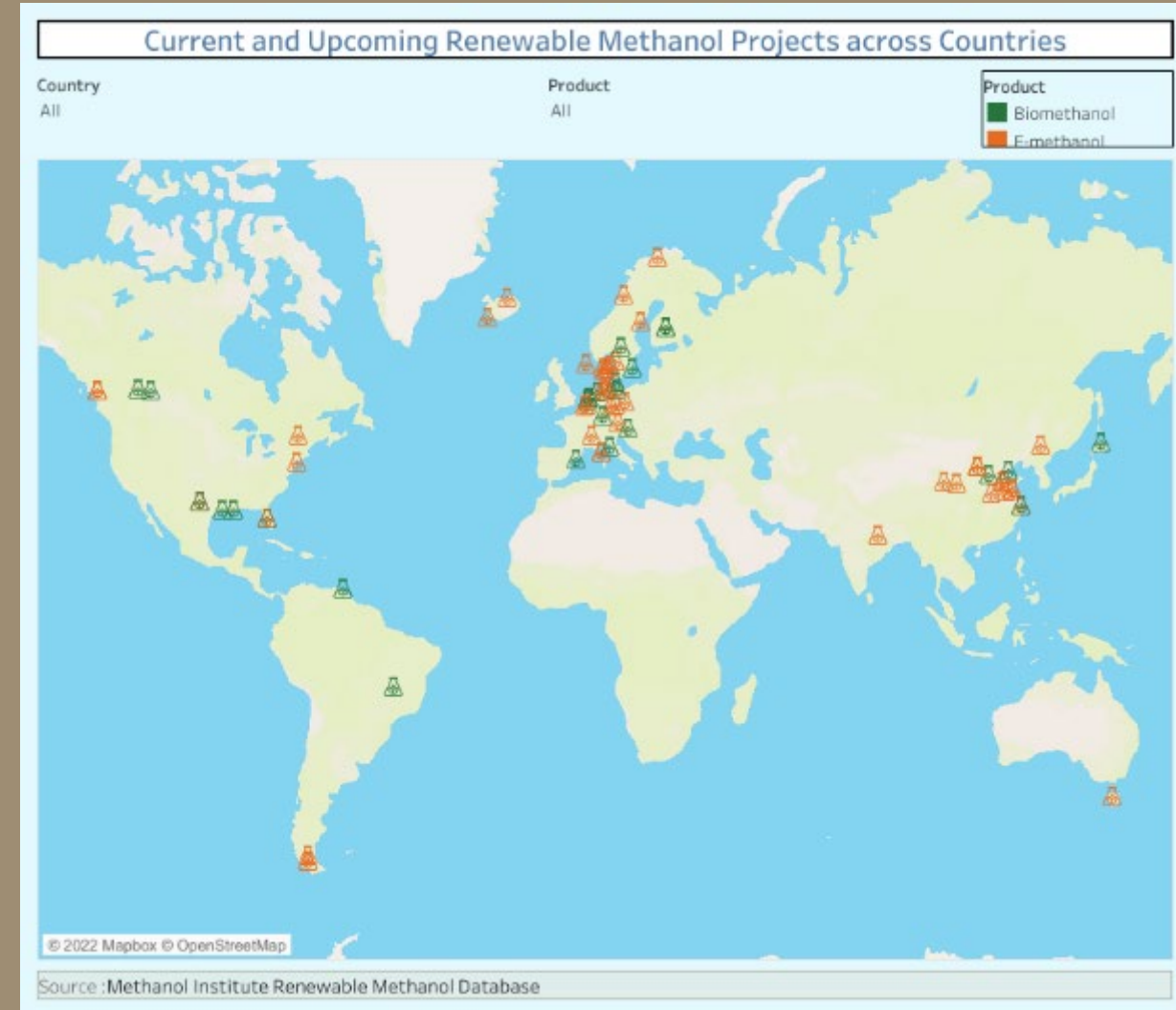
US methanol chemical vs bunker



Challenges and Opportunities for Renewable Methanol

- High feedstock and production costs
- Low production volumes, high renewable MeOH prices
- Decouple society from dependence on fossil fuels
- Strong policy & regulations
- Investments/incentives throughout the supply chain

Source: MefCO2



Source: Methanol Institute

Summary

- Conundrum of choice and yet no one size-fits-all fuel
- High production costs of renewable methanol
- Not enough conventional methanol for petrochemical and shipping industries
- Two-tier pricing structure could emerge, petrochemical users could find themselves prices out of the market



Platts Global Methanol Derivatives Assessments



Platts launches CFR China methanol derivative assessments Oct 3, 2022

Platts, part of S&P Global Commodity Insights, started publishing daily CFR China methanol derivative assessments, providing greater price transparency for the methanol market, effective Oct. 3, 2022.

The assessment was launched after a series of positive feedback from the market regarding the research on a forward curve as a step towards growth for the methanol derivatives market.

These assessments provide information for market participants to hedge their positions, based on premiums/discount to physical prices, as they look to mitigate risks from timing differences.

	Symbol	Price	Change
CFR China methanol derivatives \$/mt			
Apr	: MAWAZ01	311.00	+1.00
May	: MAWAZ02	308.00	+0.00
Jun	: MAWAZ03	306.00	+1.00
Jul	: MAWAZ04	305.50	-0.50
Aug	: MAWAZ05	308.50	+0.50
Sep	: MAWAZ06	310.50	+0.50

Key specifications for the CFR China derivatives assessments

Parcel Size: minimum of 1,000 mt

Assessment laycans covered: 6 months forward from month of publication

Rollover: 1st business day of calendar month

Unit: \$/mt

Settlement basis: These derivatives settle on the average of the physical Platts methanol CFR China marker (price database code AAWAZ00).

Timing: Platts will take into consideration the latest information sourced from the market up to the close of the Market on Close assessment process at 4:30 pm Singapore time (0830 GMT) for the new derivatives assessments.

More details on specifications can be found here: <https://www.spglobal.com/commodityinsights/en/our-methodology/methodology-specifications/petrochemicals/asia-pacific-petrochemicals-methodology>

Where to find the assessments and how to participate

- The new assessments are published in Petrochemical service of the Platts Dimensions Pro, Asian Petrochemicalscan publication, Platts Petrochemical Alert (PCA) page 653 and Platts Market Center, under the following price database symbols:
- Methanol CFR China derivative \$/mt Mo01 MAWAZ01
- Methanol CFR China derivative \$/mt Mo02 MAWAZ02
- Methanol CFR China derivative \$/mt Mo03 MAWAZ03
- Methanol CFR China derivative \$/mt Mo04 MAWAZ04
- Methanol CFR China derivative \$/mt Mo05 MAWAZ05
- Methanol CFR China derivative \$/mt Mo06 MAWAZ06

Entities with interest to participate in the MOC may initiate the process via <https://www.spglobal.com/platts/en/our-methodology/participation-review> .

SGX Platts Methanol CFR China swaps – Hedge your exposure

Contract Specifications

	SGX Platts Methanol CFR China Swap	SGX Platts Methanol CFR China Futures
Contract Size	500 metric tonnes	100 metric tonnes
Minimum Price Fluctuation	US\$0.01 per metric tonne	US\$0.01 per metric tonne
Contract Months	12 months starting with current month, with next consecutive month added upon each month's expiry	12 months starting with current month, with next consecutive month added upon each month's expiry
Quotation	US\$ per metric tonne	US\$ per metric tonne
Tick Value	USD 5	USD 1

Platts reflects only non-sanctioned methanol in its CFR China assessment

- S&P Global Platts reflects only non-sanctioned material in its CFR China methanol assessment, effective Jan. 3, 2022, following extensive market consultation and feedback.
- Platts assessments aim to reflect the market value of widely tradable material. Platts understands that individual companies may have trading limits with counterparties and that national legislation may prevent companies from dealing in materials of certain origins which includes embargoed material.
- From Jan. 3, 2022, Platts no longer reflects trades of sanctioned material in its CFR China methanol assessment. Platts assessments reflect the market value of widely tradable material and understands that individual companies may have trading limits with counterparties and that national legislation may prevent companies from dealing in materials of certain origins.
- Platts price assessments reflect only merchantable material in the physical spot market and will continue to collect, verify and publish price information pertaining to these supplies, clearly stating its origin, and may normalize it to the standard for assessment purposes.

Platts Global Methanol Team Contact Info

TBA

Associate Editor – US petrochemical

petchems@spglobal.com

Esther Ng

Senior Editor – Asian methanol

+ 65 6530 6515

esther.ng@spglobal.com

Stergios Zacharakis

Global Methanol Lead, London

+ 44 7976 809955

stergios.zacharakis@spglobal.com

Astrid Torres

Managing Editor – US Aromatics

+1 346 348-6875

Astrid.torres@spglobal.com

Kamna Kapoor

Sr Specialist, Price Assessment,
India methanol

kamna.kapoor@spglobal.com

Sarah Trinder

Managing Editor – Europe aromatics

+44 7866 061 716

sarah.trinder@spglobal.com

Ben Brooks

Associate Director – US Petrochemicals

ben.brooks@spglobal.com

Eric Su

Managing Editor, Asia
Petrochemicals

eric.su@spglobal.com

Ora Lazic

Sr. Market Engagement Lead

ora.lazic@spglobal.com

Vanessa Ronsisvalle

Associate Director – Asia
Petrochemicals

vanessa.ronsisvalle@spglobal.com

Maria Tsay

Petrochemicals Global Director

maria.tsay@spglobal.com

Platts[®]

S&P Global
Commodity Insights